



TILENGA PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

Volume IV

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National Environment Management Authority

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16 Social

16.1 Introduction

This Environmental and Social Impact Assessment (ESIA) chapter provides the social economic baseline and impact assessment, covering the potential social, economic and cultural changes and impacts (both beneficial and adverse) that the Project may give rise to. The chapter also provides the specification of suitable mitigation and enhancement measures for social economic impacts.

The following social, economic and cultural topics are covered within this chapter:

- Governance and Administration;
- Population, demographics and education;
- Culture, Traditions and Social Dynamics;
- Social Infrastructure and Services;
- Settlements and Housing;
- Economy and Livelihoods;
- Land Tenure and Land Use; and
- Human Rights.

The baseline data presented in this chapter have been obtained via desktop study and through primary data collected through various surveys undertaken between 2014 and 2017. The baseline has also been informed by stakeholder consultations undertaken over the same period. Further details about the data collection methodology are provided under Section 16.5.2.

Other baseline sections covering aspects of relevance to the social baseline, referenced throughout the chapter, include **Chapter 5: Stakeholder Engagement**, **Chapter 17: Archaeology and Cultural Heritage**; **Chapter 18: Health and Safety**; and **Chapter 19: Ecosystem Services**.

16.2 Scoping

During the scoping phase a desktop study was conducted to compile and analyse existing baseline data available for the Study Area. A gap analysis was undertaken on the existing data to determine requirements for additional primary data collection needed to undertake the impact assessment.

Additionally, a field reconnaissance visit was undertaken in June 2015 and scoping consultations were undertaken in August and September 2015. Findings from these visits helped to identify available data sources to complete the desktop study and were used to determine the approach for baseline surveys.

The outcomes from the scoping phase tasks were summarised in the Scoping Report, which was submitted and approved by National Environment Management Authority (NEMA). The Scoping Report provided an initial baseline of the social environment, an overview of anticipated impacts on social receptors, and an outline of the required contents of the ESIA chapter. A copy of the Approval for the Scoping Report is attached in Appendix A.

16.3 Legislative Framework and Standards

16.3.1 National Standards

Table 16-1 presents a summary of the principal national Ugandan policies, laws, and regulations applicable to the social aspects of the Project. **Chapter 17: Archaeology and Cultural Heritage** provides a summary of policies, laws and regulations relevant to culture and traditions, which are also of relevance to the social baseline and impact assessment. The over-arching policies, laws, and regulations applicable to the Project are discussed in **Chapter 2: Policy, Regulatory and Administrative Framework**.

Table 16-1: National Policies, Laws and Regulations

Instrument / Legislation	Overview	Relevance to the Project
National Policies		
The National Environment Management Policy (NEMP) (1994)	The National Environment Management Policy (1994) provides an enabling framework for management of environmental resources in all aspects of national planning including providing a system of environmental impact assessment so that the adverse impacts of development activities can be foreseen, avoided or mitigated.	Requirement for ESIA to be carried out prior to commencement of the Project in line with relevant legislation.
Uganda National Land Policy, 2013	The Uganda National Land Policy provides a framework for articulating the role of land in national development, land ownership, distribution, utilisation, alienability, management and control of land. The Policy is aimed at transforming the country into a modern, industrialised and urbanised society.	Requirement that land acquisition for the Project recognises the land rights of customary owners, individuals and communities owning land and that prompt, adequate and fair compensation is paid for those displaced from their land.
Uganda Vision 2040 (2013)	<p>The objective is to operationalize the National Vision Statement: “A transformed society from a peasant to a modern and prosperous country within 30 years”. The benchmark for the Vision is to raise Gross Domestic Product (GDP) per capita to 9,500 United States Dollars (USD) with real GDP growth of 8.25% per annum.</p> <p>The following sectors are identified as providing opportunities in terms of economic growth:</p> <p>Tourism: The tourism industry is expected to play a major role in the economy and a major contributor to GDP by 2040, with “enormous employment opportunities”.</p> <p>Agriculture: Recognised as the largest source of employment and a major contributor to GDP. The goal is to transform the agriculture sector from subsistence farming to commercial agriculture and a number of Government actions to achieve this are set out.</p> <p>Oil and Gas: presents the country with opportunity to spur economic growth, create employment, foster technology transfer and generate revenues for investments in development of other strategic sectors such as infrastructure and human resource development. Over the Vision period, Government will strengthen the policy, legal, institutional and regulatory framework to foster transparency, protect environment and good governance in the oil and gas sector.</p> <p>Minerals: Over 27 types of minerals in significant commercial viable reserves are identified. Recognises that Uganda has the opportunity to build a strong mining industry</p>	The Project will help the Government of Uganda to meet some of the objectives of Vision 2040.

Instrument / Legislation	Overview	Relevance to the Project
	<p>that will be a source of revenue, employment, and economic lifeline industries.</p> <p>Knowledge and Information Communication Technology (ICT) Sector: This industry is expected to greatly contribute to the national GDP and creating employment opportunities.</p>	
<p>Uganda National Development Plan (NDP) II (2015/16-2019/20)</p>	<p>This National Development Plan (NDPII) is the second in a series of six five-year Plans aimed at achieving the Uganda Vision 2040. The goal of this Plan is to propel the country towards middle income status by 2020 through strengthening the country's competitiveness for sustainable wealth creation, employment and inclusive growth.</p> <p>Tourism agriculture, minerals, oil and gas, infrastructure development and human capital development are five areas prioritised by the NDP II.</p>	<p>The Project will be developed in alignment with the goals of the NDP II.</p>
<p>Tourism policy (2013)</p>	<p>The aim of the national Tourism Policy is to ensure that tourism becomes a vehicle for poverty reduction in the future to the extent possible within the resource base and market limitations. The specific objectives are: (1) Derive greater revenues from an increasing number of pleasure tourist arrivals, longer lengths of stay and higher daily expenditure, (2) Distribute revenue earnings widely, with the large scale participation of communities and district in the development, and (3) encourage the development of eco-tourism, agro-tourism and community tourism products.</p>	<p>The Project has the potential to impact tourism. Impacts on tourism are assessed as part of the ESIA.</p>
<p>Tourism Development Master Plan (2014-2024)</p>	<p>The Tourism Development Master Plan recognises Uganda's exceptional range of natural and cultural tourism assets and prescribes strategies to unlock their potential, which will lead to a significant boost to the tourism sector over the next 10 years. By 2024, the master plan forecasts an increase in foreign receipts to more than USD 1.4 billion per annum, and the creation of over 150,000 additional tourism jobs.</p> <p>The strategic interventions suggested by the master plan to enhance tourism planning and management include: reviewing the Uganda Tourism Act 2008; recruit and train more staff; strengthen areas of licensing, registration and tourism statistics collection; widely consult tourism sector players on the reorganization of the tourism sector and forming of the Uganda Tourist Authority; reorganise and strengthen the Uganda Tourism Association (UTA) to clearly provide a unified industry voice; and mainstreaming regional tourism plans/agreements in</p>	<p>The Project has the potential to impact tourism. Impacts on tourism are assessed as part of the ESIA.</p>

Instrument / Legislation	Overview	Relevance to the Project
	<p>national tourism plans.</p> <p>The master plan proposes a Tourism Development Areas (TDAs) approach as a means to efficiently utilise the vast tourism resources and enhance the levels of tourism.</p>	
<p>Uganda Wildlife Policy (2014)</p>	<p>This policy recognises that tourism in Uganda relies significantly on wildlife. It sets a framework to conserve wildlife resources of Uganda in a manner that contributes to the sustainable development of the country and the well-being of its people. Among the specific objectives: (1) to promote sustainable management of wildlife, protected areas (in and outside), sustainable and equitable utilisation of wildlife resources a viable form of land use, (2) to effectively mitigate human wildlife conflicts, and (3) to ensure net positive impacts of exploration and development of extractive industries and other forms of development in wildlife conservation areas.</p> <p>The policy identifies key strategies for tourism development including: (1) promote eco-tourism, (2) diversify tourism product, (3) develop or improve infrastructure in wildlife conservation areas, (4) support the private sector to effectively participate in conservation related enterprise development.</p>	<p>The Project has the potential to impact tourism. Impacts on tourism are assessed as part of the ESIA.</p>
<p>Plan for Modernisation of Agriculture (PMA) (2000)</p>	<p>The PMA had four main objectives, all of which were focused on improving the livelihood of agricultural households. The PMA has seven implementation areas: (i) research and technology development, (ii) National Agricultural Advisory Services (NAADS), (iii) agricultural education, (iv) rural financial services, (v) marketing and agro-processing, (vi) sustainable use and management of natural resources, and (vii) physical infrastructure.</p>	<p>The Project has the potential to impact agricultural land and farming activities within the Project Area. Any interventions to address such impacts will be developed in line with government objectives for agricultural development.</p>
<p>Agricultural Sector Development Strategy and Investment Plan (DSIP) 2010/2011-2014/2015</p>	<p>The DSIP defines the agriculture sector development agenda for the next 5 (five) Financial Years (FY) 2010/11 to 2014/15. The strategy is the culmination of a comprehensive sector review process grounded on a new National planning framework, the National Development Plan (NDP) and a draft National Agriculture Policy.</p> <p>The development objectives of the DSIP are:</p> <ul style="list-style-type: none"> • Rural incomes and livelihoods increased; and • Household food and nutrition security improved. <p>The immediate objectives are;</p> <ul style="list-style-type: none"> • Factor productivity in crops, livestock and fisheries sustainably enhanced; 	<p>The Project has the potential to impact agricultural land and farming activities within the Project Area. Any interventions to address such impacts will be developed in line with government objectives for agricultural development.</p>

Instrument / Legislation	Overview	Relevance to the Project
	<ul style="list-style-type: none"> • Markets for primary and secondary agricultural products within Uganda, the region and beyond developed and sustained; • Favourable legal, policy and institutional frameworks to facilitate private sector expansion and increased profitability along entire value chains developed; and • Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Agencies functioning as modern client oriented organisations within an innovative, accountable and supportive environment. 	
<p>The National Food and Nutrition Policy (2003)</p>	<p>The Uganda Food and Nutrition Policy (UFNP) was formulated in 2003 by the Ministry of Health (MOH) in collaboration with MAAIF in order to improve the nutritional status of the population. The objective was to complement the Plan for Modernisation of Agriculture whose components did not directly address food and nutrition security. The UFNP identifies twelve intervention focus areas:</p> <ul style="list-style-type: none"> • Food supply and accessibility; • Food processing and preservation; • Food storage, marketing and distribution; • External food trade; • Food aid; • Food standards and quality control; • Nutrition; • Health; • Information, education and communication; • Gender, food and nutrition; • Food, nutrition and surveillance; and • Research. 	<p>The Project has the potential to impact food security and agricultural activities. Any interventions to address such impacts will be developed in line with government objectives for food and nutrition as well as for agricultural development.</p>
<p>The National Fisheries Policy (NFP) (2004)</p>	<p>The NFP 2004 is a policy framework aimed at improving the livelihoods and alleviating poverty in fishing communities through the sustainable management of Uganda's lake resources.</p> <p>The overall fisheries goal is to ensure increased and sustainable fish production and utilisation by properly managing capture fisheries, promoting aquaculture and reducing post-harvest losses. The policy has 13 policy areas each with its policy objectives and policy strategies. Among the ways to achieve this goal was to support decentralised co-management practices (Beach Management Units (BMUs)),</p>	<p>The Project has the potential to impact fisheries in Lake Albert. Any interventions to address such impacts will be developed in line with government objectives for fisheries.</p>

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	<p>strengthen the capacity of local governments and set up a Fisheries Authority with strengthened capacity to regulate.</p> <p>However, this policy, although debated in and enacted by Parliament, has not been turned into a fisheries bill approved and implemented by the government. This means that many of the suggestions in the fisheries policy, for example, for the establishment of a semi-autonomous Fisheries Authority to replace the Department of Fisheries Resources, have never materialised.</p>	
<p>The National Health Policy (2010)</p>	<p>The National Health Policy II (2010) guides the development of Uganda's health sector in line with the Government's constitutional obligation to provide health services and promote healthy nutrition and lifestyles.</p> <p>Among other guiding principles, the policy emphasises:</p> <ul style="list-style-type: none"> • The role of the community in decision making and planning for health services delivery; • Delivery of health services within the framework of decentralisation; • The need for alternative, equitable and sustainable options for health financing; and • Partnerships with the private sector in increasing the geographical scope of health services and the scale of services provided. 	<p>The Project has the potential to impact (positively and negatively) community health and safety.</p> <p>Health sector stakeholders at local and national levels were consulted as part of the evaluation of impacts on delivery of health services in the Project area of influence.</p>
<p>The National Youth Policy (2001)</p>	<p>The Policy provides an operational framework to facilitate meaningful involvement of youth in national development efforts and to respond to their various needs. Section 8.8 highlights the significance of youth education and awareness in promoting the conservation of natural resources. The Policy aims to enhance the participation of youth in the development process.</p>	<p>The Project has the potential to impact (positively and negatively) youth. Concerns of youth were documented and addressed during the stakeholder engagement process.</p>
<p>National orphans and other Vulnerable Children policy (2004)</p>	<p>The Policy outlines the enabling framework for improvement of the quality of life of orphans and other vulnerable children. Its guiding principles include inclusion of orphans and other vulnerable children in the development process, particularly in affairs that affect them (s 2.9). Additionally, the Policy provides for effective advocacy at all levels to ensure that the concerns of orphans and other vulnerable children are appreciated (s 4.3).</p>	<p>Orphans and vulnerable children are likely to be more vulnerable to potential negative Project impacts and less likely to be able to benefit from positive impacts. It is therefore important to identify these groups as part of the ESIA and Resettlement Action Plan (RAP) processes.</p> <p>The Proponents will need to allow the concerns of orphans and other vulnerable children and their families to be captured in the ongoing stakeholder engagement process.</p>

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The National Child Labour Policy (2006)	The Policy provides a framework for addressing child labour and actions that need to be taken to deal with child labour.	There is a potential risk of child labour in the Project supply chain that must be addressed by the Project Proponents in line with national policy.
National Equal Opportunities Policy (2006)	The policy provides the framework for promoting equal opportunities for all people in Uganda in all activities, programmes, plans and policies of Government, private sector and Non-Governmental Organisations (NGOs) in all spheres of social, economic, political and civil life.	The Project will be a major employer. The Project Proponents shall undertake Project activities in compliance with supporting legislation outlined within the Policy – namely, the Local Governments Act Cap 243, the National Youth Council Act Cap 319, the Uganda Gender Policy 2007, the National Youth Policy 2005, the National Orphans and Other Vulnerable Children Policy 2004, the National Women's Council Act Cap 318, the Children Act Cap 59, the National Council on Disability Act 2003, and the Land Act Cap 227.
The National Policy on Persons with Disability (2006)	The Policy seeks to promote equal opportunities, care and support for the protection of Persons with Disabilities (NSPP 2015 ¹).	Persons with disabilities are likely to be more vulnerable to potential negative Project impacts and less likely to be able to benefit from positive impacts. It is therefore important to identify these groups as part of the ESIA and RAP processes. The Project Proponents shall allow concerns of persons with disabilities to be documented and addressed as part of the ongoing stakeholder engagement process.
The Uganda Gender Policy (2007)	The policy provides a framework for redressing gender imbalances as well as a guide to all development practitioners.	Section 6.1 outlines roles and responsibilities of the private sector in implementation of the policy. They include, among others: ensuring that corporate policies and practices incorporate gender equality principles; providing incentives and support to women entrepreneurs; collaborating with the Ministry of Gender Labour and Social Development (MGLSD) and other appropriate institutions on matters of gender mainstreaming; and implementing Affirmative Action measures.
Government's White Paper Policy on Education (1992)	The 1992 Government White Paper on Education is the basis of official policy on the purposes and programs of education. Its aims are to promote citizenship; moral, ethical, and spiritual values; scientific, technical and cultural knowledge, skills, and attitudes; literacy and equip individuals with basic skills and knowledge - in short, "to contribute to the building of an integrated, self-sustaining and independent national economy."	The Project has the potential to impact education. Impacts on education are assessed within the scope of the ESIA. Any interventions to address impacts on education will be developed in line with government objectives in this area.

¹ National Social Protection Policy (2015)

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Revised Education Sector Strategic Plan 2007-2015 (2008)	<p>The Plan had three purposes:</p> <p>(a) To help the Ministry fulfil its mission, which is “to support, guide, coordinate, regulate and promote quality education and sports to all persons in Uganda for national integration, individual and national development;”</p> <p>(b) To guide all sub-sectors in their regular medium-term and annual planning and budgeting exercises; and</p> <p>(c) To help the Ministry of Education and Sports, as sector coordinator, negotiate with other government agencies, other actors in the education sector, and external funding agencies the scope and use of their investments in the education sector.</p>	<p>The Project has the potential to impact education. Impacts on education are assessed within the scope of the ESIA. Any interventions to address impacts on education will be developed in line with government objectives in this area.</p>
Gender in Education Policy September (2010)	<p>a) Enhance equal participation for all in the education system;</p> <p>b) Promote the provision of relevant knowledge and skills equally to males and females;</p> <p>c) Ensure gender responsive planning, budgeting, programming and monitoring and evaluation; and</p> <p>d) Promote an enabling and protective environment for all persons.</p>	<p>Gender equality will be integrated into any interventions developed to address potential impacts on education by the Project.</p>
Basic Requirements and Minimum Standards Indicators For Education Institutions (2010)	<p>a) To fulfil the Ministry of Education and Sports (MoES) vision of “Provision of Quality and Appropriate Education and Sports Services for All”.</p> <p>b) To facilitate and guide institutions (government, community and private), in creating a conducive learning environment, alleviation or total elimination of impediments to the achievement of quality education in the country.</p> <p>c) To advance further, Government’s and Education Development Partners’ efforts and commitment to support schools in this endeavour.</p> <p>d) To provide a strong foundation and comprehensive framework for an effective and systematic development, organisation and management of schools.</p>	<p>The Project has the potential to impact education. Impacts on education are assessed within the scope of the ESIA. Any interventions to address impacts on education will be developed in line with government objectives in this area.</p>

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<p>Skilling Uganda Strategic Plan 2011-2020 (MoES, 2011)</p>	<p>The 10-year Strategic Plan is designed to contribute to the achievement of the higher-level development objective for the Business, Technical, Vocational Education and Training (BTVET) system BTVET should ensure that Ugandans and enterprises acquire the skills they need to raise productivity and income.</p> <p>The Plan has five objectives to reach the sub-sector's higher level objective: 1) Make BTVET relevant to productivity development and economic growth, 2) Increase the quality of skills provision, 3) Increase equitable access to skills development, 4) Improve the effectiveness in BTVET management and organisation, 5) Increase internal efficiency and resources available to BTVET.</p>	<p>The Project has the potential to impact education and skills development. Impacts on education and skills development are assessed within the scope of the ESIA. Any interventions to address impacts will be developed in line with government objectives in this area.</p>
<p>Strategic Plan for Universal Secondary Education in Uganda 2009 – 2018</p>	<p>a) Increase and improve equitable access to quality secondary education; b) Improve the quality and relevancy of secondary education; and c) Increase effectiveness and efficiency in delivery of secondary education.</p>	<p>The Project has the potential to impact education. Impacts on education are assessed within the scope of the ESIA. Any interventions to address impacts on education will be developed in line with government objectives in this area.</p>
<p>National Industrial Policy (2008)</p>	<p>The Policy sets out the strategic direction for industrial development in Uganda. Policy objectives include the promotion of environmentally sustainable industrial development and participation of disadvantaged sections of society in industrial development (s 1.3).</p>	<p>Disadvantaged and vulnerable groups are likely to be more vulnerable to potential negative Project impacts and less able to benefit from positive impacts. They must therefore be identified as part of the ESIA process. The Project Proponents shall elicit the views and concerns of disadvantaged or vulnerable sections of the affected communities as part of the ongoing stakeholder engagement process.</p>
<p>National Oil and Gas Policy of Uganda (2008)</p>	<p>The policy seeks to establish and efficiently manage the country's oil and gas resources. The goal of the policy is to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society.</p> <p>Guiding principles of the Policy include among others:</p> <ul style="list-style-type: none"> • The use of oil and gas revenues to create lasting benefits to society through investment in areas such as skills development, infrastructure, technology and health; • Protection of the environment and biodiversity; • Importance of disclosing relevant information to stakeholders including transparency on payments and revenues; • Emphasis on system of co-operation extending to local communities, taking into account their interests, sharing 	<p>The Project will be developed to avoid potential negative impacts on the economy, society and environment and look for ways to enhance potential benefits as outlined in this Policy.</p> <p>Under Section 5 the Policy species that Government shall where necessary and in accordance with the Constitution, acquire land in the public interest to support implementation of oil and gas activities. It further notes that capacity building programmes for Land Boards, in the areas with the potential for petroleum production or in areas where transport corridors will be constructed, shall be undertaken.</p> <p>The Policy promotes effective physical planning and urban development of the ring of towns that exist, and those that will develop within and at the periphery of the oil and gas producing regions. These measures are intended to contribute to avoiding any undesirable population</p>

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	<p>royalties in line with the Constitution and relevant laws, and managing conflicts; and</p> <ul style="list-style-type: none"> • Expectation for oil companies to contribute to institutional capacity building and in transfer of technology. 	<p>migration.</p> <p>Under Section 5 The Policy further addresses:</p> <ul style="list-style-type: none"> • Impact on fiscal and monetary policy • Impact on the balance of payments • Impact on national industry • Impact on Agriculture and Rural Activities <p>Under Section 6 the Policy recognises the need to guide population movements and settlements triggered by oil and gas activities. The Policy says it shall promote employment of nationals in the oil industry and in the resulting employment created by the industry's chain or multiplier effect. It also promotes the development of appropriate procedures for compensation and provision of employment to local communities. The Policy also recognises several potential causes of negative impacts on human health from oil and gas activities and promotes the setting up of best international practices for prevention and rapid emergency response mechanisms designed to mitigate against air and water pollution and the spread of communicable diseases. The Policy also addresses potential impact on education and research plans,</p>
<p>National Policy for Older Persons (2009)</p>	<p>The Policy provides for equal treatment, social inclusion and provision of livelihood support for older persons (NSPP 2015).</p>	<p>Buliisa District Development Plan II indicates that about 4.6% of the population are above 65 years old. Older persons are likely to be more vulnerable to potential negative Project impacts and less able to benefit from positive impacts. They must therefore be identified as part of the ESIA process. The Project Proponents shall elicit the views and concerns of older persons within the affected communities as part of the ongoing stakeholder engagement process.</p>
<p>The National Policy for Disaster Preparedness and Management (2010)</p>	<p>The Policy details the mechanisms and strategies for the effective and practical management of disasters, and presents the institutional framework under which partners (lead sectors, local governments, international development and humanitarian partners, the private sector and NGOs) can coordinate their operations. Under s. 1.1.4.8, the Policy states that socio-economic and environmental impact assessments shall be undertaken to guide planning and budgeting for disaster preparedness and management.</p>	<p>The Project Proponents shall undertake an environmental and social impact assessment, which shall take into account disaster preparedness and management with respect to the proposed development.</p>

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National Employment Policy (2011)	The policy provides a framework for achieving the goal of decent and remunerative employment for all women and men seeking such work, in conditions of freedom, equity, security and human dignity.	The policy (s. 6.6) emphasises the need for employers to comply with Uganda's legal and regulatory framework to promote the rights of workers.
National HIV/AIDs policy (2011)	The policy provides a broad framework for delivering Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) services in the country. It stipulates policies and legal requirements that guide planning and action in social and economic sectors and at the various levels of the response to HIV and AIDS.	Under s.3.1 (Policy: Coordination and Management of the National Response), Government requires all stakeholders involved in development efforts to mainstream HIV and AIDS in their policies and plans.
National Social Protection Policy (2015)	The Policy seeks to promote effective coordination and implementation of relevant social protection interventions to complement the efforts of the poor and vulnerable to cope with socioeconomic risks and shocks.	The poor and vulnerable are likely to be more vulnerable to potential negative Project impacts and less able to benefit from positive impacts. They must therefore be identified as part of the ESIA process. The Proponents shall elicit the views and concerns of poor and vulnerable members of the affected communities as part of the ongoing stakeholder engagement process.
National Content Policy for the Petroleum Industry in Uganda (2017)	The Policy establishes a framework for significant national participation in the petroleum sector for the benefit of the Ugandan economy, the sector itself and society at large.	<p>The Project Proponents will implement requirements specified under s. 4.3 (role of the private sector) that include among others:</p> <ul style="list-style-type: none"> • Preparation of plans for promotion of national content; • Ensuring that national content is a criterion in the evaluation and award of bids and tenders; • Utilising locally available goods; and • Promoting best employment practices and industry standards.
Special Needs and Inclusive Education Policy (2012)	<p>The policy seeks to:</p> <ul style="list-style-type: none"> • Increase enrolment, participation and completion of schooling by persons with special learning needs; • Strengthen and systematise existing initiatives/programs on special needs and inclusive education; • Enhance participation of stakeholders in the management and implementation of special needs and inclusive education programs in Uganda; and • Promote sporting programs for learners with special learning needs. 	The Project Proponents shall address the concerns of persons with special learning needs in any interventions towards enhancement of delivery of education services undertaken as part of the Project.

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<p>The Energy Policy for Uganda (2002)</p>	<p>The policy goal is to meet the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner. Specifically the energy policy seeks to meet the following objectives:</p> <ul style="list-style-type: none"> • To establish the availability, potential and demand for various energy resources in the country; • To increase access to modern affordable and reliable energy services as a contribution to poverty eradication; • To improve energy governance and administration; • To stimulate economic development; and • To manage energy-related environmental impacts. 	<p>The Project will help the Government of Uganda to meet its goals for sustainable energy provision in Uganda.</p>
<p>The Renewable Energy Policy for Uganda (2007)</p>	<p>The policy aims to provide a framework to increase in significant proportions the contribution of renewable energy in the energy mix (from 4% in 2007 to 61% in 2017).</p> <p>The main features of the policy are:</p> <ul style="list-style-type: none"> • Introduction of the feed in tariffs; • Standardised power purchase agreements; • Obligation of fossil fuel companies to mix products with biofuels up to 20%; and • Tax incentives on renewable energy technologies. 	<p>The Project will consider this Policy in any interventions to promote access to energy within the Project Area.</p>
<p>Uganda Sustainable Energy for All (SE4All) Initiative Action Agenda (2015)</p>	<p>The United Nations (UN) Secretary General launched the SE4ALL Initiative in September 2010 to achieve three inter-related goals by 2030:</p> <ul style="list-style-type: none"> • Ensuring universal access to modern energy services; • Doubling the rate of improvement in energy efficiency; and • Doubling the share of renewable energy in the global energy mix. <p>Uganda's SE4ALL's Action Agenda seeks to integrate the multi-tier efforts that the country is implementing towards providing universal access to energy, increased energy efficiency and increased use of renewable energy. Uganda's SE4ALL goals are:</p> <ul style="list-style-type: none"> • Universal access to modern energy services: <ul style="list-style-type: none"> - 98% of population with energy access; and - 99% of population with access to modern cooking solutions. 	<p>The Project will consider Uganda's Action Agenda in any interventions to promote access to energy within the Project Area.</p>

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	<ul style="list-style-type: none"> • Doubling global rate of improvement of energy efficiency: <ul style="list-style-type: none"> - Reduce national wood consumption by 40% and improve energy efficiency of power users by a minimum of 20%. • Doubling share of renewable energy in global energy mix: <ul style="list-style-type: none"> - >90% renewable energy share in power; and - 36% thermal energy. 	
National Laws		
The Land Acquisition Act (Cap 229)	The Act makes provision for the compulsory acquisition of land for public purposes and for other matters incidental thereto.	The Act stipulates that in the case of compulsory land acquisition for the Project, the Project affected persons (PAPs) must be adequately compensated.
The Domestic Violence Act (2010)	The Act provides for the protection and relief of victims of domestic violence and for the punishment of perpetrators of domestic violence.	The Project Proponents shall identify measures to address domestic violence as an indirect outcome of Project activities in local communities.
Petroleum (Exploration, Development And Production) Act, 2013	The Petroleum (Exploration, Development and Production) Act gives effect to Act 244 of the Constitution, operationalises the National Oil and Gas Policy of Uganda.	<p>Sections 125, 126 and 127 of the Act prescribe requirements for national content development including training and employment of Ugandans; promoting the provision of goods and services by Ugandans; and technology transfer of knowledge and skills. The requirements include preparation of a detailed programme for training and recruitment of Ugandans by the licensee.</p> <p>Section 135* (1) (a) requires the proponent to obtain written consent of a relevant authority before undertaking activities on 'any land dedicated or set apart for [...] a place of burial, or upon land over which [...] a right to a cultural site has been granted.'</p> <p>Under s. 135 (1) (b), the proponent shall obtain the written consent of the land owner for activities planned (i) on or within two hundred meters of inhabited, occupied or temporarily unoccupied houses or buildings; (ii) within fifty meters of land prepared for crop cultivation; (iii) on any land from which during the year immediately preceding agricultural crops have been reaped; and (iv) at the site of or within one hundred meters of a cattle dip tank, dam or water used by human beings or cattle.</p> <p>Section 135 (1) (f) requires written consent from the concerned local council for activities to be undertaken on land within two hundred meters of the boundary of any township; while subsection (h) requires the written consent of the department</p>

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		<p>responsible for fisheries where activities are to be undertaken in a fish breeding area.</p> <p>Section 136 (1) grants rights to land owners to undertake cattle grazing and cultivation in an exploration or development area insofar as these activities do not interfere with petroleum activities or safety zones in the area. Under s. 136 (2), the land owner within a development area shall seek the written consent of the licensee prior to erecting any building or structure on the land. Section 137 grants rights to land owners or licensees with a different licence other than the one under the Act to undertake other subsurface activities that do not interfere with an exclusive right or with petroleum activities.</p> <p>Section 138 provides for the acquisition of exclusive rights by a licensee to any part of a block through a lease or other rights, and sets out the terms under which compensation shall be made to the land owner in the event that the licensee and land owner fail to agree.</p>
<p>The Fish Act, Cap 197</p>	<p>The Act makes provision for the control of fishing, the conservation of fish, purchase, sale, marketing and processing of fish and matters connected therewith.</p>	<p>Section 12, subsection (4) stipulates that 'except where otherwise expressly provided by any written law, no person shall divert the waters of any lake, river, stream, pond or private waters in which fish, their eggs or progeny have been introduced with the consent of the chief fisheries officer, unless the ditch, channel, canal or water pipe conducting the water is equipped at or near the entrance or intake with a screen or a filter of a design approved in writing by the chief fisheries officer, that is capable of preventing the passage of fish, their eggs or progeny into the ditch, channel, canal or water and where the chief fisheries officer so directs there is also provided a by-pass.'</p> <p>The Project Proponents are required to liaise with the Chief Fisheries Officer to obtain approval for the designs of proposed water abstraction facilities.</p>
<p>The Local Governments Act, Cap 243</p>	<p>The Local Governments Act, Cap 243 establishes a decentralised form of government based on the District as the main unit of administration. The Districts are given legislative and planning powers under this Act. They also plan for the conservation of environment within their local area.</p>	<p>The Act confers upon the District local government responsibilities that include land surveying and land administration (ss. 30 and 31 (Second Schedule)) and appointment of a land board. As such, the District Council a key stakeholder in the Project.</p>

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The Survey Act, Cap 232	The Act provides for and guides the survey of land in Uganda including aspects such as access to lands under survey, and compensation for injury caused during survey activities.	Requires the Project Proponents to undertake land acquisition activities in accordance with the requirements of the Act including provision of prior notice and compensation for injury done by clearance among others.
The Registration of Titles Act, Cap 230	The Act stipulates the requirements relevant to the registration and issuance of titles to land transfer of registered land.	The Project Proponents are required to comply with the requirements of the Act during any acquisition of land for establishment of Project components.
The Public Health Act, Cap 281	The main objective of the Public Health Act is to safeguard and promote public health.	Section 54 provides a general prohibition of nuisances or conditions liable to be hazardous to health on any land.
Public Finance Management Act 2015 Section 75	<p>The Act sets out that Government shall retain 94% of the revenue from royalties arising from petroleum production and the remaining 6% shall be shared among the local governments located within the petroleum exploration and production areas of Uganda. The Minister responsible for petroleum shall publish the local governments eligible to receive royalties under subsection. 50% of the revenue from royalties due to the local governments shall be shared among the local governments involved in petroleum production based on the level of production of each local government or impact. The balance of 50% of the revenue from royalties due to the local governments shall be shared among all the local governments based on population size, geographical area and terrain.</p> <p>It also specifies that the government will give 1% of royalties arising from petroleum production due to central government to a gazetted cultural or traditional institution.</p>	<p>The revenue from royalties shall be appropriated to a local government in the annual budget for development purposes.</p> <p>The traditional authorities within the Project Area have stated that these royalties will constitute a key source of revenue for the Kingdom and that they will contribute to various development projects on education, health, culture and infrastructure projects.</p>
The Income Tax Act, Cap 340 and the Income Tax (Amendment Act) 2011	The Act consolidates and amends the law relating to income tax payable by persons or businesses in Uganda and for other connected purposes.	The Proponents shall pay taxes due on chargeable income as stipulated in Part IV of the Act.
The Education (Pre-primary, primary and Post primary) Act (2008)	<p>a) To give full effect to education policy of government functions and services by government;</p> <p>b) To give full effect to the decentralization of education services;</p> <p>c) To give full effect to the Universal Primary Education Policy of government;</p> <p>d) To give full effect to the Universal Post Primary Education and Training Policy of government;</p>	The Project has the potential to impact education. Impacts on education are assessed within the scope of the ESIA. Any interventions to address impacts on education will be developed in line with this Act.

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	<p>e) To promote partnership with the various stakeholders providing education services;</p> <p>f) To promote quality control of education and training; and</p> <p>g) To promote physical education and sports in schools.</p>	
The Business, Technical Vocational Education and Training Act (2008)	<p>a) To define the scope and levels of BTJET programmes and the roles of the different stakeholders in the provision of BTJET;</p> <p>b) To separate the training and delivery of BTJET from quality assurance functions;</p> <p>c) To establish an institutional framework for the promotion and coordination of BTJET;</p> <p>d) To specify the provider of BTJET; and</p> <p>e) To provide for mechanisms and establishment of organs responsible for the regulation of qualifications (standards, assessment and certification) and training delivery in formal and non-formal institution.</p>	Any interventions by the Project Proponents taken to promote BTJET will be developed in alignment with this Act. This Act is also relevant to the development of the Project's National Content Policy.
Solar Power Subsidy (2007)	In September 2007, the Ugandan government announced a 45% subsidy - increased from 14% - on all solar power equipment. The programme introduces subsidies through microfinance institutions, either as a cash pay out to those who install solar systems on loan or a loan-offset. The programme is funded by the Rural Electrification Fund, the World Bank Credit Fund, the United Nations Development Programme and microfinance institutions.	The Project may consider solar power projects to address potential environmental and social impacts.
Hydro and CHP Feed-in-Tariff (2002 and modified in 2010)	Provides feed in tariffs for hydro power and co-generation.	Provides baseline context on the energy sector, which is relevant to the assessment of potential social impacts.
The Uganda Energy Credit Capitalisation Company (2011)	<p>The Uganda Energy Credit Capitalisation Company (UECCC) was established to provide financing options with the aim of facilitating investment in renewable energy projects.</p> <p>It works with development partners and financial institutions to offer the following services:</p> <ul style="list-style-type: none"> • Partial risk guarantee for up to 15% of the project cost during the construction phase of a project. • Bridge financing to cover interest payments during the construction stage of a project. • Subordinated debt finance to address lack of equity held by project developers. • Liquidity refinancing to extend the tenor 	<p>The Project may consider renewable energy projects to address potential environmental and social impacts.</p> <p>Also provides baseline context on the energy sector, which is relevant to the assessment of potential social impacts.</p>

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	<p>of loans. Upper ceiling is currently at USD 3m.</p> <ul style="list-style-type: none"> • Solar refinancing for beneficiaries acquiring solar systems. • In addition, the UECCC offers various forms of technical assistance to independent power producers and financial institutions, including on how to address pre-investment barriers. In April 2014, the UECCC launched an open call for applications for hydro, solar, biomass and wind power projects of 1-20 Megawatt (MW) for early stage transaction advisory services with a total budget of 1.5m Euros (EUR) (USD 2m). 	
<p>Renewable Energy Feed in Tariff (2012)</p>	<p>In January 2011, Uganda implemented a Feed-in-tariff system, valid for a 20 year period, to support renewable energy deployment.</p> <p>Feed-in-tariffs differ for each technology, are adjusted annually and calculated with regards to annual capacity caps to 2014.</p>	<p>The Project may consider renewable energy projects to address potential environmental and social impacts.</p> <p>Also provides baseline context on the energy sector, which is relevant to the assessment of potential social impacts.</p>
<p>Uganda Tourism Act (2008)</p>	<p>The objective was to reform, consolidate and streamline the law relating to tourism; to provide for licensing, regulating and controlling of the tourism sector; to give effect to the implementation of the tourism policy of Government; to reconstitute the Uganda Tourist Board to make it private sector driven; to establish a tourism development levy; to provide for the establishment and management of a tourism development fund; to repeal the Hotels Act, the Tourist Agents (Licensing) Act, and the Uganda Tourist Board Act; and to provide for related matters.</p>	<p>The Project has the potential to impact tourism.</p>
<p>Uganda Wildlife Act Cap 200 of 2000</p>	<p>The objective of the Uganda Wildlife Act (UWA) Cap 200 is to provide for sustainable management of wildlife; to consolidate the law relating to wildlife management; to establish a coordinating, monitoring and supervisory body for that purpose and for other matters incidental to or connected with wildlife management. The law covers all wildlife protected areas and wildlife outside protected areas.</p> <p>This Act provides for conservation and management of Wildlife and wildlife protected areas in Uganda. It creates the Uganda wildlife Authority and charges it with management of wildlife in and outside protected areas. The Act under S.4 (3) puts the Uganda Wildlife Authority under overall supervision of the ministry responsible for wildlife. The legislation establishes wildlife use rights regime and creates various</p>	<p>The Project has the potential to impact tourism and protected areas. The Uganda Wildlife Authority is a key Project stakeholder.</p>

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	<p>offences relating to wildlife.</p> <p>The Act stipulates that UWA is legally obliged to share 20% of its park entry fees with the local governments surrounding the protected area from which the fees are collected.</p>	
National Regulations		
<p>The Environmental Impact Assessment (EIA) Regulations, 1998</p>	<p>The EIA Regulations, 1998 specify the general requirements for good EIA practice in Uganda.</p>	<p>Sub-regulation (1) of Regulation 12 requires the developer to take all measures necessary to seek the views of the people in the communities that may be affected by the project. Regulations 19, 20, 21, 22 and 23 outline further requirements for public participation.</p>
<p>The Petroleum (Exploration, Development and Production) (Health, Safety and Environment) Regulations, 2016</p>	<p>The regulations prescribe requirements for licensees to ensure that occupational safety and health in all petroleum activities is satisfactory for the health and safety of employees and the environment.</p>	<p>The Project Proponents shall follow health and safety requirements prescribed under these regulations in all relevant activities throughout the Project lifespan.</p>
<p>National Content Regulations (National Content) Regulations, 2016</p>	<p>The regulations prescribe the requirements for technology transfer of knowledge and skills relating to the petroleum industry to Ugandans to be employed by licensees.</p>	<p>The Project Proponents shall implement and promote transfer of knowledge and skills to Ugandans during the Project through a national content programme (s.7), including requirements such as employment and training of Ugandans, procurement of goods and services locally, and partnership with Ugandan companies, citizens and registered entities.</p>
<p>Environmental Impact Assessment Guidelines for the Energy Sector</p>	<p>EIA guidelines developed specifically for the energy sector.</p>	<p>The guidelines include sections on compensation for loss of assets, as well resettlement. With regard to the latter, the guidelines state that it is Governments policy goal to improve living standards and earning capacities of displaced persons. It further recognises the importance of ensuring that displaced people benefit from the displacing project; that resettlement takes place according to a timetable that makes sufficient time allowances for the development of resettlement infrastructure; lost incomes are restored, and that sufficient financial resources are made available in order to afford resettlement.</p>
<p>National Physical Planning Standards and Guidelines,</p>	<p>The Physical Planning Guidelines and Standards are intended to guide the preparation and implementation of physical development plans, with the basic aim of ensuring orderly, coordinated and efficient</p>	<p>This guideline includes standards and guidelines for residential, commercial and industrial developments and associated infrastructure requirements.</p>

Instrument / Legislation	Overview	Relevance to the Project
2011	development.	
Physical Planning Act No. 8, 2010	<p>The Act regulates development where development is the making of any material change in the use of any building, land, subdivision of any land, and the erection of such buildings or works and carrying out of such building operations. It declares the whole country a planning area bringing the entire country under planning control. It has established planning institutions like the National Physical Planning Board (NPPB), District Physical Planning Committee, and Urban/Local Physical Planning Committees. These institutions provide national and regional planning frameworks and inform district, urban and local planning processes.</p>	<p>This Act defines the requirements and procedures for land allocation and planning approval for all developments. The Act specifies that The Minister has powers to declare an area a special planning area or suspend all developments in the special planning area. Where Uganda Land Commission (ULC) has land it wants to allocate, and no planning and allocation has taken place before, the District Physical Planning unit in conjunction with the Physical Planning Committee of the area will prepare a layout which will guide ULC in the allocation of such land as per the land use attached to it. The Act also provides that land owners have to use qualified planners to prepare local physical development plans through the local physical planning committees.</p>
The Fish (Quality Assurance) rules, 2008	<p>This rule establishes the responsibilities of the fish inspectors as well as the measures set to ensure the safety and quality of the product (fish sanitary certificates, conditions for placing on the market, product traceability, requirements for exportation and importation, approval of landing sites, licensing of vessels used in fisheries, actions in case of health risks, etc.).</p> <p>This law establishes that there shall be a BMU at all gazetted fish landing sites. The BMUs shall be in charge of fisheries resource management in partnership with local government and central government department or institutions for fisheries regulations and control.</p> <p>This Act makes provision with respect to fisheries in Uganda and the purchase, sale, marketing and processing of fish. The Act places restrictions on specified fishing and use of fishing vessels by non-citizens, provides with respect to the licensing of fishing vessels and close seasons, prohibits the use of poison, grants powers to the Minister to control particular methods of fishing and regulates the introduction or transfer of non-indigenous fish or their eggs.</p>	<p>The Project has the potential to impact fisheries. Beach Management Units were engaged as part of baseline studies for the ESIA and will be an important stakeholder in any interventions relating to management of potential impacts on fisheries.</p>
Guidelines for Revenue Sharing Between Wildlife Protected Areas and Adjacent Local Governments and	<p>The overall goal of revenue sharing is to ensure strong partnership between protected areas management, local communities and local governments leading to sustainable management of resources in and around protected areas by enabling people living adjacent to protected areas to obtain financial benefits derived from the existence of these areas that contribute to</p>	<p>The Project ESIA must look at potential impacts to tourism and therefore revenue sharing specified under these guidelines.</p>

Instrument / Legislation	Overview	Relevance to the Project
Communities (UWA, 2012)	<p>improvements in their welfare and help gain their support for protected areas conservation.</p> <p>The local government's share of the 20% gate collections is determined by the extent to which local government's boundary touches a protected area boundary and by the extent to which local government's jurisdiction contributes to the total population of all frontline parishes adjacent the protected area perimeter.</p>	
Operational Guidelines for Oil and Gas Exploration and Production in Wildlife Protected Areas (UWA, 2014)	<p>The guidelines are intended to act as a guiding tool to oil companies working within the protected areas to minimise impacts from their activities.</p>	<p>The guidelines tackle a number of operational aspects that UWA requires companies to observe and comply with, for smooth implementation of the oil and gas activities within the protected areas. One of the objectives is to minimise potential negative impacts of oil and gas development activities on tourism.</p> <p>Potential impacts and measures are identified, such as: increased presence of human and motorized equipment, visual intrusion and specific interference with tourism activities (e.g. companies shall as much as possible concentrate their activities during low tourism seasons; Company vehicles shall move at agreed scheduled times to avoid interference with animal and tourist movements).</p>
Murchison Falls National Park (MFNP) General Management Plan (GMP) (2013-2023)	<p>The GMP provides general indications for conservation, zoning, uses and development of MFNP. The Plan identifies spatial areas according to their resource value and sensitivity, such as wilderness zone, tourism zone, resource use zone, dust management zone and critical ecosystem zone.</p>	<p>The Project will take into consideration the zoning defined in the GMP in Project planning and assessment of potential impacts within MFNP.</p>

Source: AECOM & Eco & Partner Consult's own elaboration, 2018

Details of the following laws and regulations, also of relevance to the Social Chapter, are provided in **Chapter 2: Policy, Regulatory and Administrative Framework**:

- The Constitution of the Republic of Uganda, 1995 (as amended);
- The Land Act, Cap. 227 (1998) as well as the Land (Amendment) Act, 2010;
- The Roads Act, Cap 358;
- The Access to Roads Act, Cap 350;
- The Illiterates Protection Act, Cap 78;
- The Occupational Safety and Health Act, 2006; and
- Uganda Wildlife (Murchison Falls National Park) Regulations-S.I 200-3.

16.3.1.1 Recommendations from the Strategic Environmental Assessment of Oil and Gas Activities in the Albertine Graben

The Strategic Environmental Assessment (SEA) of Oil and Gas Activities in the Albertine Graben (Ref. 16-90) identified a number of Key Issues² and associated recommendations³ of relevance to the Social Chapter including:

- Key Issue 2: Co-existence with local communities: Recommendations to manage potential impacts associated with this issue include:
 - Planning of urbanisation and required associated infrastructure to be advanced in line with petroleum development planning to avoid social tension and lack of capacity of infrastructure.
 - Allocation of a budget to translate information about the legal framework for land administration into local languages in the Albertine Graben and training of district land boards.
 - The Land Administration Department should be more involved in issues of resettlement action planning instead of only dealing with the office of the Chief Government Valuer.
 - Establishment of a comprehensive social development programme to address issues of HIV/AIDS, co-existence of agricultural systems with the oil and gas sector; community infrastructural planning programmes; conflict resolution; expectation management; alternative income generating activities.
 - Strengthening of linkages between policies and guidelines on social issues between Ministry of Gender, Labour and Social Development and the petroleum sector.
 - Census to determine number of population for planning for growing economy.
- Key Issue 4: Co-existence with Other Industries and Service Providers: Relevant recommendations include:
 - The petroleum industry should be required to offer capacity building programs for existing and potential new businesses with the aim of preparing them for delivery of goods and services to the petroleum industry in good time before any activities take place. This is to make the potential local companies competitive at international levels.
 - The Government should develop local infrastructure supporting the involvement of local companies.
 - The Government should plan for extra energy resources and provide services (whether by private Companies or public) such as sewage and storm water management for extended or new urban centres.
 - Alternative means of transport need to be developed and include railway, air transport and water transport to make businesses competitive
- Key Issue 5: Co-Existence with Tourism. Relevant recommendations include:
 - There should be regulations on the maximum acceptable disturbance levels of oil and gas activities taking the tourism sector views into consideration.
 - Activities in areas which are formally designated for ecosystem protection and biodiversity conservation should be in accordance with the official protection status of the area.
 - The oil and gas exploiting firms must ensure minimum disturbance to the circuits, and alternative circuits should be developed by the oil firms to replace the ones out of use due to exploration activities.
- Key Issue 6: Co-Existence with Fisheries. Relevant recommendations include:
 - Develop regulatory frameworks to operationalize the Fisheries Policy (2004).

² Key Issues were identified to focus the assessment of the SEA based on evaluation of significance, which was built on: the frequency that the issue was highlighted based on four sources (documentation review, evaluation by expert teams, stakeholder opinions and scenario analysis); the urgency of the issue relative to the SEA process; the duration and extent of impact connected to the issue; and the reversibility of the impact.

³ These do not constitute formal government policy and do not have legal status unless and until formally adopted into policy and law by government.

- Strengthen the multi-institutional approach to fisheries administration and management, setting clear mandates and modes of interaction and coordination amongst the key institutional actors namely the Directorate of Fisheries Resources (DFR), District Local Governments and community representatives for example Beach Management Units.
- Formalise and strengthen inter district dialogue, coordination and collaboration to enhance management and development of fisheries and other natural resources in the Albertine Graben.
- Key Issue 7: Sharing of Revenues and Wellbeing between the National and the Local/ Regional level. Co-operation.
 - Develop flexible revenue sharing mechanism.
 - Autonomy given to districts to spend money on priority projects with advice and supervision from central government.
- Key Issue 13: Institutional Capacity Building. Structures and Functions. Relevant recommendations include:
 - Effort shall be made to train NEMA staff and other relevant supervisory agency staff to scrutinize and review EIAs related to the petroleum sector.
 - Awareness raising and training of new and established institutions to handle their mandate in managing the petroleum industry.
 - Establish panel of experts to periodically review EIAs of the Oil and Gas Sector.
 - Increase capacity of line ministries and lead agencies to review EIAs on oil and gas.
 - Ensure capacity and adequately staff and budget ministries that regulate the petroleum sector.
 - Implement framework for monitoring oil and gas activities.
 - Appoint more independent environmental inspector to NEMA.
 - Thorough stakeholder engagement process should be part of EIAs
 - Capacity building should include Community Based Organisations and other civil organisations.
- Key Issue 14: Capacity of District Local Governments to Manage Environmental Concerns. Relevant recommendations include:
 - More skilled personnel should also be recruited at the districts to fill vacant posts in the environment and natural resources fields. A specific program should be developed and implemented for capacity building on environmental management related to the oil and gas sector in the Albertine Graben.
 - Awareness raising and training of new and established institutions to handle their mandate in managing the petroleum industry.
 - Improved coordination between the districts and the relevant central Government departments and the information flow channels should be clearly outlined and followed.
 - Environmental and social data should be shared between central and district government and data gaps filled.
 - Involvement of district officers in the planning process so they know what to monitor
- Key Issue 16: Land Use and Spatial Planning. Relevant recommendations include:
 - Ministry of Lands, Housing and Urban Development shall expedite the process for the development of the Albertine Graben regional physical development plans with emphasis on ecological land use planning to cater for the various sensitive areas.
 - Ministry of Lands, Housing and Urban Development needs to urgently initiate development of the Urbanization Policy as recommended in the National Land Policy in order to provide sufficient guidance for the comprehensive orderly planning and sustainable development in the Albertine Graben.

16.3.2 International Standards and Agreements

International standards and guidelines of relevance to social aspects are the International Finance Corporation (IFC) Performance Standards (PS) (Ref. 16-1) and Equator Principles (Ref. 16-2).

16.3.2.1 IFC Performance Standards

The IFC PSs provide guidance on how to identify and manage risks and impacts in a sustainable way, including stakeholder engagement and disclosure obligations. The IFC PSs most relevant for the social study in this chapter are:

- *IFC PS 1: Assessment and Management of Environmental and Social Risks and Impacts* - establishes requirements for social and environmental performance management throughout the life of a project;
- *IFC PS 2: Labour and Working Conditions* - highlights the need for workers' rights regarding income generation, employment creation, relationship management, commitment to staff, retention and staff benefits;
- *IFC PS 4: Community Health, Safety and Security* - specific requirements for mitigating any potential for community exposure to risks and impacts arising from equipment accidents, structural failures and releases of hazardous materials;
- *IFC PS 5: Land Acquisition and Involuntary Resettlement* - recognises that project related land acquisition and restrictions could have adverse effects on communities or persons that use the land and outlines a policy to avoid or minimise involuntary physical resettlement as a consequence of development;
- *IFC PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources* – establishes requirements for avoiding impacts on biodiversity and ecosystem services, and minimising or mitigating them in cases where impacts are unavoidable; and
- *IFC PS 8: Cultural Heritage* - aims to protect cultural heritage from the adverse impacts of project activities and support its preservation. Its scope includes intangible cultural heritage including expressions of culture and traditions.

16.3.2.2 Equator Principles

The Equator Principles are a set of ten environmental and social standards adopted by a number of global financial institutions, which must be adhered to prior to the provision of Project financing. Based on and in alignment with the IFC PS, the Equator Principles focus on project environmental and social standards and responsibilities. In particular, they highlight the protection of indigenous peoples, labour standards, and the importance of consultation with local affected communities.

16.3.2.3 International Conventions and Agreements

Uganda is a signatory to the following international agreements that are relevant for the social aspects of the proposed Project (further details of these agreements are provided in **Chapter 2: Policy, Regulatory and Administrative Framework** and further details of agreements relating to culture and traditions are given in **Chapter 17 – Archaeology and Cultural Heritage**). These include:

- Abolition of Forced Labour Convention, 1957 (No. 105);
- African Charter on Human and Peoples' Rights;
- African Charter on the Rights and Welfare of the Child;
- Convention against Torture and Other Cruel Inhuman or Degrading Treatment or Punishment;
- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW);
- Convention on the Rights of Persons with Disabilities;
- Convention on the Rights of the Child;

- Convention Relating to the Status of Refugees, 1951;
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111);
- Equal Remuneration Convention, 1951 (No. 100);
- Forced Labour Convention, 1930 (No. 29);
- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87);
- International Convention on the Elimination of All Forms of Racial Discrimination;
- International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families;
- International Covenant on Civil and Political Rights (ICCPR) (including the First Optional Protocol on the ICCPR with reservations on Article 5);
- International Covenant on Economic, Social and Cultural Rights;
- International Petroleum Industry Environment and Conservation Association (IPIECA) practical guide “Integrating Human Rights into Environmental, Social and Health Impact Assessments” (December 2013);
- IPIECA Guide to Social Impact Assessment in the Oil and Gas Industry (2004);
- IPIECA Community Grievance Mechanism toolbox (2014);
- Labour Inspection Convention, 1947 (No. 81) (Excluding Part II);
- Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143); Minimum Age Convention, 1973 (No. 138);
- Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict;
- Optional Protocol to the Convention on the Rights of the Child on the sale of children child prostitution and child pornography;
- Protocol Relating to the Status of Refugees 1967;
- Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa;
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98);
- United Nations Guiding Principles on Business and Human Rights;
- United Nations Development Programme (UNDP) Sustainable Development Goals (SDGs);
- Voluntary Principles for Security and Human Rights (VPSHR); and
- Worst Forms of Child Labour Convention, 1999 (No. 182).

16.4 Spatial and Temporal Boundaries

The Project Area covers the entire area of Contract Area 1 (CA-1), Exploration Area 1A (EA-1A) and License Area 2 (LA-2) North. The Project's Area of Influence (AoI) for the social aspects addressed in this chapter includes, but also extends beyond its physical footprint; the wider context is likely to experience both indirect and induced impacts by virtue of the Project's presence and associated activities. As such, the Study Area for the social baseline assessment was defined to include not only the areas immediately surrounding the various Project components, but also wider geographic areas in the vicinity of the Project that are likely to experience indirect impacts. A Primary and Secondary Study Area were therefore defined, as explained below.

Social impacts are also likely to be experienced across the wider region as well as at the national level, due to employment and procurement opportunities and contributions to the national economy from taxes and revenues. There are also likely to be impacts along Project transport corridors.

National and regional level information is therefore provided to provide a benchmark for the assessment of these impacts and to provide context and a reference point for the local level data.

16.4.1 Primary Study Area

The Primary Study Area reflects the administrative areas (i.e. districts and sub counties) within which the Project is located and the area that is anticipated to experience direct impacts and includes:

- Buliisa District: specifically, villages within the sub-counties of, Buliisa sub county, Ngwedo sub county, Kigwera sub county and Buliisa Town Council;
- Nwoya District: specifically, Purongo sub county and Got Apwoyo sub county⁴; and
- Murchison Falls National Park (MFNP).

The Primary Study Area Figure 16-1 encompasses the villages detailed in Table 16-2.

Table 16-2: Villages within the Primary Study Area

<i>District</i>	<i>Sub County/Town Council</i>	<i>Parish</i>	<i>Villages</i>
Buliisa	Ngwedo sub county	Avogera Parish	Avogera Kamandindi Muvule Nunda
		Ngwedo Parish	Kibambura Ngwedo TC Uduk II Ngwedo Farm
		Mubako Parish	Karatum Village Mubako Village Paraa Village
		Muvule Parish	Ajigo Village Muvule I Uduk I
		Nile Parish	Kilyango Village Kisomere Village Kasinyi
	Kigwera sub county	Kirama Parish	Kigwera NE Kirama Kiyere
		Ndandimire Parish	Katodio Village Ndandamire Village Kichoke Village
		Wanseko Parish	Katanga Village Wanseko TC Masaka
		Kisansya	Bikongoro Kisansya East Kisansya West

⁴ No villages within Got Apwoyo and Purongo will be directly affected by Project infrastructure, however, the boundaries of EA-1A fall within these sub counties therefore they are included as part of the Primary Study Area.

District	Sub County/Town Council	Parish	Villages
		Kigwera	Kigwera North West Kigwera South East Kigwera South West
Buliisa	Buliisa sub county	Kakoora	Beroya Kakoora Kijumbya
		Bugana	Bugana Kataleba Bugana Kichoke Waiga
		Kigoya	Kigoya Kijangi
		Nyamitete	Gotlyech Pandiga Uribo
	Buliisa Town Council	Central Ward	Civic Cell Kizongi
		Eastern Ward	Nyapeya Kizikyia
		Northern Ward	Kakindo Kisimo Cell
		Western Ward	Kityanga Kitahura
Nwoya	Purongo sub county	Paromo Patira Pawatomero Pabit Murchison Falls National Park	Lagaji ⁵ .
	Got Apwoyo sub county	Paminolango Tegot Barylec Obira	Te Ogot Latoro Barylec Obira

16.4.2 Secondary Study Area

The Secondary Study Area encompasses those areas that are likely to experience indirect impacts due to influx, economic opportunities, and presence of Project workers. This includes:

- Wider parts of Buliisa District including Biso Town Council;
- Hoima Municipality (Hoima District);

⁵ Villages in Purongo Sub County will not be directly affected and baseline surveys were not undertaken there at the village level. Therefore other villages are not listed here. Lagaji has been listed because it is located closest to the proposed support base and camp at Tangi.

- Masindi Municipality (Masindi District)⁶; and
- Pakwach Town council (Pakwach District).

Table 16-2 shows the Project footprint and the Districts corresponding to the Secondary Study Area. Pakwach District, which was newly created in 2017, is not shown on this figure as data on the boundaries of this district were not available at the time of writing (March 2018).

16.4.3 Temporal Boundary

The proposed timescales for the different phases of the Project are set out in **Chapter 4: Project Description and Alternatives**. A brief summary of the timescales are provided below:

- Site Preparation and Enabling Works Phase expected to take approximately 5 years;
- Construction and Pre-Commissioning is expected to take up to 7 years;
- Commissioning and Operations is expected to commence approximately 36 months after effective date of the main construction contract award. The lifetime of the Project is 25 years; and
- Decommissioning is planned for the end of the 25 year operation.

The phases overlap and in total the duration through all phases will be approximately 28 years. The duration of activities which may lead to potential social impacts differ between short and long term episodes, all of which are described within the assessment. Some impacts may last beyond the Projects lifetime.

⁶ Masindi District may also be subject to direct impacts associated with the development of the Masindi Vehicle Checkpoint

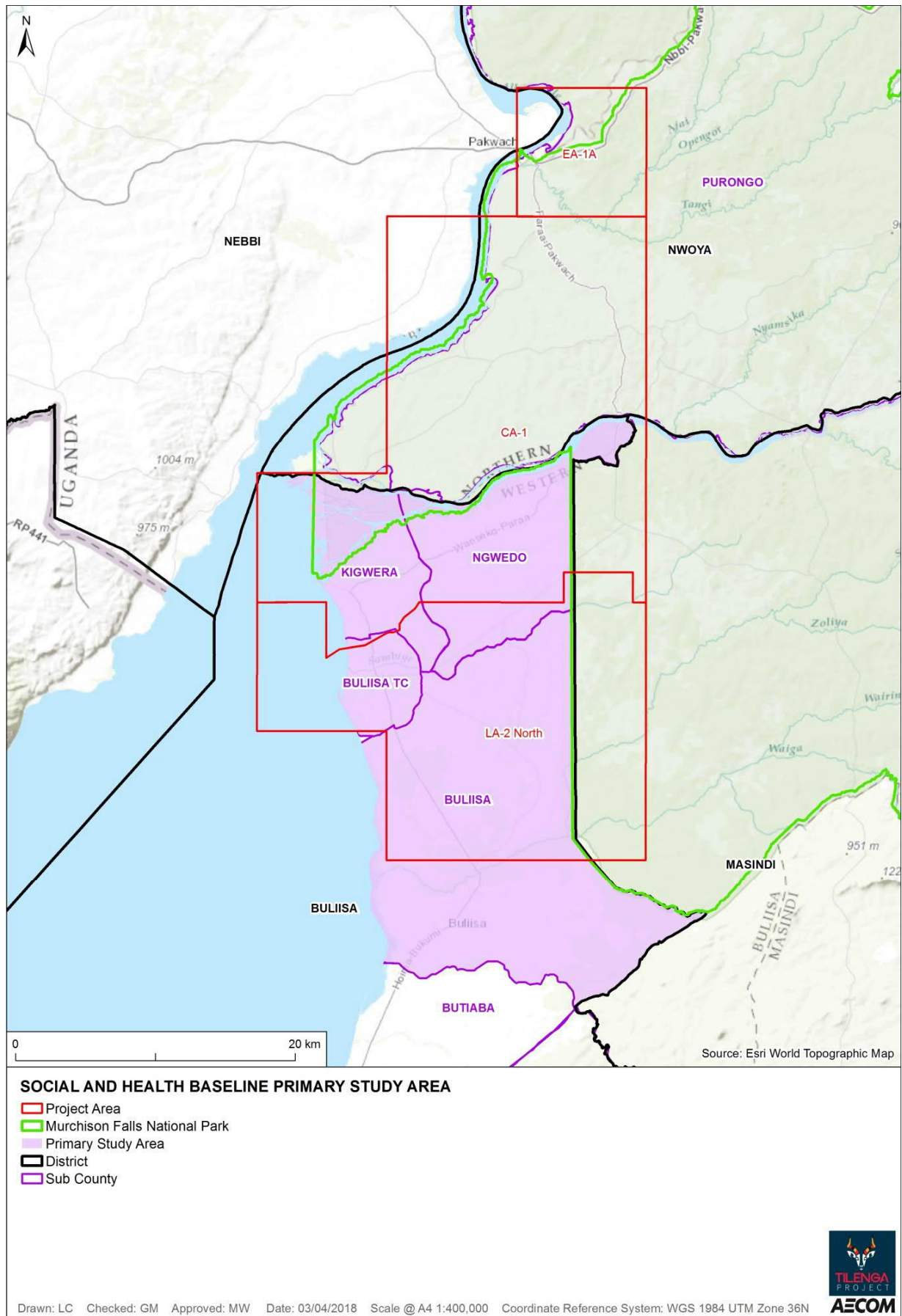


Figure 16-1: Primary Study Area for Social and Health Baseline

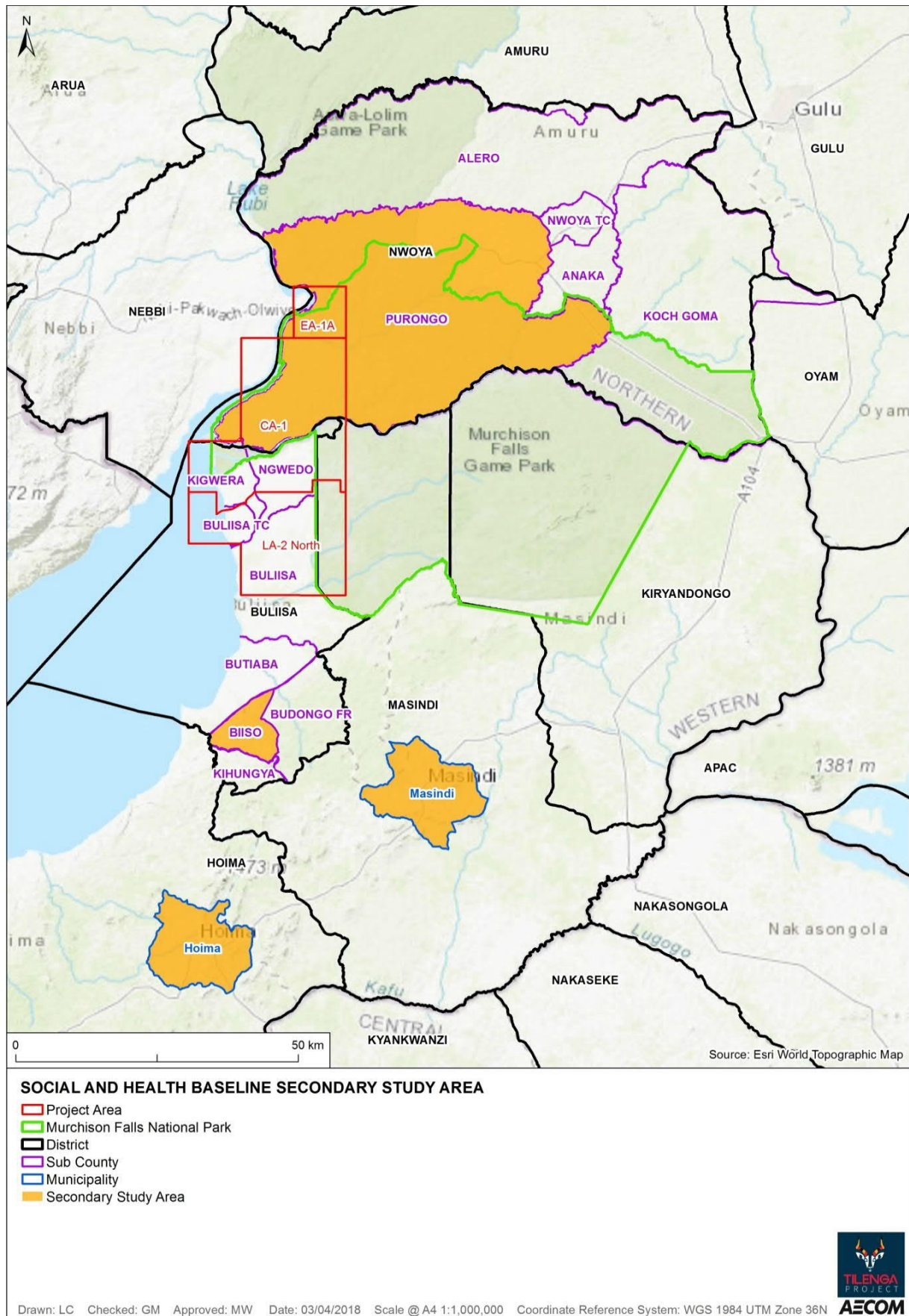


Figure 16-2: Secondary Study Area for Social Baseline

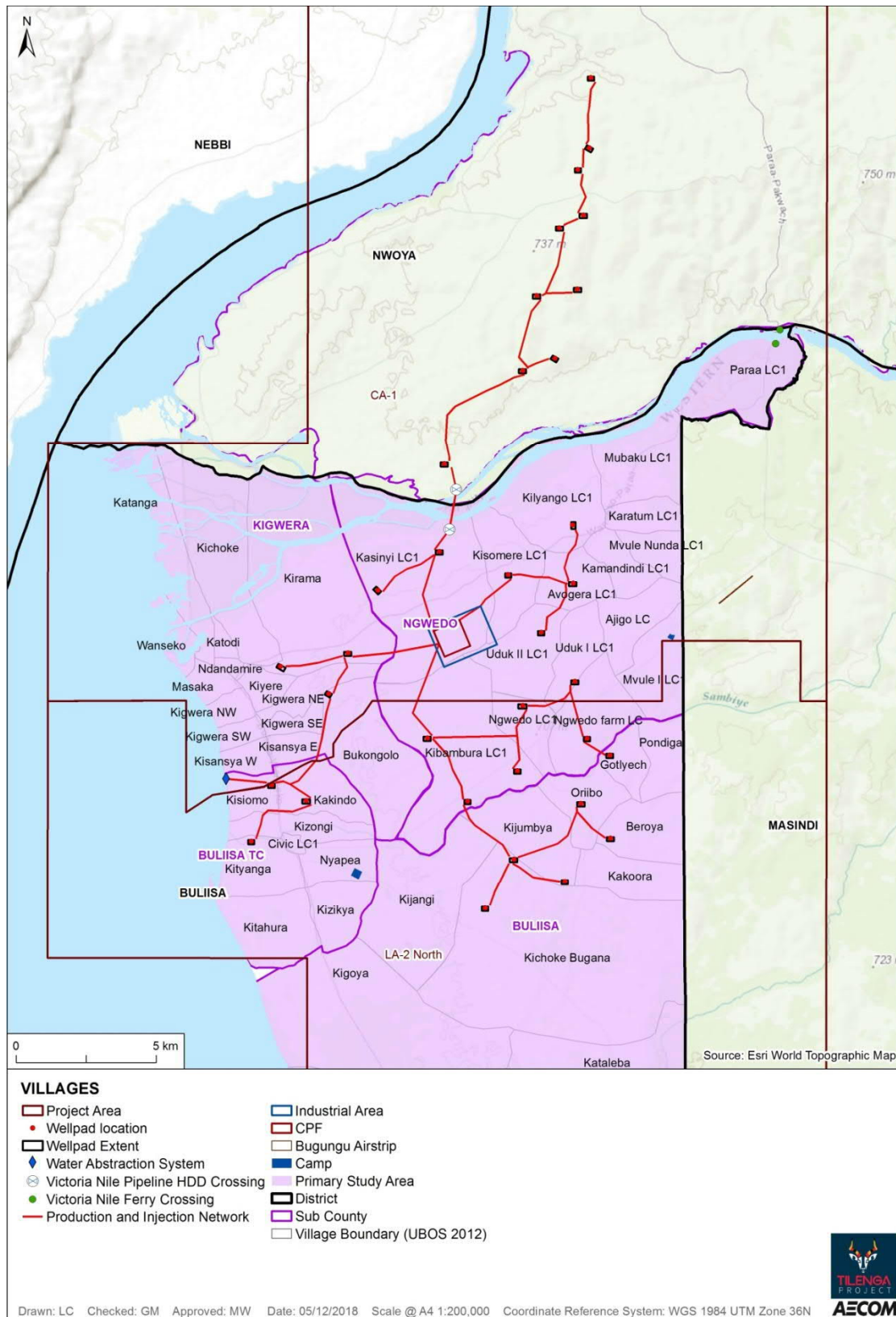


Figure 16-3: Villages Boundaries⁷

⁷ It should be noted that there are some issues associated with village boundaries with discrepancies reported on the boundaries between certain villages from different sources such as Uganda Bureau of Statistics (UBOS) data or village residents. See Section 16.6.1.9.3 for more information.

16.5 Baseline Data

16.5.1 Introduction

Social baseline data has been obtained from a wide range of sources, including secondary sources collected through desk-based research and primary sources collected during fieldwork and through stakeholder consultations. Total Exploration & Production (E&P) Uganda B.V (TEP Uganda) and Tullow Uganda Operations Pty Ltd (TUOP) commissioned a standalone Social and Health Baseline Study (SHBS) for blocks EA-1 (now known as CA-1), EA-1A and EA-2 (now known as LA-2) in 2015, which was carried out by Artelia Eau et Environment (Ref. 16-3). The SHBS included a community profile and reports and surveys on land and natural resource use, livestock and grazing, tourism, and health undertaken within the Primary Study Area. This chapter relies heavily on the information provided in that report, which is provided as a supporting study in this ESIA as Appendix G. Additional data was sourced from publically available secondary data and primary data collected by ESIA social team in 2016-17.

The photographs that are included in this report have been sourced from either the baseline survey work conducted for the project by Artelia Eau and Environment (Ref. 16-3) or the baseline surveys conducted by ESIA team in 2016 and 2017.

16.5.2 Baseline Data Collection

The following sections set out the secondary data sources that were used and primary data research and baseline surveys that were undertaken by ESIA team to supplement data obtained through the desktop study.

16.5.2.1 Primary Data and Baseline Surveys

Primary data was collected to supplement the available secondary data and to fill the gaps identified in the gap analysis. This data was also used to verify and ground-truth data collected from secondary sources. Qualitative data on social characteristics were collected through baseline field surveys and stakeholder consultations undertaken in November-December 2016 and January 2017 (see **Chapter 5: Stakeholder Engagement**). Data collection tools including interview schedules and questionnaires were developed based on the information gaps identified during the desktop review.

16.5.2.1.1 ESIA 2016-17 Baseline Surveys

The primary baseline survey activities undertaken by ESIA team between November 2016 and January/ February 2017 are referred to in this section as the ESIA Social Baseline Survey (ESIA SBS).

The following activities were undertaken:

Key Informant Interviews (KII): A total of 67 semi-structured interviews were held with national, regional and local government authorities, traditional leadership, NGOs and Community Based Organisations (CBOs), and service providers. Interviews were guided by interview questionnaires to elicit specific information from participants. The questionnaires served as a guide only and the informants were free to raise additional issues they considered important, and consultants were also free to adapt the focus of the interview depending on responses received.

Focus Group Discussions (FGD): A total of 51 FGDs were held within a sample of villages in the Primary Study Area as these are expected to experience direct and indirect impacts from the Project. The objective of the FGDs was to get a deeper knowledge and understanding of specific topics through group discussions with livelihood groups or social groups sharing the same characteristics (women, youth, migrants, elders). FGD guides were used to guide the discussions; however, consultants adapted questions according to the responses received and dynamics of the group.

Community Mapping: Community mapping was undertaken in Kakindo, Kisimo, Kityanga and Kizongi villages, as these villages had not been mapped during the SHBS undertaken by Artelia in 2015. Mapping focused on community infrastructure and resources. In addition to basic descriptive information, spatial and photographic data of the sites of interest was collected.

Non-probability purposive sampling, implying that sampling is not random and purpose driven, was used to select participants for survey activities. Villages were selected for the baseline survey based on a) proximity to Project infrastructure; b) likelihood to experience direct impacts, socioeconomic impacts, and indirect impacts; c) demographic information (efforts were made to include all potential sub-groups in the survey sample based on e.g. ethnicity, gender, age, migrant status; livelihood); and d) level of participation in previous surveys (where possible efforts were focused on affected communities that had not been comprehensively surveyed before to avoid stakeholder fatigue).

Details of the survey activities undertaken with different stakeholder groups are provided in Table 16-3. A summary of the fieldwork undertaken for the 2015 SHBS is given in Section 2 of the report's Executive Summary.

Prior to the survey work undertaken by ESIA team, a comprehensive social and health baseline field survey was undertaken by Artelia Eau et Environment that included household surveys, focus group discussions, key informant interviews, community mapping, and health facility assessments. A full list of activities conducted in each village during the 2015 SHBS and the 2016 SBS is given in Appendix G.

Table 16-3: Social Baseline Survey Activities

Stakeholder	Activities	Topics Discussed
National Government		
Ministry of Gender, Labour and Social Development Directorate of Gender and Community Development Directorate of Social Protection Directorate of Labour	Semi-structured interviews	Involvement in the oil and gas sector to date; activities and interventions in the Project Study Area (see figures 16-1 and 16-2 above); vulnerable groups; minority groups; gender; human rights; land issues; labour and working conditions; occupational health and safety; and, Project perceptions.
Uganda Bureau of Statistics	Semi-structured interviews	Request for latest census data; data availability for livestock, agriculture, environment and economy.
Ministry of Health Community Health Department (Environmental Health)	Semi-structured interview	Involvement in the oil and gas sector to date; activities in the Project Area; NGO partners; HIV/AIDS; vulnerable groups; and health education.
Uganda Human Rights Commission (UHRC) – headquarters and Hoima regional office	Semi-structured interview	Involvement in the oil and gas sector to date; activities and interventions in the Project Area; human rights; vulnerable groups; minority groups; land issues; legacy impacts; mediation and arbitration systems; and Project perceptions.
Office of the Prime Ministry, Department for Emergency Preparedness and Response	Semi-structured	Involvement in the oil and gas sector to date; activities and interventions in the Project Area; partnerships with other government departments and NGOs; resettlement; land issues; risk profile in the Project Area; and Project perceptions.
Uganda Police Force, Directorate for Oil and Gas	Semi-structured interview	Involvement in the oil and gas sector; security preparation for oil and gas development; human rights; crime and security risks in the Project Area; and Project perceptions.
Ministry of Internal Affairs, Directorate in charge of Citizenship	Semi-structured interview	In-migration; administrative requirements for foreign workers; and Project perceptions.

Stakeholder	Activities	Topics Discussed
District Authorities		
Buliisa District leadership: Chief Administrative Officer District Chairman District Health Team District Community Development Officer District Production and Commercial Officer District Probation Officer District Environment Officer	Semi-structured interviews	Topics, determined according to the informant, including: Resources and administrative structures; mediation and arbitration systems; health issues; land issues; development planning; vulnerable groups; NGOs and CBOs; government interventions and programmes in the district; cultural issues; recent changes in the district; in-migration; and Project perceptions.
Nwoya District Leadership: District Planner District Production Officer District Environment Officer		
Hoima District Leadership: District Chief Administrative Officer District Planner District Health Officer District Community Development Officer District Education Office District Production and Commercial Officer		
Masindi District Leadership: District Technical Planning Committee District Planner District Health Team		
Sub county and Municipality Authorities		
Buliisa Town Council	Semi-structured interviews	Topics determined according to the informant, including: Resources and administrative structures; mediation and arbitration systems; health issues; land issues; development planning; vulnerable groups; NGOs and CBOs; government interventions and programmes in the sub county or municipality; cultural issues; recent changes in the area; in-migration; and Project perceptions.
Buliisa Sub county		
Ngwedo Sub county		
Kigwera Sub county		
Biiso Town Council		
Purongo Sub county		
Got Apwoyo Sub county		
Pakwach Town Council		
Hoima Municipality		
Masindi Municipality		
Traditional Authorities & Religious Leaders		
Acholi Chiefdom	Semi-structured interviews	Tangible and intangible cultural heritage, cultural traditions, recent change in the area, vulnerable and minority groups, in-migration, mediation and arbitration systems, and project perceptions.
Bunyoro Kitara Kingdom		
Bunyoro Inter-Religious Committee		

Stakeholder	Activities	Topics Discussed
Villages in Primary Study Area⁸		
Kirama	FGDs women, youth, elders	Vulnerability; communication channels, access to information; community decision making; mediation and arbitration systems; livelihoods; gender; health; cultural heritage; in-migration; NGOs and CBOs; Project perceptions.
Kibambura	FGDs with women, elders & youth	
Ngwedo farm	FGDs with women, youth, elders	
Wanseko	FGDs with sea shell collectors, sand miners, papyrus harvesters, boda boda drivers, fishermen	Livelihoods; natural resources use; health; communication and decision making; challenges; Project perceptions.
Bikongoro	FGDs with women, elders, balaalo	Vulnerability; communication channels, access to information; community decision making; mediation and arbitration systems; livelihoods; gender; health; cultural heritage; in-migration; NGOs and CBOs; Project perceptions.
Bugana Kataleba	FGD with charcoal makers and hunters	Livelihoods; natural resources use; health; communication and decision making; challenges; Project perceptions.
Uribo	FGD with bee keepers	
Kizongi	Community mapping	Natural resources use; community features.
Kakindo	Community mapping	
Kityanga	Community mapping	
Kisimo	Community mapping	
Te Ogot	Mixed village FGD	Livelihoods; community infrastructure; support networks; NGOs and CBOs; cultural heritage; Project perceptions.
Towns in Secondary Study Area		
Hoima Municipality	FGDs with sex workers, business community, youth, women working in the informal sector, hoteliers, traditional medicine practitioners, elders, migrants	Vulnerability; communication channels, access to information; community decision making; mediation and arbitration systems; livelihoods; gender; in-migration; cultural heritage; health; NGOs and CBOs; Project perceptions.

⁸ Survey work in villages undertaken as part of ESIA 2016 SBS built on the work done for the 2015 SHBS during which consultants collected data in the following 43 villages in Buliisa district and Nwoya district: Ajigo, Avogera, Beroya, Bikongoro, Bugana-Kataleba, Bugana-Kichoke, Buliisa Town Council, Gotlyech, Kakoora, Kamandindi, Karatum, Kasinyi, Katanga, Katodio, Kibambura, Kichoke, Kigwera North East, Kigwera North West, Kigwera South West, Kigwera South East, Kigoya, Kijangi, Kijumbya, Kilyango, Kirama, Kisansya East, Kisansya West, Kisomere, Kiyere, Masaka, Mubako, Muvule I, Muvule Nunda, Ndandamire, Ngwedo Farm, Ngwedo Trading Center, Pajengo (Got Apwoyo), Pandiga, Paraa, Uduk I, Uduk II, Uribo, Waiga, Wanseko Trading Center.

Stakeholder	Activities	Topics Discussed
Biso Town Council	FGDs with women working in the informal sector, elders, migrants, traditional medicine practitioners, business community and youth	Vulnerability; communication channels, access to information; community decision making; mediation and arbitration systems; livelihoods; gender; in-migration; cultural heritage; health; NGOs and CBOs; Project perceptions.
Pakwach Town Council (TC)	FGDs with sex workers, boda boda drivers, hoteliers, and elders	Livelihoods; in-migration; experience working with the Project; support networks; NGOs and CBOs; cultural heritage; Project perceptions.
Masindi Municipality	FGDs with hoteliers and truck drivers	Livelihoods; support networks; NGOs and CBOs; HIV/AIDS; in-migration; Project perceptions.
Social Service Providers		
Police Hoima district police headquarters Buliisa district police headquarters Pakwach TC police centre Nebbi district police headquarters	Semi-structured interviews.	Crime statistics, traffic accidents, community conflict, mediation and arbitration systems, security issues, trends in crime levels, and Project perceptions.
Health Centres Hoima Regional Referral hospital Biso Health Centre III Buliisa General Hospital Buliisa Health Centre IV Kigwera Health Centre II Purongo Health Centre III Masindi General Hospital	Semi-structured interviews Health Facility Assessment	Health topics including burden of disease, HIV/AIDS and Most at Risk Population (MARP), health inequality, service capacity, health trends, vulnerable groups, health education, family planning, traditional medicine, NGOs and CBOs, and Project perceptions. Health facility assessment covered: facility characteristics; staffing; communication; infrastructure and equipment; infection control, medical waste management and water supply and sanitation; available services.
International and National NGOs		
Minority Rights Group International	Semi-structured interviews	Organisations' previous experience with oil and gas sector, interventions in the Project area, vulnerable groups, human rights, gender, justice and arbitration systems, and Project perceptions.
International Alert		
International Organisation for Migration (IOM)		
African Institute for Energy Governance (AFIEGO)		
Local NGOs		
Buliisa Initiative for Rural Development Organisation (BIRUDO)	Semi-structured interviews	Organisations' previous experience with oil and gas sector, interventions in the Project area, vulnerable groups, human rights, gender, justice and arbitration systems, and Project perceptions.
Lake Albert Children and Women Development Organisation (LACWADO)		
Kakindo Orphans Care		

Source: ESIA team, 2017

16.5.2.2 Secondary Data

Secondary social data was obtained from a wide range of sources, including census statistics, government reports, and previous ESIA and baseline studies. Secondary data was obtained for the national level, regional and local level. Secondary data sources used for the social baseline are outlined below. A full reference list can be found in 16.13.

16.5.2.2.1 Consultant Reports

Several complementary studies were commissioned by the Project Proponents prior to and during the ESIA, which provide regional and local level data across a range of topics. The key studies utilised to develop the social chapter are:

- Artelia Eau and Environment, Social and Health Baseline Reports, including the following work streams: Community Profile, Land and Natural Resources, Livestock and Grazing, Health, and Tourism, and Appendix 1 to the SHBS Workstream B – Village Profiles (Prepared for TEP Uganda, 2015). *Throughout this chapter this work is referred to as the 2015 SHBS* (Ref. 16-3);
- Air Water Earth (AWE) Abridged Socioeconomic Assessment Report of Block 2 and Southern Part of Block 1 (Prepared for TUOP, 2014) (Ref. 16-4);
- Worley Parsons, Lake Albert Regional Socioeconomic Assessment (Prepared for TUOP, 2013) (Ref. 16-5);
- Intersocial, Resettlement Impact Scoping Report (prepared for TUOP and TEP Uganda, 2016) (Ref. 16-6);
- Intersocial, Market and Asset Evaluation Assessment (prepared for TUOP and TEP Uganda, 2016) (Ref. 16-7);
- Advisian and Treweek Environmental Consultants, Ecosystem Services Review (prepared for TUOP, 2015) (Ref. 16-8);
- AECOM, Report on the Environmental Baseline in Exploration Area 2 (produced for TUOP, 2012) (Ref. 16-9);
- Artelia Eau and Environment, Social Screening for Buliisa Project Facilities (produced for TEP Uganda, 2013) (Ref. 16-10);
- CNOOC Uganda Ltd, Total E&P Uganda B.V, Tullow Uganda Operations Pty Limited (2016), Land Acquisition and Resettlement Framework. (Ref. 16-12);
- ATACAMA, SYNERGY, NOMAD Tilenga Project Final RAP 1 Social Baseline Report (2018) (Ref 16-13); and
- Air, Water, Earth (AWE), Early Works Project Brief (prepared for TEP Uganda and TUOP 2017) (Ref 16-14).⁹

The studies listed above each had slightly different but often overlapping study areas. The study areas for the main studies referenced throughout the chapter are explained in Table 16-4.

⁹ The data used by AWE for their socio-economic assessment was primarily sourced from the same reports as those reviewed during ESIA and referenced here. Further information on the baseline socio-economic assessment undertaken by AWE in 2017 is contained within the Early Works Project Brief in Appendix C.

Table 16-4: Study Areas within Previous Baseline Studies

Report	Study Area
RAP 1 report, ATACAMA, SYNERGY and NOMAD, 2018 (Ref. 16-13)	Over 600 households interviewed in the proposed industrial area, Kasinyi Village, Buliisa District.
SHBS, Artelia 2015 (Ref. 16-3)	Equivalent to Primary Study Area
Ecosystem Services Review, Advisian and Treweek 2015 (Ref. 16-8)	The Ecosystem Services Review covers 2,219,834 hectares (ha) across a large part of the Albertine Graben encompassing Buliisa District, Hoima District, Nwoya District, Masindi District and parts of Nebbi District as well as MFNP.
Abridged Socioeconomic Assessment Report of Block 2 and Southern Part of Block 1, Air Water Earth, 2014 (Ref. 16-4)	Boundaries of EA-2 (north and south) and southern part of EA-1 within Buliisa and Hoima Districts.
Lake Albert Socioeconomic Assessment, Worley Parsons, 2013 (Ref. 16-5)	Tullow operated EA-2 and area of EA-1 south of the Albert Nile within Buliisa and Hoima Districts.

Source: ESIA team's own elaboration, 2017

16.5.2.2.2 Publically Available Reports

Publically available reports from multilateral institutions and UN agencies provided useful national and regional level data. Available secondary data was also supplemented through research papers, development reports and media articles available from online sources. Online sources included:

- World Bank - sources included the databank and Country Partnership Strategy;
- United Nations agencies;
- International Labour Organisation (ILO);
- Makerere University;
- International and national NGOs; and
- Online newspapers and websites.

16.5.2.3 Data Assumptions and Limitations

Key limitations faced during the study were:

- Limited up-to-date reliable quantitative data was available for many topics including demographics, household income levels, crime rates, and agricultural outputs. While this does not prevent impacts from being assessed at a qualitative level, lack of such data limits the ability to quantify impacts and also means there is a gap in baseline indicators for purposes of future monitoring. Some of these gaps will be filled during the RAP surveys, which will provide sufficient quantitative data to assess and monitor impacts on Project Affected Communities (PACs) affected by resettlement (commenced in March 2017 and the final RAP 1 report was submitted and approved by Government of Uganda (GoU) in January 2018);
- Stakeholder fatigue was evident during some of the FGDs, and consultants therefore tried to limit some of the questions asked in order to limit the time asked of participants taking part in the survey. This was particularly evident during community mapping exercises;
- National Census data was inaccurate in places e.g. numbers in tables did not always add up correctly;
- Due to the nature of qualitative surveying there is potential for bias and subjective opinions to be stated based on individual or group dynamics;
- The presence of the client during some of the surveys, and the very nature of the surveys themselves, may have affected some of the respondents' answers as they may have assumed their responses would influence decisions around social investment in their area or access to other Project benefits; and

- Authors assumed that the referencing within studies that were relied upon to produce this chapter was accurate.

Limitations encountered during the 2015 SHBS undertaken by Artelia, upon which this section draws heavily, are detailed within that report.

16.6 Baseline Characteristics

16.6.1 Governance and administration

16.6.1.1 General Description

Uganda attained self-government in 1958 and gained full independence from Britain in 1962 and became a republic in 1963. There were several challenges to domestic affairs in the years following independence, including two military coups, a brief war with Tanzania and protracted civil war, which led to severe economic stagnation, breakdown of physical infrastructure, and widespread civilian death and injury as well as over two million refugees.

The Uganda People's Congress (UPC) led by Milton Obote won the first post-independence general election in April 1962 and the Kabaka of Buganda, Sir Edward Mutesa (Kabaka Mutesa II), became the first (non-executive) President in 1963. In 1967 the country became a unitary republic, the traditional kingdoms were abolished and the President became head of the executive as well as head of state. The kingdoms were restored in 1993, and the 1995 constitution has a provision on traditional leaders. Obote remained in power until January 1971, when a military coup was staged by Idi Amin who placed the country under a brutal authoritarian regime. Amin's reign ended in 1979 following a brief war with Tanzania. Obote returned to power in disputed elections in 1980 but political instability continued and the National Resistance Army (NRA), led by Yoweri Museveni, led a protracted bush struggle against the government's Uganda National Liberation Army (UNLA) from 1981 – 1986. Obote was overthrown in a coup led by General Tito Okello in 1985, and Okello himself was replaced six months later by Museveni and the NRA. Museveni has remained in power since, most recently winning his fifth term with a majority in the 2016 general election (Ref. 16-15).

Today Uganda is a presidential republic, in which the President of Uganda is both head of State and head of Government; there is a multi-party system based on a democratic parliamentary system with universal suffrage for all citizens over 18 years of age. Elections for members of the Legislature have been held every five years and the last one was held in February 2016. There are 38 registered political parties. Major political parties include the National Resistance Movement (NRM, the ruling party), Forum for a Democratic Change (FDC), Democratic Party (DP), Conservative Party (CP), Justice Forum (JEEMA), and Uganda People's Congress (UPC). Uganda has a decentralised administrative arrangement with a central government in Kampala and several local governments established at district and downwards to sub-counties and urban authorities.

16.6.1.2 Central Government

The Government of Uganda is made up of three branches: Executive, Legislature, and Judiciary. The Executive includes the heads of state, including the President, Vice-President and the Prime Minister, as well as the cabinet. The Legislature is the Parliament of Uganda with a Speaker of Parliament and a Deputy Speaker of Parliament and over 300 Members of Parliament representing geographical constituencies and special interest groups such as youths, disabled people, women, etc. Legislative elections are held every five years. The Judiciary is made up of the Supreme Court, Court of Appeals (Constitutional Court), the High Court and Magistrates' Courts. Ministries are headed by Permanent Secretaries, ministry departments are headed by Commissioners, and authorities are headed by Executive Directors.

Ministries of most relevance to the Project and oil and gas industry are shown in Figure 16-4. Key ministries and agencies relevant to the Project are also listed in **Chapter 5 – Stakeholder Engagement**, Table 5-1.

16.6.1.3 Local Government

Since 1992, the government has been implementing a policy of decentralising responsibility for service delivery to local government. The government enacted the Local Government Act, 1997 to

entrench and consolidate the decentralisation policy as provided for in Chapter 11 of the 1995 Constitution. Administratively, as of 2017 the country has 112 districts, 41 Municipalities, 239 Town Councils, and 1,403 sub-counties. The districts of Uganda are shown in Figure 16-5.

At all levels of local government the unit of governance is referred to as the Local Council (LC). Local government is based on a four or five tier structure (for rural and urban areas respectively), comprised of village council (LC1); parish council (LC2; which are not very active in the Project Area), sub county council (LC3), and the district council (LC5) at the top. The terminology for urban areas is slightly different, with cell or village council (LC1) at the bottom, then ward or parish council (LC2), town council or municipal town division (LC3), municipality (LC4), and at the top the district council or city council (LC5).

16.6.1.4 District Government

The district is the highest level of local government and is responsible for service delivery to local communities. The Resident District Commissioner (RDC) is appointed by the President and oversees implementation of central government programmes at the district level. Each district is represented by several members of parliament (MP) according to the number of constituencies and by one district female MP.

The district is governed by the district council, which is comprised of elected members and led by an elected (LC5) chairperson who serves for a term of five years. It is made up of elected representatives from the sub-counties and technical staff in the district.

The district council is responsible for a number of decentralised services. These services are detailed in the Second Schedule; Functions and Services of the Government and Local Governments, of the Local Government Act, 1997, and include:

- Education (primary, secondary, vocational and technical);
- Health care (hospitals, health centres, dispensaries and aid posts; and public health services);
- Maintenance and construction of roads;
- Maintenance and supply of water;
- Agricultural services;
- Land administration and surveying; and
- Development of the community.

Local government is responsible for the delivery of public services through technical heads of various government departments (e.g. education, health, roads). The Chief Administrative Officer (CAO) is the technical head of the district responsible for overseeing public service delivery and is appointed by the National Public Service Commission. There are also a number of committees that oversee different departments. In both Buliisa and Nwoya, district councils have set up Task Forces on Oil and Gas comprised of both technical and political representatives as well as security personnel and CSO leaders among others (Ref. 16-16). An overview of the different government offices within the district is given in Table 16-5.



Figure 16-4: Key Government Ministries and Directorates of Relevance to the Project

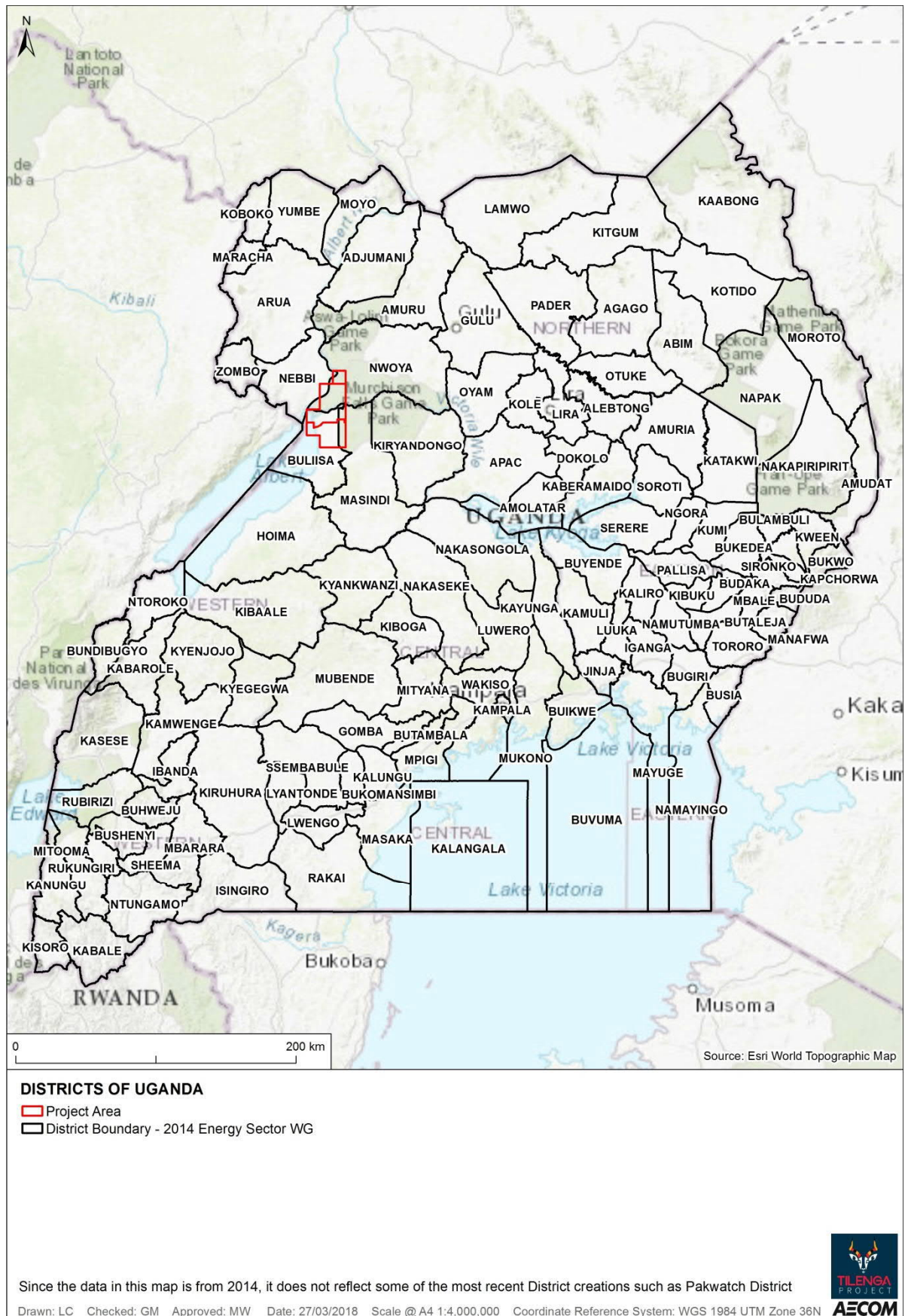


Figure 16-5: Districts of Uganda

Table 16-5: Overview of District Government Offices

Office	Overview
District Natural Resources and Environment	The district environment office is part of the District Natural Resources and Environment Directorate. The District Environmental Officer is appointed by the District Service Commission and is also a representative of NEMA responsible for environment matters including monitoring and review of the ESIA process, disclosure and enforcement of the ESIA at the district level.
District Natural Resources and Environment (District Land Office)	The District Land Office (DLO) is also part of the District Environment and Natural Resources Directorate and it specifically provides technical services to the district administration and the District Land Board (DLB). Under the Land Act, 1998; a DLO should comprise a Physical Planner, Land Officer, Valuer, Surveyor and Registrar of Titles. The DLB is comprised of a minimum of five members who are appointed by the district council for a five year period. The DLB is responsible for: holding and allocating land in the district which is not owned by any person or authority; facilitating the registration and transfer of interests in land; and compiling and maintaining rates of compensation payable (e.g. crops, non-permanent buildings). The DLB can also acquire rights or interests in land.
District Production Directorate	The department consists of the following sub-sections: Agriculture, Veterinary, Entomology, Fisheries, Trade and Industry, Co-operatives and Marketing. To ensure better service delivery, there is a District Production Officer, who is responsible for the day to day co-ordination, supervisory and administrative activities in the entire department. This directorate is responsible for the land based and non-land based livelihood activities in the district including agriculture and commerce. Other important departments in this sector for livelihood patterns and activities are fisheries, tourism, livestock and marketing.
Health	At the district level, health service delivery is implemented by a District Health Management Team (DHMT) which is led by a District Health Officer (DHO). The DHMT is responsible for implementing health policies and programmes and planning and overseeing service delivery.
Community Development	<p>The District Community Development Officer (DCDO) plays a key role in stakeholder engagement and community projects. Their responsibilities include:</p> <ul style="list-style-type: none"> • Planning and budgeting for development programmes at the community level; • Supervising staff involved in promoting the social and economic welfare of local communities; • Organising local communities to effectively participate in development initiatives; • Sensitising communities on gender issues, women and children rights, roles and obligations; and mainstreaming gender development in district plans and programs; • Monitoring, evaluating and reporting on community development programmes and projects; • Promoting the equal participation of all communities in development programmes; • Promoting the creation and growth of functional groups for the improved welfare of the population; • Training communities in literacy programmes and income generating activities; and • Providing advice on the effective mobilisation of the community for development.

Office	Overview
Administration and Council Affairs	This is a service support department and has the following sections: CAOs Office, Records Management, Human Resources, Office Supervisor, County Administration and Information. This department is headed by the CAO and is responsible for the public administration, service delivery planning and resource mobilisation of the district and overall supervision and remuneration of staff for effective service delivery including managing district council affairs (secretariat of the district LC5 council) and other statutory bodies at the district such as District Service Commission and Public Accounts Committee.
Works and Technical Services (including water and some aspects of sanitation)	This department deals with roads, water development, housing and mechanical services in the district. A number of road access facilities proposed to be used and or upgraded by the Project currently belong to the district.
Health and Education	The Local Governments Act mandates Local Governments to deliver Education services to the people within their areas of jurisdiction including pre- primary, primary, secondary, some aspects of tertiary education, Special Needs Education and Physical Education and Sports.

16.6.1.5 Sub-county Government

The sub county (town council or division in urban areas) technical team is headed by a sub county chief, while the LC3 chairperson is the political head of the sub county and the chairperson of the sub-county local government council (LC3).

Sub county chairpersons are directly elected by residents of the sub county. Sub county councils are responsible for service delivery and development in the sub county.

Sub counties in the Primary Study Area include Purongo and Got Apwoyo in Nwoya District and Kigwera, Ngwedo, Buliisa and Buliisa Town Council in Buliisa District. Each sub county is made up of a number of parishes.

An important office within the sub county Government is the Area Land Committee (ALC). ALCs determine, verify and mark the boundaries of all interests in land that is subject to an application for certificate of customary ownership or in grant of freehold title. The ALC assists the DLB in an advisory capacity on matters relating to land including ascertaining rights in land boundaries and disputes.

16.6.1.6 Parish and Ward Level

The parish at the LC2 level (ward in the town council) is formed of villages. Parishes in the Primary Study Area are primarily made up of five villages per parish (see Table 16-2). Parishes vary in size from roughly 900 to 6,000 people. The parish chief is appointed by the government for an undefined term and they provide leadership to LC2. The parish councils are responsible for monitoring service delivery at the parish level. The LC2 chairperson is elected by the village LC1 leaders. The LC2 chairperson selects the nine members to form the LC2 executive committee to assist the chairperson to manage council affairs.

16.6.1.7 Village and Cell Level

The village (cell in the town council) is the lowest administrative unit (LC1). In the Primary Study Area villages vary in size from roughly 80 to 600 households with between 200 and 2,000 people. Each village is represented by a LC1 and is governed by a LC1 chairperson and nine executive committee members. The LC1 chairperson is elected by residents of the village¹⁰ⁱ. A challenge for local government at this level is low levels of education and literacy; however, LC1 chairpersons and

¹⁰ Uganda has not held elections for LC 1 Chairpersons and Committees since 2001. Elections scheduled for November 2017 were halted by court injunctions.

councils maintain an important administrative and active role in village life, such as handling civic matters at the village level including dispute resolution (e.g. theft, land disputes), sharing information, and witnessing land transactions.

According to the Local Government Act, one third of councillors should be women. Although this has resulted in more women being represented at the village level, there are only two women LC1 chairpersons in the Primary Study Area in Ajigo and Bikongoro. The 2015 SHBS reports that some people view LC1 chairpersons with suspicion and as the 'eye of the government' at the local level. In addition, a number of LC1 chairpersons have been accused of corruption, embezzlement, land grabbing and speculation.

16.6.1.8 Development Planning Framework

Uganda's national development goals and the framework for achieving them are outlined in various national and local development documents. In 2007 the Ugandan Cabinet approved the National Development Planning Framework and National Vision Statement, which is to transform Ugandan society from a peasant to a modern and prosperous country within 30 years. The national planning document Uganda Vision 2040, released in 2013, was subsequently developed to operationalise this vision statement. Uganda Vision 2040 is intended to set the overarching approach to planning to which all other government entities are expected to align their development priorities. It provides that this vision statement will be implemented through development of three 10-year plans, six five-year National Development Plans (NDPs); Sector Investment Plans; Local Government Development Plans (LGDPs); Annual Work Plans and Budgets. The second five year NDP was launched in 2015 for the period 2015/16 – 2019/20.

Section 35 of the local Government Act (Cap 243) requires districts and municipal councils to develop integrated development plans incorporating plans from lower local governments in their respective areas of jurisdiction. Local governments are required to submit their plans to the National Planning Authority for integration into the NDP and Ministries to inform National Sector planning processes. LGDPs act as development frameworks put in place by local governments to guide and coordinate all development efforts in their districts by various stakeholders (state and non-state). The LGDP is developed through a participatory bottom-up approach involving input from village, parish and sub county governments as well as civil society and relevant sector representatives. The planning horizons are five years with a mid-term review. Priorities from the five year plan guide annual budget allocation. The latest District Development Plan (DDPs) were published in 2016 for the years 2015/16 – 2019/20.

16.6.1.9 Governance and Administration in the Primary Study Area

Buliisa and Nwoya districts are new districts created from Masindi and Amuru in 2006 and 2010 respectively.

16.6.1.9.1 Buliisa District

Buliisa District is located in the Western Region of Uganda in the Bunyoro Sub-Region and is surrounded by Lake Albert, River Nile (Victoria Nile), Budongo forest and the MFNP. The total area of the district is 2,498 km². Buliisa District borders Nebbi and Nwoya districts to the north, Masindi to the east, Hoima to the south, and Lake Albert to the west.

Buliisa District is comprised of six sub counties and one town council. The district headquarters are located in Buliisa TC. As of the end of the SBS fieldwork, (February 2017) LC II leaders had not yet been elected since the creation of parishes in Buliisa in 2010 due to a lack of resources to organise elections. The administrative boundaries in Buliisa District are provided in Figure 16-6. Table 16-6 shows the breakdown of Buliisa District by sub county, parish and village.

Table 16-6: Sub county, Parish and Villages in Buliisa District

Sub county	Parishes	Villages
Buliisa	4	12
Kigwera	5	15
Ngwedo	5	16
Buliisa Town Council	4 wards	8 cells
Biiso	4	32
Butiaba	4	20
Kihungya	4	24

Source: Ref. 16-3, and 16-17

Source: Ref. 16-3

Figure 16-7: Governance Structure in Buliisa District (Primary Study Area only)

Figure 16-7 and Figure 16-8 show the governance structure of Buliisa District and organisational structure of the District Local Government as of 2015. Figure 16-9 shows the governance structure of Buliisa Town Council.

The priorities and goals for the district outlined in the Buliisa District Development Plan for 2015/16 to 2019/20 are:

- Improved governance and accountability;
- Improved management of resources and general management of the district;
- Develop and retain an efficient and well-motivated workforce;
- Improved resolution of land disputes in the district (including a newly drafted Buliisa Land Ordinance);
- Poverty reduction, through sustainable use of natural resources, increased food security, and improved household incomes;
- Improved health services by developing existing health facilities and new health units;
- Improved education provision and access to learning;
- Infrastructure improvement, such as district road network and buildings; and
- Promote community empowerment, human rights, gender equity, social protection, and positive cultural values.

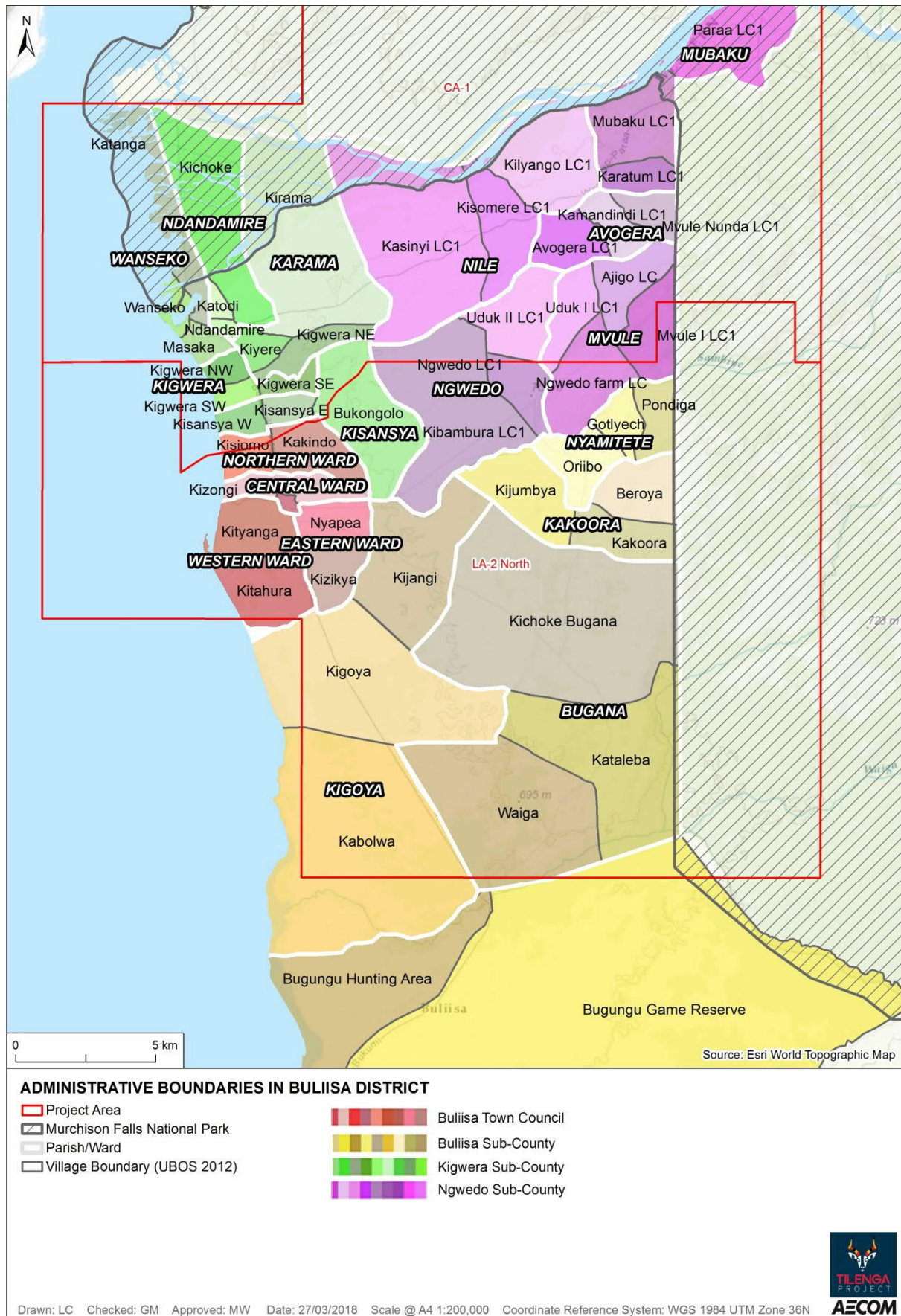
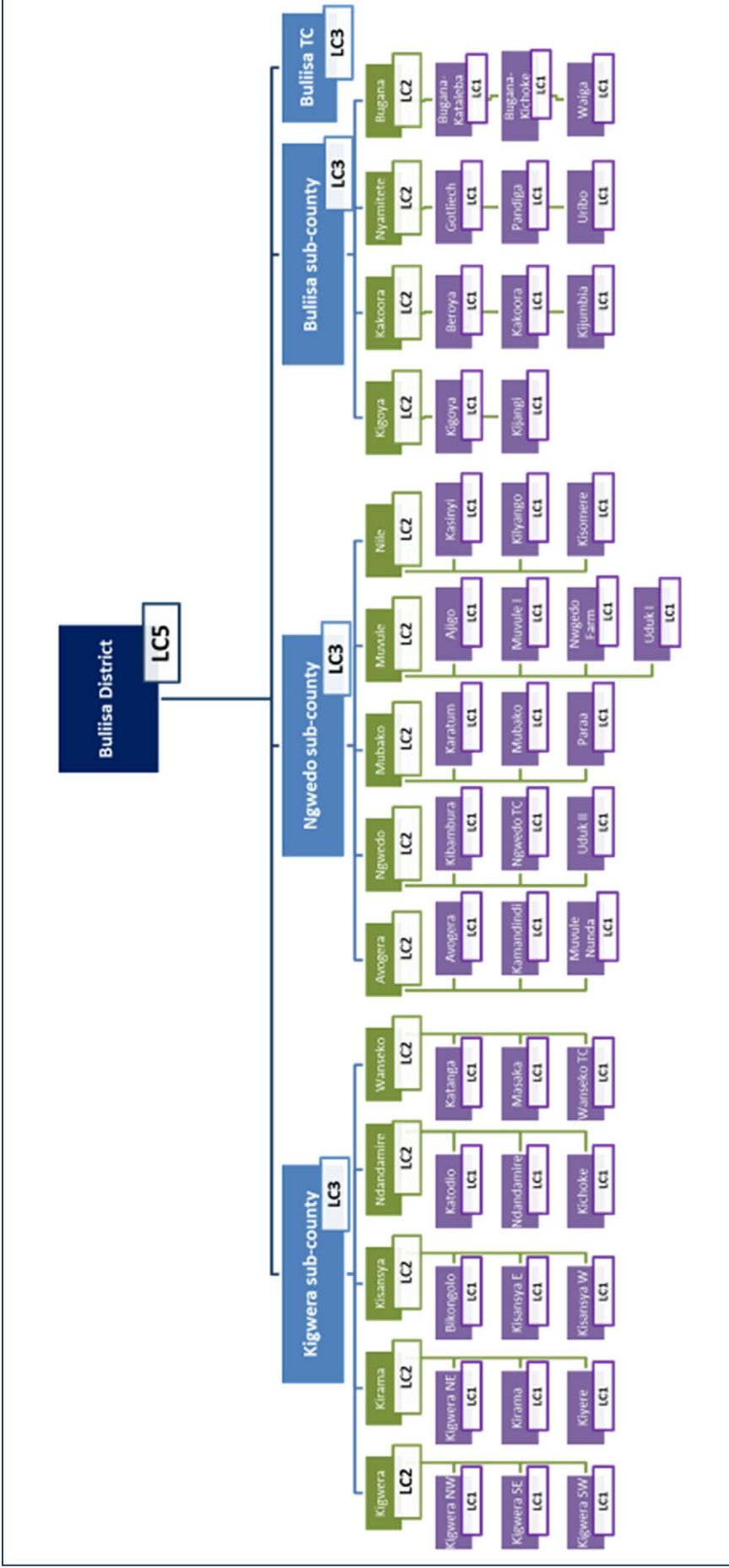
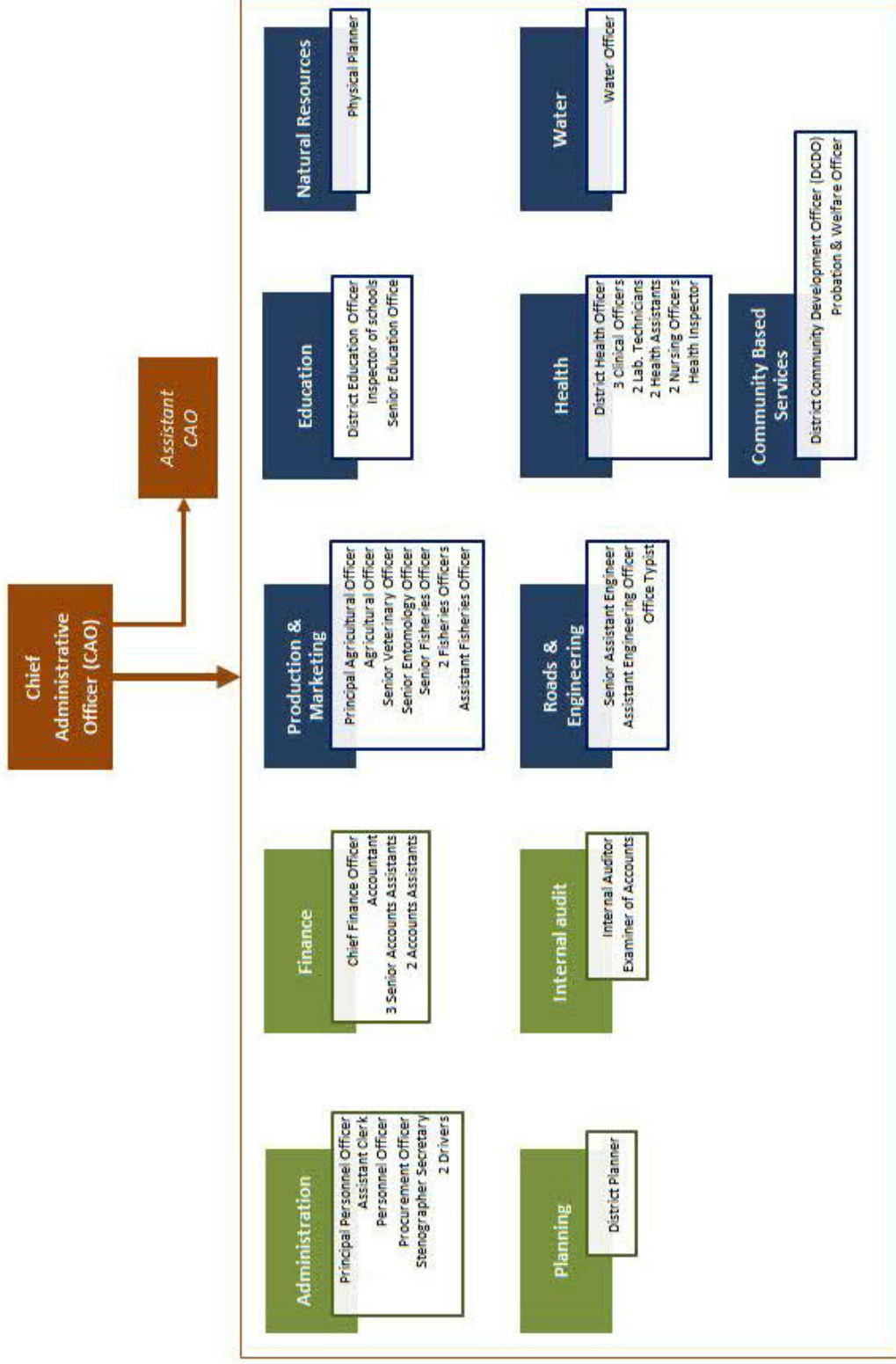


Figure 16-6: Administrative boundaries in Buliisa District



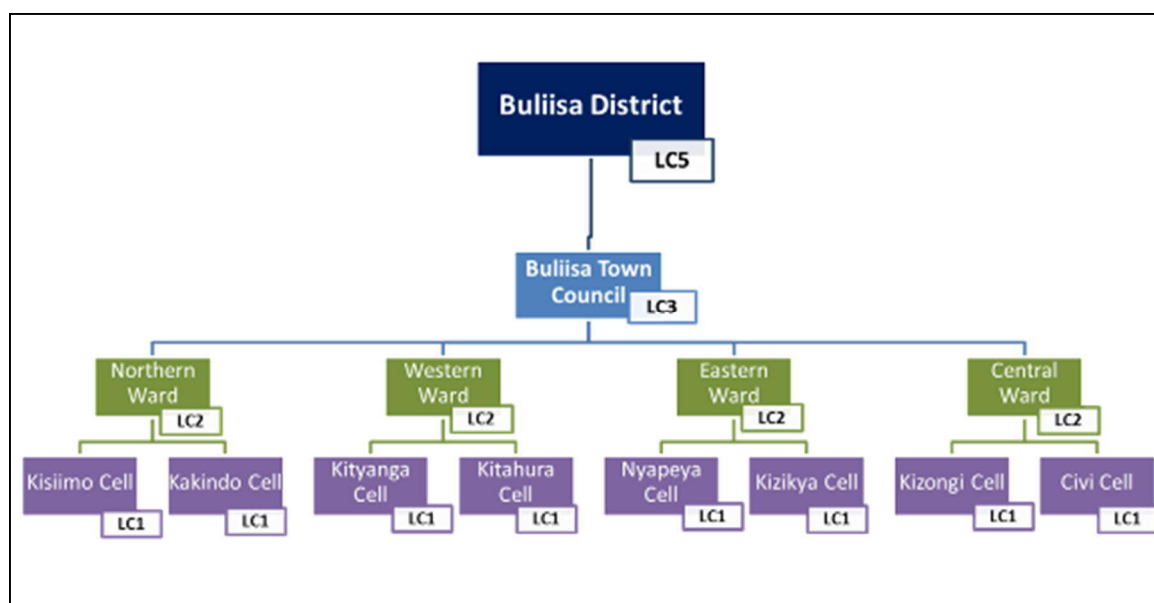
Source: Ref. 16-3

Figure 16-7: Governance Structure in Buliisa District (Primary Study Area only)



Source: Ref. 16-3

Figure 16-8: Organisational Chart of Bulisa District Local Government



Source: Ref. 16-3

Figure 16-9: Governance Structure in Buliisa Town Council

16.6.1.9.2 Nwoya District

Nwoya district is located in the Northern Region and Acholi Sub-Region. To the west is the Nile River (Albert Nile) and a third of the MFNP lies in the district in Purongo sub county. It is one of the largest districts in Uganda with an area of 4,771 square kilometres (km²). Nwoya is also one of the newest districts in Uganda having been created in 2010. The headquarters are located in Anaka Town Council.

Nwoya has five sub-counties and one town council: Nwoya Town Council, Alero, Koch Goma, Anaka, Purongo and Got Apwoyo sub counties. Got Apwoyo sub county is a new sub county that was created out of Latoro Parish in Purongo sub county in 2016. Figure 16-10 shows an administrative map of Nwoya District from 2015 (prior to the creation of Got Apwoyo sub county). The map shows that part of CA-1 and EA-1A lie within Purongo sub county, although this area is all within MFNP. The closest settlements to the Project Area within Nwoya District are in Purongo and Got Apwoyo sub Counties.

According to local government representatives (ESIA SBS), Got Apwoyo was separated from Purongo sub county to improve service delivery as the area is far from Purongo and the population was isolated. The sub-county has four parishes: Paminolango, Tegot, Barylec and Obira, and 14 villages. As of December 2016 the political wing of the sub county council had been established including all council members and 15 executives, the sub county chief and the parish chief.

Purongo sub county leaders reported in December 2016 that they have proposed that Purongo urban centre become a town council to increase its autonomy. They felt this was needed because there has been a lot of development in the urban centre and the population is growing rapidly.

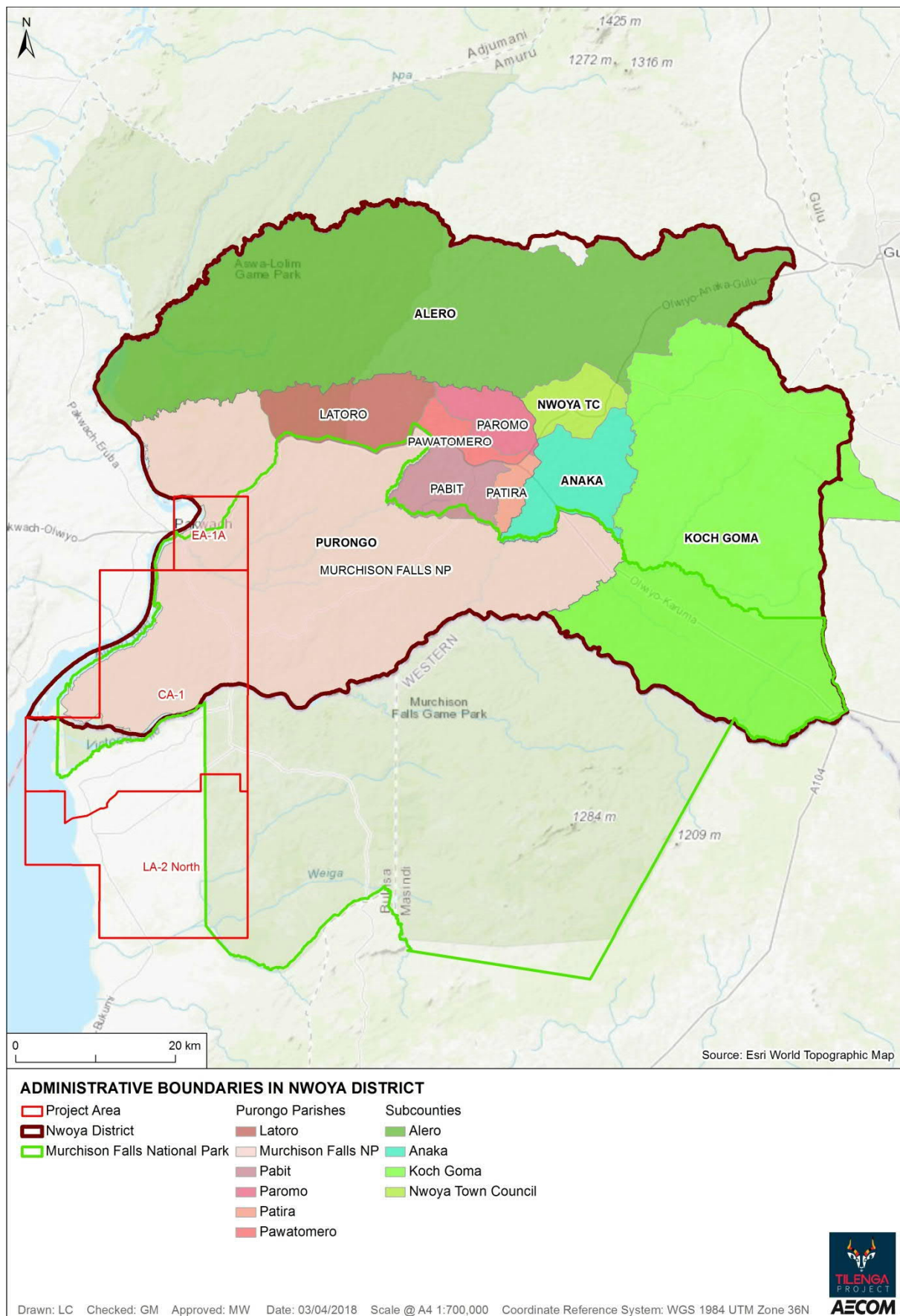


Figure 16-10: Administrative boundaries in Nwoya District

The Nwoya District Development plan for the period 2010/11 to 2016/17 focuses on the following priorities:

- Improve physical infrastructure, such as access roads, schools, supply of clean water;
- Extend the national electricity grid to the district through lobbying central government;
- Improve health services especially for HIV/AIDs;
- Sustainable use of natural resources;
- Improve management of district, such as local revenue generation¹¹, capacity building, transparency and accountability;
- Improve management of human-wildlife conflicts;
- Promote gender equality; and
- Improve community participation in the planning process.

16.6.1.9.3 Village Boundary Issues in Buliisa and Nwoya Districts

The demarcation of village boundaries is a sensitive and complex issue and there are a number of inconsistencies in how village boundaries are recorded. During the 2015 SHBS inconsistencies in existing maps showing administrative boundaries and village boundaries from other sources, such as UBOS data or village residents, were discovered. UBOS defined enumeration areas (boundaries) in 2011 in preparation for the 2014 census; although it is reported they consulted with LC2 chairpersons, there was reportedly no participatory consultation with LC1s or local communities to confirm the boundaries (reported by stakeholders during 2015 SHBS and ESIA SBS). UBOS highlighted in the 2014 census that a number of administrative boundaries remain unclear and may not match 'reality' of village boundaries on the ground.

Field investigations undertaken by Artelia in 2015 discovered many discrepancies when compared to the UBOS village boundaries; the key ones are highlighted here:

- Kirama overlaps with Kichoke;
- Kasinyi extends over a larger area and overlaps with Kisomere;
- Gotlyech overlaps with Pondiga village; and
- Bugana-Kataleba extends over a larger area and overlaps with Waiga and Bugana-Kichoke.

Field investigations were also compared with the Artelia Social Screening Study map (Ref. 16-10) and discovered a number of discrepancies. Appendix G (Figure 13 and Figure 14 in Workstream "B" Community Profile) shows maps allowing a comparison between village boundaries between UBOS enumeration areas, the Artelia Social Screening Study map (Ref. 16-10) and results of 2015 field investigations undertaken by Artelia (Ref. 16-3).

16.6.1.9.4 Resource and Capacity Challenges in Buliisa and Nwoya District Local Governments

The local governments of Buliisa and Nwoya are relatively newly established and still have limited capacity, limited infrastructure, and staffing, making public infrastructure and services delivery a challenge. Both Buliisa and Nwoya district local governments recognise that they face challenges raising local revenue and implementing their five yearly DDPs. Key constraints (outlined in the DDPs and confirmed during meetings with local government during the 2015 SHBS and ESIA SBS) are identified as a poor resource base and general poverty within the population, inadequate staffing, lack of logistical resources (e.g. transport) and poor roads hampering service delivery, poor technical capacity, limited monitoring or accountability for service delivery, and corruption and misuse of public resources. Poor technical and leadership capacity of sub county governments is also reported to be a challenge.

¹¹ According to meetings with the district government undertaken during the 2015 SHBS, developing an industrial park and a market at Latoro in Purongo sub county are identified measures for increasing local revenue generation.

The Buliisa DDP highlights the fact that understaffing undermines the effectiveness and ability of service delivery. Understaffing is driven by a number of factors including low levels of education among the general community, poor housing facilities and amenities for current and potential staff, hard to reach district road and transport facilities and poor living conditions that make it difficult to attract and retain staff. Understaffing has also been attributed to a limited wage bill and ban on recruitment by the Ministry of Public Service (Ref. 16-18).

There are increasing levels of individualisation and registration of land interests in the Primary and Secondary Study Area from predominantly communal and customary tenure (see Section 16.6.7). The district technical capacity to manage this transition in respect to the traditional and formal land management procedures is very limited and requires support from sensitising the community about their land rights to performing necessary due diligence in the process of managing applications for conversion and registration of interests in land. Trying to access land-related information can be a challenge as important files and documents (such as legal land titles, leases, etc.) can linger for years in former headquarters before they are sent to the new district headquarters.

Both Buliisa and Nwoya districts have District Land Boards. The Buliisa DLB was formed in 2007 and, as of 2015, had received 177 applications for land registration (Ref. 16-3). However, the Buliisa DLB has reported that they lack resources of both staff and funds to carry out their due diligence and administrative procedural work. Applications for land registration were received by the Buliisa DLB despite a moratorium imposed by the Ministry of Lands, Housing and Urban Development (MLHUD) on the issuance of land titles across the Albertine Graben region in 2011 in an effort to tackle speculation and land grabbing. The moratorium was issued in the form of a national policy directive, however, the legitimacy of this moratorium was contested by Buliisa District Local Government, and the Buliisa DLB therefore continued to register applications for land titles and to forward them to the MLHUD. The MLHUD refused to process these land titles and in February 2017, following a fact finding site visit in Buliisa District, the MLHUD made the decision to rescind all land applications that were made in Buliisa from 2010 until 2017, declaring all transactions and approvals that had taken place within that timeframe null and void.

In 2016, Buliisa District Local Government issued a Draft Land Ordinance with the purpose of developing a framework for land tenure security; to clarify the different types of tenure systems in the District and how they are managed; to provide the norms of customary land ownership including communal ownership; to enhance land tenure security through land registration; to sensitise and empower local people and ensure their participation in development projects; to provide a framework for the co-existence of development projects and community livelihood activities; to provide for leasehold as the most appropriate tenure system for availing land for development projects; and, to create a framework for managing and resolution of conflicts arising out of land disputes.

The Nwoya DLB was initially delayed following doubts by the District Council over the credibility and qualifications of the initial Board, but it was eventually approved for a five year tenure in 2013.

Nwoya and Buliisa districts do not have functioning land offices: they rely on a Physical Planner who also assumes the functions of the land officer and natural resources officer interchangeably. District Land Tribunals have never been created as they should have been according to the Land Act. Land disputes/ issues are handled mainly through the judiciary system instead. Further information about the land administration in Buliisa and Nwoya districts is provided in Section 16.6.7.

Buliisa's District Production and Marketing Department (DPMD), which is the main institution responsible for supervising the livestock, agriculture and fisheries sectors, is similarly hampered by a lack of means and resources. The 2015 SHBS identifies the following challenges facing the DPMD in Buliisa District:

- *Inadequate staffing*: only eight staff members;
- *Lack of logistic support*: DPMD has three motorbikes which are nine years old and no vehicle;
- *Lack of office space*: this is a general issue for the whole of Buliisa District local government; and
- *Reduced funding*: the DPMD budget was halved between 2013/2014 and 2014/2015 following a general drop in the district budget due to reduced government grant transfers. From 2015/16 to 2016/2017 there was a further reduction in the budget of 25.7% due to reduction in allocation of

development grants like those previously allocated under the National Agricultural Advisory Services (NAADS) programme and the development component of Production and Marketing Grant (Ref. 16-19)

Recruitment and deployment of technical and administrative staff in the tourism sector also remains a challenge. Tourism issues at the district level are supposed to be managed by District Tourism Officers but until now none have been appointed and District Commercial Officers (DCOs) remain in charge (DCOs were responsible for local tourism under the old structure when tourism fell under the Ministry for Tourism, Trade and Industry). According to the Uganda Wildlife Act 1996, the district councils are expected to create District Wildlife Committees (DWC). Their objective is to advise the district councils, in liaison with UWA, on the management and utilisation of wildlife within the local jurisdiction. According to the 2015 SHBS, as of 2015, only 12 DWC's had been constituted, with none in Buliisa or Nwoya districts, yet local tourism remains one of the biggest alternative livelihood potential for the communities living around the protected areas including wildlife reserves.

During stakeholder consultations with local government the District Environmental Officers (DEO) in Buliisa District and Nwoya District suggested that they require additional support (funds and resources) to effectively fulfil their functions including monitoring of oil and gas activities, making disclosures and sensitisation of communities about the potential environmental impacts of oil and gas development and enforcement of Environmental and Social Impact Study (ESIS) (Environmental and Social Management Plan (ESMP)) related to oil and gas. The Local Government Budget Framework Paper for 2016/17 Buliisa District reports that the natural resources department is supposed to have 12 staff members but instead has just one. In Nwoya District there are currently three staff in the natural resources department – the DEO, natural resources officer and a forestry officer who also acts as the district surveyor (Meeting with Nwoya DEO undertaken as part of ESIA SBS, December 2016).

An overview of the departments and sections within District Local Government and commentary on how Buliisa and Nwoya District Local Governments are meeting staffing requirements under each is provided in Table 16-7. Overall, as of 2015 it was estimated that only 50% of head of department positions in Buliisa District Local Government, and 42% in Nwoya District Local Government were filled (Ref. 16-7).

Table 16-7: Comment on Staffing of District Local Government Departments and Sections

Department / Sections	Buliisa	Nwoya
Production Veterinary Crop Entomology Fisheries Commerce and trade	<ul style="list-style-type: none"> • Department is headed by a District Production Officer (in place). • Sections all have a section head but understaffing identified as a problem within all sections except fisheries. • The fisheries sector has four members of staff including a senior fisheries officer, two fisheries officers, and an assistant fisheries officer. • There is need to recruit staff at sub county level to improve extension services to farmers. 	<ul style="list-style-type: none"> • District Production Officer in place. • District Fisheries Officer in place. • Staff shortages reported: all staff previously under NAADS programme were terminated and no recruitment at district or sub county level has taken place to replace them. • Crop production, livestock, fisheries, commercial and trade sections all headed by aides.
Natural Resource Environment Forestry Wetlands Land management	<ul style="list-style-type: none"> • The Natural Resource Officer heads the Natural Resources Department and also acts as District Land Officer. • A separate Physical Planner • District Environment Officer in place. • District Forestry Officer in place. • Only one out of 12 positions filled in the department. 	<ul style="list-style-type: none"> • Physical Planner heads the Natural Resources department. • District Environment Officer, Forestry Officer and Staff surveyor also in place. • Other positions within department remain vacant.

Department / Sections	Buliisa	Nwoya
Community Services Social welfare Social Rehabilitation Community Development Children and Youth affairs Gender Disability and Elderly	<ul style="list-style-type: none"> • Five out of ten positions filled at district level. One out of seven positions filled at lower local government level. • Filled positions include District Community Development Officer, Probation Officer, Social Welfare Officer, and three Assistant Community Development Officers at the sub county level. • Position of Senior Community Development Officer is vacant. 	<ul style="list-style-type: none"> • District Community Development Officer in place. • Shortage of sub county community development officers.
Planning Planning Office Statistics Population	<ul style="list-style-type: none"> • District Planner and statistician positions filled. • Vacant positions include: Senior Planner, Data entry clerk and assistant statistician. 	<ul style="list-style-type: none"> • District Planner in place. • Other positions remain vacant due to limitation on recruitment by ministry for public service.
Works Roads Water Mechanical Engineering Buildings and Construction	<ul style="list-style-type: none"> • District Engineer and Supervisor of Works positions are vacant. • Staff shortages reported in water sector, roads sector. 	<ul style="list-style-type: none"> • District Water Officer in place • District Engineer in place Low staffing reported in roads and water sections.
Education DEO's Office Inspection Sports	<ul style="list-style-type: none"> • District Education Officer in place. • Teaching staff shortages reported. 	<ul style="list-style-type: none"> • District Education Officer and Inspector in place.
Health DHO's Office Health Sub-District Lower Health Units	<ul style="list-style-type: none"> • District Health Officer in place with support staff but staff shortages reported at health centre level. 	<ul style="list-style-type: none"> • No District Health Officer in place in 2015. • Staff shortages reported at all levels.
Council Council Clerk to council Procurement and Disposal Unit District Service Commission District Land Board Public Accounts Committee	<ul style="list-style-type: none"> • The Council has in place a District Chairman, Vice Chairman, Speaker, and four Executive members. • The District Service Commission is composed of five members all filled and no vacant post. • The District Land Board consists of five members (three male and two female). • The Public Accounts Committee consists of four members (one female and three males). 	<ul style="list-style-type: none"> • District Chairman and Vice Chairman in place. No further information available.
Finance Revenue Expenditure/Budget Accountability	<ul style="list-style-type: none"> • Staff shortages reported especially for sub counties. 	<ul style="list-style-type: none"> • Staffing level in 2016 reported to be 54% with key positions not filled.

Department / Sections	Buliisa	Nwoya
Administration/ Management CAO's Office Human Resource Management County Administration Registry/Records Information and Public Relations Internal Audit	<ul style="list-style-type: none"> District chairperson, CAO, Deputy CAO, PAC, District Information Officer all in place. Staff shortages reported to impact service delivery. Internal audit section seriously under staffed. 	<ul style="list-style-type: none"> District chairperson, CAO, Deputy CAO, in place Statistician in place. Staffing level in 2016 reported to be 54% with a need for recruitment of 17 staff to fill vacant positions.

Source: ESIA team own elaboration based on data provided in (Ref. 16-17 and 16-19)

16.6.1.9.5 Revenue and Expenditure in Buliisa and Nwoya Districts

Information in this section is summarised from data available in the Local Government Budget and Performance Reports for 2016 published by the Ministry of Finance Planning and Economic Development (Ref. 16-19), and the National Budget Framework Paper FY 2016/17 – FY 2020/21 (Ref. 16-20).

Trends in approved budget and total revenue received for Buliisa and Nwoya Districts between 2012 and 2017 are shown on Figure 16-11.

Buliisa and Nwoya Districts Budget and Total Revenue

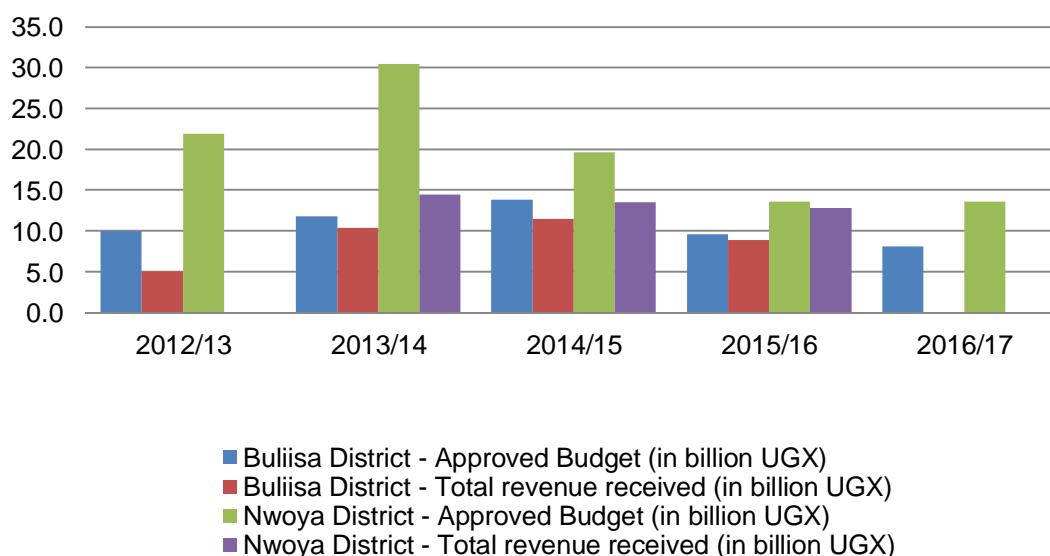


Figure 16-11: Buliisa and Nwoya Districts Budget and Total Revenues for FY 2012/13 – FY 2016/17¹²

The annual budgets for Buliisa and Nwoya districts have had year on year reductions over the last three and four financial years respectively. For FY 2015/2016, there was a decrease in the annual budget of 21% for Buliisa District and 39% for Nwoya District compared to the previous year. This decrease is partly explained by a drop in donor funding in these districts and a decrease in central

¹² Data not available for Buliisa District total revenue received in 2016/17, Nwoya District total revenue received in 2012/13 and 2016/17.

government transfers as the Northern Uganda Social Action Fund Project (NUSAF) and the District Livelihood Support Programme (DLSP) came to an end. Buliisa District expects to receive 8.17 billion Ugandan Shillings (UGX) in 2016/17, representing another 15% decline from the 2015/16 budget. This is mostly due to reduction in conditional grants and continued phasing out of the NUSAF2 fund. However, there is expected to be an increase in discretionary government transfers of 36% due to change of policy regarding consolidation of grants. Nwoya's budget for 2016/17 is UGX 11.1 billion, representing a reduction of approximately 19% from the 2015/16 budget, however, this does not account for donor funding, which is not yet committed in the form of Memorandums of Understanding (MoUs).

For the FY 2015/ 2016 the budget for Buliisa District was 9.64 billion UGX (approximately 2.7 million USD¹³) and for Nwoya District it was 13.6 billion UGX (approximately 3.8 million USD), with both districts heavily dependent on external funding. In terms of annual budget per capita, the budget for both districts is comparatively low at 24 USD per inhabitant for Buliisa District and 28 USD per inhabitant for Nwoya District.

Revenue sources for the local government in Buliisa and Nwoya districts are summarised in Table 16-8. Buliisa and Nwoya rely on central government funds for the majority of their funding. For the FY 2015/ 2016, central government funding accounted for 92% of Buliisa's budget, and 84% of Nwoya District's budget.

Locally raised revenue comes from taxes, land fees, local hotel tax, MFNP gate charges and park fees shared revenue, registration fees, rent and rates from other government units, levies on animal and crop husbandry, property related duties/ fees, court fees, business licenses and permits, and other miscellaneous sources. In 2015 to 2016 a revenue sharing scheme with UWA where 20% of park entrance fees paid by visitors are shared with communities that border the park¹⁴ formed 67% of planned locally raised revenues in Nwoya District (for Anaka, Koch Goma and Purongo). Not all of the planned budget was disbursed; however, as local level governments did not submit approved work plans under the revenue sharing scheme as planned. In Buliisa District, funds from UWA were recorded under government transfers rather than locally raised revenue, but only formed 5% of total revenue for Buliisa District in 2014/15 financial year.

Donor funding accounted for a larger share of funds for Nwoya District (11%) but only 2% for Buliisa District. In Buliisa District the main donors are Infectious Disease Institute (IDI), World Health Organisation (WHO), United States Agency for International Development (USAID) (the Neglected Tropical Disease Programme), Global Fund to Fight AIDS, Tuberculosis and Malaria (also called the Global Fund), and United Nations Children's Fund (UNICEF). In Nwoya District the main donors are USAID (Northern Uganda Development of Enhanced Local Governance, Infrastructure and Livelihoods Programme (NUDEIL)), UNICEF, and the Japan International Cooperation Agency (JICA).

Table 16-8: Buliisa and Nwoya District Budgets (2015/2016)¹⁵

Source of Funds	Buliisa District				Nwoya District			
	UGX (000s)	USD	% of total bud-get	Cumulative receipts end of Q4 (%)	UGX (000s)	USD	% of total bud-get	Cumulative receipts end of Q4
Locally raised revenue	524,346	145,733	5	6	673,294	187,130	5	3

¹³ USD values based on exchange rate at 21 March 2017 of USD 1 = UGX 3,598 (source: <https://www.xe.com>).

¹⁴ The revenue from UWA is disbursed to local communities as a conditional grant with communities having to submit a proposal for social or a livelihood project which can be funded. The project is selected by the local government of the community.

¹⁵ USD values based on exchange rate at 21 March 2017 of USD 1 = UGX 3,598 (source: <https://www.xe.com>).

Source of Funds	Buliisa District				Nwoya District			
	UGX (000s)	USD	% of total bud-get	Cumulative receipts end of Q4 (%)	UGX (000s)	USD	% of total bud-get	Cumulative receipts end of Q4
Discretionary government transfers	1,333,574	370,643	13	10	1,830,752	508,825	13	15
Conditional Government Grants	5,692,268	1,582,064	57	68	7,833,069	2,177,062	57	59
Other government transfers	1,875,467	521,253	19	9	1,560,700	433,769	11	6
Local development grant	344,609	95,778	3	4	299,344	83,197	2	2
Donor funding	214,500	59,616	2	3	1,432,769	398,213	11	14
Total	9,984,764	2,775,087	100	100	13,629,928	3,788,196	100	100

Source: Ref. 16-21 and Ref. 16-22

District expenditures for Buliisa and Nwoya districts are shown in Table 16-9. The table shows that the majority of district spending for both Buliisa and Nwoya is on health, administration, education, roads and engineering.

Table 16-9: Buliisa and Nwoya Districts Expenditure (2015/2106)¹⁶

Item	Buliisa District			Nwoya District		
	UGX (000s)	USD	% of total budget	UGX (000s)	USD	% of total budget
Administration	848,850	235,923	10	778,821	216,459	6
Finance	239,535	66,574	3	438,802	121,957	4
Statutory bodies	500,038	138,977	6	527,422	146,588	4
Production and marketing	206,826	57,484	2	183,842	51,096	1
Health	1,851,355	514,551	21	2,508,284	697,133	20
Education	3,488,218	969,488	40	5,044,446	1,402,014	41
Roads and engineering	452,156	125,669	5	1,344,114	373,573	11
Water	594,877	165,335	7	713,975	198,437	6
Natural resources	20,326	5,649	0	97,102	26,988	1
Community based services	444,796	123,623	5	583,118	162,067	5
Planning	139,011	38,636	2	68,176	18,948	1

¹⁶ USD values based on exchange rate at 21 March 2017 of USD 1 = UGX 3,598 (source: <https://www.xe.com>).

Item	Buliisa District			Nwoya District		
	UGX (000s)	USD	% of total budget	UGX (000s)	USD	% of total budget
Internal audit	42,133	11,710	0	26,104	7,255	0
Total	8,828,121	2,453,619	100	12,314,206	3,422,514	100

Source: Ref. 16-21 and Ref. 16-22

16.6.1.10 Governance and Administration in the Secondary Study Area

16.6.1.10.1 Hoima District

Hoima District sits in the Western Region of Uganda and is bordered by Buliisa District to the north, Masindi District to the northeast, Kyankwanzi District to the south, Ntoroko District to the southwest and Lake Albert to the west. The district has 11 sub counties and one municipality (Hoima Municipality). The District Headquarters are located in Hoima Municipality.

Hoima District's budget for FY 2015/2016 was approximately UGX 26 billion (approximately 7.2 million USD equating to approximately 13 USD per inhabitant). Annual budgets increased from UGX 19.766 billion in FY 2012/2013 (9.097 received) to 21.289 in 2013/2014, then to 23.257 in 2014/2015 and up to UGX 26.032 billion in 2015/16. The approved budget for 2016/17 was 28.239 billion.

Locally raised revenue constitutes approximately 5% of the 2015/2016 budget, donor funding approximately 3% and the remainder comes from central government transfers. The proposed budget for 2016/2017 is approximately UGX 24.8 billion. The District faces similar constraints and challenges to Buliisa and Nwoya in service delivery and achieving their proposed development plans, including: low staffing levels and high turnover of technical staff; lack of funding; technical capacity gaps; and shortage of logistical and transport resources (Ref. 16-20).

The main focus areas for the district's existing development plan are agriculture, infrastructure and tourism. The District Planner (KII, ESIA SBS, November 2016) noted that the District anticipates high levels of in-migration into the District over the next five years, especially into sub counties bordering the lake, and this has been factored into development planning. It has been estimated that approximately 150,000 people will migrate to the district over the next five years, representing almost 25% of the current population¹⁷. The district has recently formed a grievance management committee that will handle grievances related to road infrastructure development projects in the district. This has been set up in collaboration with Uganda National Road Authority (UNRA).

Hoima Municipality

Hoima Municipality comprises four divisions namely, Mparo (with 4 wards and 45 cells), Kahoora (4 wards and 33 cells), Bujumbura Division (3 wards and 30 cells) and Buseruka (4 wards and 32 cells).

Hoima Municipality has an urban section (including the Central Business Area with commerce and trade-wholesale shops, agricultural produce stores etc., small scale industries, hotels, fuel filling stations and consultancy services) and a peri-urban section which is largely rural with the main livelihood activities being crop farming.

Hoima Municipal Council anticipates that Hoima will have high levels of growth and development in the district, such as industrial, transportation, and in the services sectors. In response to this, Hoima municipal council have set aside funds from a Uganda Support to Municipal Infrastructure Development (USMID) project to conduct planning in order to manage the anticipated expansion of the municipality (Ref. 16-23). During a meeting with Hoima Municipality in 2016, the municipality leaders also reported that they submitted proposed changes in the administrative structure to the

¹⁷ The methodology that was used to estimate this number was not given.

Government of Uganda in preparation for the oil and gas activities. These include a request for two more Community Development Officers (CDOs) and one Assistant for the Economic Planner. (ESIA SBS, December 2016).

In line with the national development planning framework, Hoima Municipal Council has developed a five year development plan for 2016-2020 that sets out its strategy to achieve its stated vision of “a transformed traditional Hoima Town to a modern beautiful Hoima Oil City with an educated, health and economically productive citizenship by 2040” (Ref. 16-24).

16.6.1.10.2 Nebbi District

Nebbi District lies in Uganda’s Northern Region and is bordered by Arua to the northwest and the north, Democratic Republic of Congo (DRC) in the south, Zombo in the west, Amuru in the northeast, Buliisa in the southeast and Nwoya in the east. Nebbi District headquarters are situated in Nebbi Town Council. The District is divided into two counties with 13 rural sub counties and two town councils. The District comprises of 81 parishes and 889 village councils. Padyere County has eight sub counties and one town council, while Jonam County comprises of five sub counties and one town council. The District has two Town Boards namely: Panyimur and Parombo.

Nebbi District’s budget for FY 2015/2016 was approximately UGX 29.4 billion (USD 8.2 million, which equates to approximately USD 21 per inhabitant). Locally raised revenue constitutes approximately 6% of this budget, donor funding approximately 1.5% and the remainder comes from central government transfers. The proposed FY 2016/17 budget is approximately UGX 28.3 billion, (Ref. 16-19).

The following challenges to implementation of the district’s last development plan are acknowledged in the latest (2015) development plan:

- Low prioritisation and sequencing of projects and interventions leading to inefficient utilisation of resources. Limited financing options due to: low domestic revenue mobilisation; weak public private partnership (PPP) financing arrangement; and a high cost of finance for the private sector;
- Weak public sector management, including a weak decentralised public service delivery system, procurement;
- Delays and corruption;
- Limited involvement of non-district actors in planning and implementation of the plan;
- Limited integration of cross-cutting issues in sectoral plans, programmes and projects, key of these being gender, environment, Nutrition and HIV/AIDS. This is due to lack of synergies and coherence across sectors and local governments on what priorities to taken on;
- Limitation of staffing;
- Policy shift in funding from NAADS to Operation Wealth Creation¹⁸; and
- Natural Calamities/disasters/droughts/Floods.

16.6.1.10.3 Pakwach Town Council

Pakwach TC lies within Jonam County, Pakwach District, and has five wards and 52 villages. The District of Pakwach was created in July 2017. The town council has proposed an extension of its borders to absorb two more wards from the sub county. The town council government has two committees: the Social Services Committee, which covers education, health and community issues;

¹⁸ In 2001, the government launched the National Agriculture Advisory Services (NAADS) programme with the overall goal of supporting transformation of the agriculture sector from subsistence to commercial farming. Over the years, the NAADS programme became riddled with corruption and misappropriation of funds, poor distribution of seedlings to farmers, and politicization of selection of beneficiaries. To address this, in June 2014, President Museveni announced that the army would be entrusted with implementing NAADS programmes. A new initiative called Operation Wealth Creation was subsequently launched, which aims at improving livelihoods of rural farmers by engaging the Ugandan Peoples’ Defence Force (UPDF) in providing support to the coordination of NAADS activities. NAADS staff in district local governments were removed and implementation of agricultural extension programmes was placed directly under the control of the Ministry of Agriculture.

and, the Finance, Planning and Administration Committee. There is also an overarching Technical Planning Committee (FGD Pakwach TC, ESIA SBS, December 2016).

Discussion with political and technical staff from Pakwach TC revealed that the town council has a number of staffing gaps that need to be filled. A number of new posts to assist in service delivery have been proposed but these have not yet been approved. Posts have been proposed for a Senior Engineer (for Department of Works), Senior Planner (Department Physical Planning), Assistant Town Clerk and 5 Town Agents and Assistant Town Agents (currently there are only three although there are five wards within the Town Council). In the Production Department, proposals are being made for a Veterinary Officer, Fisheries Officer, and Agricultural Advisory Officers while in the Community Development Department they have proposed positions for an Assistant Community Development Officer and Assistant Labour Officer. In the Department of Health, at the moment, there is only a Health Assistant but they are proposing to have a Principal Health Inspector, a health Inspector and a Health Assistant (FGD Pakwach TC, ESIA SBS, December 2016).

16.6.1.10.4 Masindi District

Masindi District is located in Western Region and is bordered by Nwoya to the North, Kiryandongo to the east, Nakasongola and Nakaseke to the southeast, Kyankwanzi to the south, Hoima to the southwest and Buliisa to the northwest. The District has two counties and five sub counties (Kimengo, Pakanyi, Miirya, Bwijanga, and Budongo) and one municipality (Masindi Municipality) with four divisions: Central, Karujubu, Kigulya, and Nyangahya. There are 21 Rural Parishes of which 19 are gazetted and three are political parishes, 11 wards, 226 rural villages and 76 cells. The district headquarters are located in Masindi Municipality, Central Division.

Masindi's budget for FY 2015/2016 was approximately UGX 19.2 billion (USD 5.3 million, which equates to approximately USD 18 per inhabitant). Locally raised revenue constitutes approximately 4% of this budget, donor funding approximately 1.5% and the remainder comes from central government transfers. The proposed FY 2016/17 is approximately UGX 18.4 billion. The reduced budget is attributed to reduced funding from central government and donor funding, although locally raised revenue is expected to increase slightly to approximately 5% of budget share. Low staffing levels, limited community participation or support for government programmes, non-payment of taxes, transport and logistics challenges, and inadequate infrastructure in most government facilities are cited as some of the challenges in implementing the local government development plans (Ref 16-19).

The Masindi District 2015/2016 – 2019/2020 Development Plan lists the following priorities:

- Agriculture;
- Public infrastructure development;
- Trade and tourism development;
- Education and Health for human capital development;
- Local revenue collection enhancement; and
- Updated statistics/Data bank for informed decision making.

Masindi Municipality

Within the municipality Central Division, Masindi is the only urban area, with the other three divisions (Karujubu, Kigulya, and Nyangahya), rural. Masindi became a municipality in 2010 and is the biggest municipality in Uganda in terms of geography (the municipality covers 423 km²) and population (approximately 100,000 people). As a municipality they report as an independent local government, meaning that the District has no mandate over them and can only advise. They produce their own five year development plan and budget. Constraints identified in implementation of the Municipal Council's plans include under staffing in some departments, lack of enforcement staff in revenue mobilisation, lack of adequate/ reliable means of transport for revenue mobilisation, and difficulties recruiting staff (Ref. 16-25).

16.6.1.11 Customary Governance Structures and Processes

16.6.1.11.1 Traditional Kingdoms

Traditional institutions were abolished in 1966 but then restored by the government in 1993. A legislative framework was developed to regulate their operation and they have a special status in the 1995 Constitution under Article 246 (also refer to The Institution of Traditional or Cultural Leaders Act 2011), which sets out the role and responsibilities of these institutions. Traditional institutions are not allowed to collect revenues and traditional leaders are not allowed to participate in partisan politics, not exercise any administrative, legislative or executive powers at any government level. The Ministry of Gender, Labour and Social Development is responsible for regulating the traditional institutions. The government provides financial support and works with the institutions on areas of common interest.

The traditional systems of leadership include the council of elders and the clan leaders. Leadership positions are either elected or hereditary depending on the kingdom and cultural institutions. In some cases clan leaders are elected by clan members and the council of elders are elected by residents of the village, while in others clan heads are hereditary positions and not elected. These systems of traditional leadership continue to be recognised and respected by community residents. Women can also hold leadership positions on the council of elders. However, this is rare and women cannot be clan leaders.

Traditional leaders work primarily around the following principles: preservation of culture and traditions, promotion of ethnic unity, and promotion of development. Clan leaders play an important role in resolving civil conflict in communities using an informal system of arbitration that aims to maintain peace. Often, formal courts refer issues back to clan leaders to try to arbitrate and cases only return to court if clan leaders have failed (Various FGDs, ESIA SBS, December 2016). Traditional leaders have also often been involved in wider conflict resolution processes. For example, in 2007 the cultural leader Rwot David Onen Acana of Acholi Chiefdom held a peace conference (wan goo) to mediate between Uganda and the Lord's Resistance Army (LRA) in Juba, South Sudan.

The Project falls within the Acholi Chiefdom and the Bunyoro-Kitara Kingdom: two of 12 traditional cultural institutions recognised by the government (Ref. 16-26). The Bunyoro-Kitara Kingdom is formed of Lake Albert and falls within the districts of Buliisa, Hoima, Kagadi, Kakumiro, Kibaale, Kiryandongo and Masindi. The Acholi Chiefdom is north of Bunyoro-Kitara Kingdom and includes the districts of Gulu, Amuru, Nwoya, Pader Agago, Kitgum and Lamwo. Each institution has a legal mandate, a council or parliament with ministers, which parallel the official state institutions.

Buganda is the largest traditional kingdom in Uganda and comprises Uganda's entire central region including the capital, Kampala. The people from the Buganda kingdom, known as the Baganda, make up the largest ethnic group in Uganda.

The Bunyoro-Kitara Kingdom

The Bunyoro-Kitara Kingdom (BKK) is represented by a traditional ruler (King) and the structure of the Kingdom is similar to the Local Councils, with a county chief, sub county chief, parish chief, sub parish chief, and several clan committees. The office of the Prime Minister heads the civil service of the kingdom and all county chiefs report to him and he in turn reports to the King. The King is also assisted by the Principal Private Secretary and a Cabinet of Minister. The Bunyoro-Kitara traditional governance is responsible for cultural matters, such as funeral rites and marriage ceremonies and is involved in other matters including arbitration, community development programs for health and education. The Bunyoro Kitara Kingdom Land Board (which is separate to the District Land Board) was established in 2011 with the aim of recovering and protecting kingdom land that was restituted to the Kingdom in 1993 following the restoration of kingdoms, from occupation and encroachment by individuals and institutions. People must apply to the BKK Land Board for tenancy rights and pay an annual fee for ground rent if they want to settle on kingdom land.

The Kingdom of Bunyoro-Kitara was established in the 16th century. It has a capital in Hoima as well as a palace in Masindi. The population of the Kingdom is approximately 1.4 million people. The main ethnic group is Banyoro and the official language is Runyoro. The Bagungu are also part of the Kingdom in Buliisa District; however, in 2013 a group of Bagungu represented by a 15 member committee declared their intention to secede from Bunyoro-Kitara Kingdom to form a Bagungu

Kingdom. This was reported to be as a result of feeling marginalised and wanting a leader to preserve their culture (Ref. 16-3).

The Acholi Kingdom

The Acholi are closely related to the Alur (West Nile Sub Region), the Japadhola (eastern Uganda), and the Joluo (Kenya). The Acholi Kingdom is led by a paramount chief, currently Rwot David Onen Achana II who is the 25th paramount chief of the Kingdom. The paramount chief is the cultural head and custodian of Acholi culture and oversees the kingdom's 54 chiefdoms. The council of chiefs (Ker Kwaro Acholi) elects the paramount chief (Rwot). The population in the Kingdom is approximately 1.6 million people.

The traditional leaders in Acholi Kingdom were influential in promoting peace in northern Uganda after 90% of the population in Acholi had to abandon their homes and live in camps as Internally Displaced Person (IDPs). Religious leaders of all the main religions set up the Acholi Religious Leaders' Peace Initiative (ARLPI) and had strong links to the local communities as well as direct access to Sudanese leaders, such as Joseph Kony. Despite the traditional leaders efforts it is reported that the conflict in northern Uganda has eroded the Acholi cultural traditions, particularly among the youth (Ref. 16-3).

The Alur Kingdom

The Alur Kingdom includes the districts of Nebbi and Zombo. The King (Ubimu) manages the Kingdom and chiefdoms with support of a cabinet with ministers and a prime minister. The King is Rwot Phillip Olarker Rauni III who was crowned in 2010. There are succession issues in Alur Kingdom with a number of chiefdoms (e.g. Ngalthubei, Kaalkwonga of Panyimur, Rwothopano and Rwothmbaro) threatening to secede because of perceived corruption and mismanagement. In 2015 the King dissolved the cabinet and dismissed the prime minister because of internal power struggles (Ref. 16-3¹⁹). Although the Project Area does not fall within the Alur Kingdom, there is an important population of ethnic Alur within the villages affected by the Project.

16.6.1.11.2 Role of Elders and Clan Leaders

Clan leaders and elders still play an important role in communities, especially around governance and land related issues. They are seen as custodians of knowledge and play an important role in community decision making. Traditionally in northern Uganda the clan is responsible for management of land, with a responsibility to protect land for communities. Elders also play an important role in mediation of family conflicts and in maintaining community cohesion. During consultations with elders and local police as part of the 2016 social field survey it was reported that in some cases elders still administer punishments for crimes committed within the community through fines or even expulsion from the family or clan.

Among the Bagungu community in Buliisa District, clan leaders and elders are still consulted on land ownership and land boundaries, giving consent for land sales, and assisting with customary ownership certificates and land titles. During community meetings in November-December 2016 some stakeholders noted that confidence in elders' ability to mediate land disputes is beginning to weaken, however, as they are perceived as being open to corruption from land speculation.

In the Acholi traditional leaders also continue to play an important role in the community, such as resolving disputes and encouraging dialogue between community members. Known as Rwodi, these traditional leaders have the constitutional mandate to resolve grassroots level disputes, including land conflicts. Their primary function is to guide and foster dialogue among community members. The Rwodkweri (traditionally a leader chosen by the local community to coordinate agricultural activities at the grass roots level), who are responsible for 100 households, are considered to have better knowledge of land boundaries than local councils. They work closely with elders and communities to help resolve land conflicts. The council of chiefs (Rwod Moo) are legally recognised by the courts as grass roots mediators and their recommendations can be taken into account by the LC2, sub county

¹⁹ See also Ref. 16-27.

court committee or the magistrate's court. The King is the institution called upon to resolve violent conflicts between clans (Ref. 16-3).

16.6.1.12 Justice, Conflict Resolution and Arbitration Systems

16.6.1.12.1 National Level

The highest appellate court of the formal justice system is the Supreme Court of Uganda, which deals with all matters concerning constitutional interpretation and criminal appeals, including human rights allegations. Cases must first go through other lower courts such as the Constitutional Court, the Court of Appeal and the High Court before proceeding to the Supreme Court. In addition to this there are specialised courts or tribunals that form part of the judicial structure, including the Industrial Court and the Tax Appeals Tribunal and the Electricity tribunal.

According to the Uganda Human Rights Commission report 'Human Rights and Business Country Guide Uganda,' several barriers to accessing justice have been recognised in Uganda including poverty, public unfamiliarity with the litigation process and the technical nature of the law. The poor reportedly cannot afford transportation costs or legal representation, which is confined to urban areas. Bribery of court officials is reported to be common, and contributes to the public's avoidance of the judicial system. Due to these obstacles to accessing formal justice mechanisms, traditional justice systems remain important to local communities in Uganda (Ref.16-26).

16.6.1.12.2 Study Area

Both formal and informal arbitration systems are used by local communities. Local conflicts, especially family and civil matters, are usually resolved using the LC1, elders and clan leaders. Generally it is only when these institutions fail that disputes are taken through the formal judicial system.

The Local Council Courts Act establishes Local Council Courts (LCCs)²⁰ for the administration of justice at the local level, defines the jurisdiction, powers and procedures of the established courts and for other related matters. The legal jurisdiction of Local Council Courts includes matters related to land disputes, domestic violence, children related cases, assaults and battery, conversion, damage to property, trespass and adultery. LCCs provide an alternative to the formal court system, which is procedurally complex, less accessible and expensive especially to the majority rural poor.

There are three levels of the Courts:

- LCC III at the sub county/ Town/Division Council level;
- LCC II at the parish/ward level; and
- LCC I at the village level.

Appeals from the highest of the Committees (Sub County Executive) go to the Chief Magistrate. There is one magistrate attached to Buliisa District. If the appeal involves a substantial question of law or appears to have caused a substantial miscarriage of justice, then appeals would go to the High Court.

There are no high courts in Buliisa and Nwoya districts, with the nearest courts in Masindi for Buliisa, and Gulu or Amuru for Nwoya district. The long distance (approximately 100 km from Buliisa TC to Masindi Court House and over 100 km from Got Apwoyo to Gulu court house, both journeys taking approximately two hours to drive) to these courts makes it difficult for people to travel to, especially in the rainy season, and poses a challenge for access to justice and remedy. However, it is reported that there are plans to construct a court in Nwoya District (Ref. 16-3).

Across the Primary and Secondary Study Area, stakeholders reported capacity challenges within community leadership structures, sub county and district administrative structures to proactively and expeditiously handle social conflicts, "*the structures are there but the issue is a lack of capacity, logistics and resources*" (meeting with Hoima District Local Government, ESIA SBS, November 2016)

²⁰ For the most part the Local Council Courts are not functional.

November 2016). Furthermore, during stakeholder consultations with local leadership, civil society organisations and local community members as part of the ESIA SBS in November-December 2016 it was noted that general knowledge of court processes and trust in the formal justice system are low. There is a perception that formal court processes are costly and lengthy and it was repeatedly stated that whoever has the most money will always win, and therefore “if you have no money you automatically lose” (FGD respondent, ESIA SBS, December 2016).²¹

Cultural and alternative dispute resolution mechanisms are therefore still widely used to mediate disputes. At the community level, most people still use the LC1 and clan leaders as mediators. In fact, if people do not try to solve an issue using informal mechanisms first, police and formal courts often refer the case back to cultural leaders to try and find a resolution. Only when that fails is the issue brought to the police and, if necessary, taken to court. The sub county, through the office of the community development officer, also plays an important role in mediation although they face capacity challenges and are underfunded. Area Land Committees play a role in determining actual ownership during land disputes. New informal structures such as Village / Area Land Committees and Mediation Committees are being established with the help of NGOs and CBOs to improve access to alternative dispute resolution mechanisms (ESIA SBS 2016 – meeting with Buliisa Sub County leadership).

Figure 16-12 shows a copy of a poster developed by LACWADO and displayed at the Buliisa Police Headquarters outlining the process for filing a land complaint in the informal justice system.

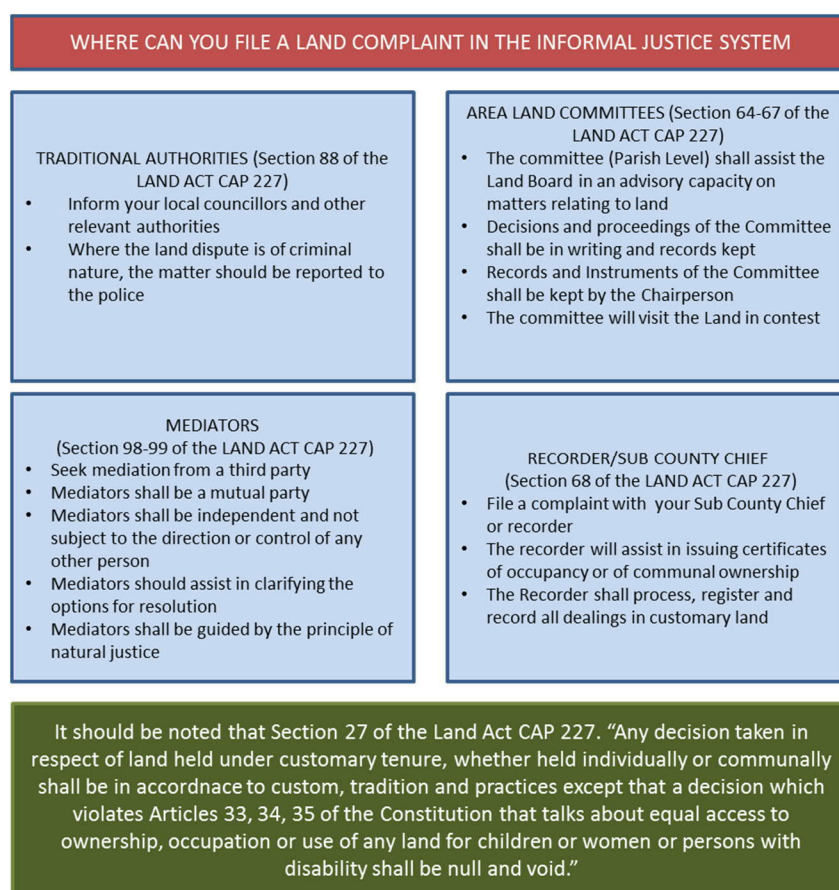


Figure 16-12: Process to Register Land Complaints through Informal Justice System

Within the Primary Study Area NGOs such as Buliisa Initiative for Rural Development Organisation (BIRUDO) provides support to communities to access formal and informal justice through mediation

²¹ During a meeting with International Alert, they reported that they had calculated that the estimated cost of accessing justice for a rape case would be UGX 250,000 (including transport to police, hospitals, courts, legal representation etc.), which is unaffordable to most in a region such as Bunyoro where they estimate that the large majority of the population (an estimated 88%) earn less than UGX 50,000 per month. (KII, International Alert, Kampala November 2016).

and legal aid, and also sensitises communities on their land rights. International Alert helped to establish Mediation Committees at sub county level to help address issues between oil companies and local communities. Members of committees are members of local communities and leaders. They provided training to committee members to strengthen their ability to mediate disputes. (KII International Alert, ESIA SBS, November 2016).

Inter-community or inter-ethnic conflicts are mediated by traditional leaders. There have been conflict resolution activities between Acholi and Jonam community leaders, for example, to solve land disputes in 2009 and 2014. In 2009 Acholi and Jonam community leaders held a meeting in Masindi, chaired by the Acholi and Jonam paramount chiefs. In 2014 they developed 11 resolutions to solve land conflict, such as sending a demand to the Ministry of Lands, Housing and Urban Development to form a Technical Land Verification Committee to verify land titles between 1986 and 2010, and putting on hold sales of land of contested areas until ownership is verified, (Ref. 16-3).

Religious leaders also work together with LC1s to help facilitate dialogue and mediate conflicts within local communities, especially conflicts between religions and social groups. The Bunyoro Inter-Religious Committee, for example, reported that they have intervened in the past to help address conflicts between migrants (mainly from outside Uganda such as DRC, Rwanda, Burundi and Southern Sudan) and Bunyoro and have intervened in land conflicts within the community as well as between community members and government (FGD, ESIA SBS, November 2016).

16.6.1.13 Community Organisational Capacity

16.6.1.13.1 Leadership and Decision Making in the Village

The lowest basic administrative and community unit is the village, governed by an elected LC1 executive committee. Information is generally passed down to village members through the LC1 chairperson and the village council is the body through which most community decisions regarding social development are made. Village meetings are usually called by the LC1 chairpersons and are conducted regularly. Each village has a meeting place, usually under a large tree (Figure 16-13).



Figure 16-13: Community Meeting in Buliisa District, August 2015

There are legislative provisions for term limits to the positions of LC1 Chairpersons (see Local Government Act, 1997). However, as of February 2017, most of the current LC1 chairpersons had been holding their positions for over the mandated period and LC1 elections had not been held since 2002. There is therefore a perception in some communities that the LC1s have 'overstayed' and have

lost their mandate. In Hoima, for example, it was reported that people have lost trust in the LC1s and they therefore take matters straight to sub county leaders.

Villages within the Primary Study Area are often characterised by one dominant ethnic group, except along the lake shore or more urbanised areas of Wanseko and Buliisa Town Council, which are more mixed. Often the LC1 is from the dominant ethnic group, although there are exceptions. This can result in other groups or individuals feeling excluded. There are two female LC1 chairpersons in the Primary Study Area in Ajigo and Bikongoro.

During community consultations with women, youth, elders and community leaders it was widely affirmed that chairpersons, elders, and clan heads are seen as the key decision makers in the community. Youth and women consulted in Buliisa and Hoima districts as part of the ESIA SBS reported that they still often feel excluded from decision making in their community, although some noted that this is changing. In most villages youth and women have elected councillors who represent them at the village level and who they can go to for mediation or help in solving a problem.

Lack of funding and resources to facilitate meetings is seen as a challenge to better community engagement and mobilisation. Cultural norms among the Bagungu and Alur about the role of women also challenge greater female attendance at and participation during meetings. Even at the household level women reported that generally they do not have a strong say in decision making. (Various FGDs, ESIA SBS, November - December 2016).

16.6.1.13.2 Management of Community Infrastructure and Resources

Communal land used for grazing, hunting, and collecting firewood is usually under the control of the community leadership and where there is a dominant ethnic group the clan leadership is instrumental over such common resources.

There has been no reported formal cooperation between villages regarding overgrazing or land degradation (Ref. 16-3). While there is cooperation between villages regarding sharing of community infrastructure (e.g. boreholes, schools, health centres, churches and mosques etc.) mechanisms to manage these are weak. Structures to manage these at village level include Water Resources Committees, Village Health Teams and Environmental Committees.

Within Buliisa Sub County a number of committees have been formulated to handle communal issues including Village Livestock Committees, Village Farmers Committees, Village Land Committees and Water Resources Committees. These committees are independent of the Local Council Committee headed by the Chairperson LCI. The committees help to resolve disputes for example on communal grazing land and also help the Area Land Committee and Sub County to supervise land transactions. Members of the committees are elected in every village. The Livestock Committee and Farmers Committee help the Sub County monitor the number of farmers and cows in each village, what the farmers and livestock keepers do and how they can be managed. Village Land Committees also influence decisions over land use within the village, (FGD, Buliisa SC, ESIA SBS, December 2016).

16.6.1.13.3 Community Support Networks

Community Based Organisations (CBOs) are located at the rural or village level and tend to focus on self-help. Village saving and credit groups and self-help groups at large have been reported in most of the villages within the Primary Study Area (42% of respondents to the 2015 SHBS household survey were members of a community self-help group). The groups gather villagers who pool their savings as a source for lending funds to group members: each member contributes regular savings deposits to a common pot, and can then take out loans from those savings, paying back an interest. These groups normally consist of 15 to 30 members. There are youth, women, livestock keepers and farmers groups, as well as credit and saving groups of mixed composition. Community self-help groups meet regularly, usually on a weekly basis, to undertake saving schemes, collective agriculture labour (goat rearing or crop farming) or income-generating activities (e.g. bee keeping and honey making). The main challenges reported are related to fluctuating participation of members and cases of money mismanagement, (Ref. 16-3).

CBOs and self-help groups identified in each village surveyed as part of the 2015 SHBS are listed within the SHBS Report Workstream B (Village Profile) (Appendix G of this ESIA).

16.6.1.13.4 Civil Society

There are a variety of civil society organisations (CSOs) working in Uganda. These organisations are required to commit to non-sectarian and non-political programmes. All CSOs must be registered with the Ministry for Gender and at the district level CSOs must be registered with the District Community Development Officers. The NGO Act of January 2016 requires community groups to register and have a permit to carry out mobilisation activities. The Act provides that Permits can be taken away if a group is deemed to be inciting unrest or anti-government sentiment.

There are several organisations and one coalition that focus on oil and gas activities in the Albertine Region. The focus of most of these CSOs is environmental matters, community development, stakeholder engagement, and information dissemination. CSOs also focus on transparency in the sector and the local Civil Society Coalition on Oil and Gas (CSCO) is a network that organises activities, and publishes reports and press releases related to oil and gas activities.

A full list of CSOs and NGOs that were reported to be working within the Study Area is provided under *Chapter 5: Stakeholder Engagement*. Some of the most active and influential organisations that were mentioned during community consultations include:

- Lake Albert Children and Women's Development Organisation (LACWADO);
- Buliisa Initiative for Rural Development Organisation (BIRUDO);
- Kakindo Orphans Care;
- Civic Response on Environment and Development (CRED);
- International Alert;
- Uganda Wildlife Society (UWS);
- Albertine Graben oil and Gas District Association (AGODA); and
- Alliance of Mayors and Municipal Leaders' Initiative for Community Action on Aids at the Local Level (AMICAAL).

16.6.1.13.5 Business Community

There are a few business associations active within the Primary Study Area including:

- The Buliisa Traders Association: Helps to advocate for members to receive training and capacity building from external organisations, lobbies the government and town council for their interests, tries to promote a savings culture amongst local businesses and extends credit facilities to members; and
- The Association of Ugandan Oil and Gas Service Providers (AUOGS): The AUOGS was established by eight companies in 2012 and is now one of the biggest lobby groups for service providers in the Oil and Gas industry. Membership is composed of both local and international companies. The association aims to help members build their capacity to meet the quality and standard of service delivery for the oil and gas sector. This has included training and certifying employees of member companies to acquire recognised Health, Safety and Environment (HSE) certification (e.g. National Examination Board in Occupational Safety and Health certificate), as well as training business owners and senior managers on industry HSE requirements and procedures. The association has also trained farmers and small scale businesses on basic book keeping, basic accounting, basic record keeping, basic contract negotiation and invoicing. Participants were drawn from Nwoya, Masindi, Hoima, Buliisa and Biiso (Ref 16-28).

16.6.2 Population, Demographics and Education

16.6.2.1 National Population

Data from the Uganda Bureau Of Statistics (UBOS) 2014 National Population and Housing Census and 2016 Statistical Abstract records the population of Uganda as 41.5 million in 2016, compared to 34.6 million in 2014, compared to approximately 30.7 million estimated in 2009/2010 (Ref. 16-29). In 2014, approximately 6.4 million people live in urban areas and of this 1.5 million people live in the

capital, Kampala. The majority of the population, 27.2 million, live in rural areas. Uganda has one of the youngest populations in the world with 78% of the population below the age of 30 (Ref. 16-29). Of the total population, there are more women (17.6 million) compared to men (17.1 million) giving a national sex ratio²² of 94.6. The annual population growth rate has decreased from 3.2% for the period 1991-2002, to 3.03% for the period 2002-2014. The projected population for 2025 is 46.7 million.

16.6.2.2 Study Area Population

16.6.2.2.1 Population Size and Characteristics

Primary Study Area

Population data specific to areas within the Primary Study Area is difficult to obtain, especially at village level. Household registers are reportedly maintained by local authorities but access was not provided during the 2015 SHBS. To date, 2014 census results are only available down to the sub county level. Population estimates, given by LC1 chairpersons, for villages surveyed as part of the 2015 SHBS are given in Appendix 5 to the SHBS Report (see Appendix G of this ESIA). This shows that the size of villages within the Primary Study Area varies considerably from 200 to 2,000 residents and the average population size of villages is 150 households and 1,000 people²³. The smallest villages include Paara, Kigwera North East and Muvule Nunda with 40 – 80 households. The largest, with more than 2,000 residents (between 250 and 550 households) are Bugana-Kichoke and Kabolwa in Buliisa sub county. Villages such as Kirama, Kichoke, Wanseko and Masaka in Kigwera sub county, and Nyapeya Cell in Buliisa Town Council have a population of over 1,000 inhabitants (Ref. 16-3).

Buliisa District

In Buliisa District, Project facilities will be located within the sub-counties of Buliisa, Ngwedo and Kigwera as well as Buliisa Town Council. Table 16-10 shows key populations statistics for sub counties in Buliisa District.

Table 16-10: Population by Sex, Sex Ratio and Population Density in Buliisa District

Sub-county	Population (2014 Census)			Sex Ratio *	Population Density **	% of District Population
	Male	Female	Total			
Biiso	8,066	8,312	16,378	97	56.3	14.5%
Buliisa	8,461	8,677	17,138	97.5	45.7	15.1%
Buliisa Town Council	3,703	3,535	7,238	104.8	217.4	6.4
Butiaba	16,366	12,545	28,911	130.5	158.2	28.3
Kigwera	6,871	6,757	13,628	101.7	270.4	11.9
Kihungya	5,915	6,481	12,396	91.3	191.3	10.2
Ngwedo	8,419	9,053	17,472	93	153.9	14.6
District	57,801	55,360	113,161	104.4	101.9	100

*Sex ratio is the number of males per 100 females

²² The sex ratio is the number of males per 100 females

²³ Estimates based on interviews with local authorities during the SHBS (2015) and UBOS (2011).

Sub-county	Population (2014 Census)	Sex Ratio *	Population	% of District
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**Number of persons per square kilometre of land
Source: Ref. 16-29

The 2014 population in Buliisa District was 113,161 and the population growth rate was 4.86% over the period 2000 to 2014; higher than the national average of 3.03%. The population density is 101.9 persons per km², much less than the national average of 174. The majority of the population (94%) live in rural areas, although the populations of urban areas are growing quickly, such as Buliisa Town Council, Wanseko, and Masaka. The most densely populated areas are Kigwera Sub County and Buliisa Town Council. Population density is higher along the lake shores as migrants from the DRC and other parts of Uganda have historically settled there for employment opportunities in the fishery sector

Figure 16-14 shows the population densities in Buliisa District and the higher population densities along the lake shores (e.g. Buliisa Town Council, Katanga, Wanseko and Masaka). The villages of Kichoke, Kibambura, Bugana-Kichoke, Bugana-Kataleba and Waiga have the lowest population density as they have large grazing areas (Ref. 16-3).

According to UBOS there were a total of 21,704 households in Buliisa District in 2014 and the average household size are 5.3 people per household; however, the SHBS household survey results and RAP1 Social Baseline report suggested it was higher at 7 persons and 7.9 persons per household respectively. Households are predominately arranged as either a single family residing in a single homestead or in a compound arrangement. The former is generally comprised of a typical nuclear family residing in a single property/ plot with one or more structures. The latter generally comprises of extended families residing in a single property/ plot with multiple structures. Several members of the population live in a single homestead (one structure), while the majority live in a compound homestead (multiple structures).

For households in villages and towns to the west along the lake shore the average household size is higher at, approximately 7 to 10.5 persons per household than on the eastern side in Ngwedo sub county (5 to 8 persons) (Ref. 16-3). The household size may often be related to the differing arrangements of the homestead. The single families residing on a single homestead will generally have smaller than the average number of household members – mostly comprised of a father, mother, and children. Compound homesteads will support an above average number of members – comprising of grandfathers, grandmothers, fathers, mothers, children, and other extended family members. Most households (85%) are male headed (Ref. 16-29).

Buliisa District has a young population, with 58% of the district falling under the 0 – 19 age group. Fifty percent of the population is economically active (aged 15 - 64 years). The sex ratio was 104.4 males per 100 females, higher than the national figure of 95 males per 100 females. The ratio of males to females is higher in Kigwera Sub County, Butiaba and Buliisa Town Council. Ngwedo and Kihungya have the lowest ratio of males to females. Ten percent of girls aged 10 - 17 years are married and 13% of girls aged 12 - 17 years have given birth (Ref. 16-29).

Nwoya District

Population data for Purongo and other sub-counties in Nwoya District is shown in Table 16-11. This data is based on the 2014 census results and therefore does not include Got Apwoyo sub county (created in 2016). At the time of writing, population data at the parish or village level were unavailable.

Table 16-11: Population by Sex, Sex Ratio and Population Density in Nwoya District

Sub-County	Population (2014 Census)			Sex Ratio	Population Density	% of District Population
	Male	Female	Total			
Purongo	15, 942	15, 536	31,478	102.6	17.4	23.5%
Alero	20, 707	21, 102	41,809	98.1	31.4	31.3%
Koch Goma	17, 400	18, 074	35,474	96.3	464.9	26.6%
Anaka Town Council	6, 536	7, 056	13,592	92.6	10.5	10.2%
Anaka Payira	5, 384	5, 769	11,153	93.3	69.3	8.4%
District	65, 969	67, 537	133,506	97.7	28.5	100%

Source: Ref. 16-29

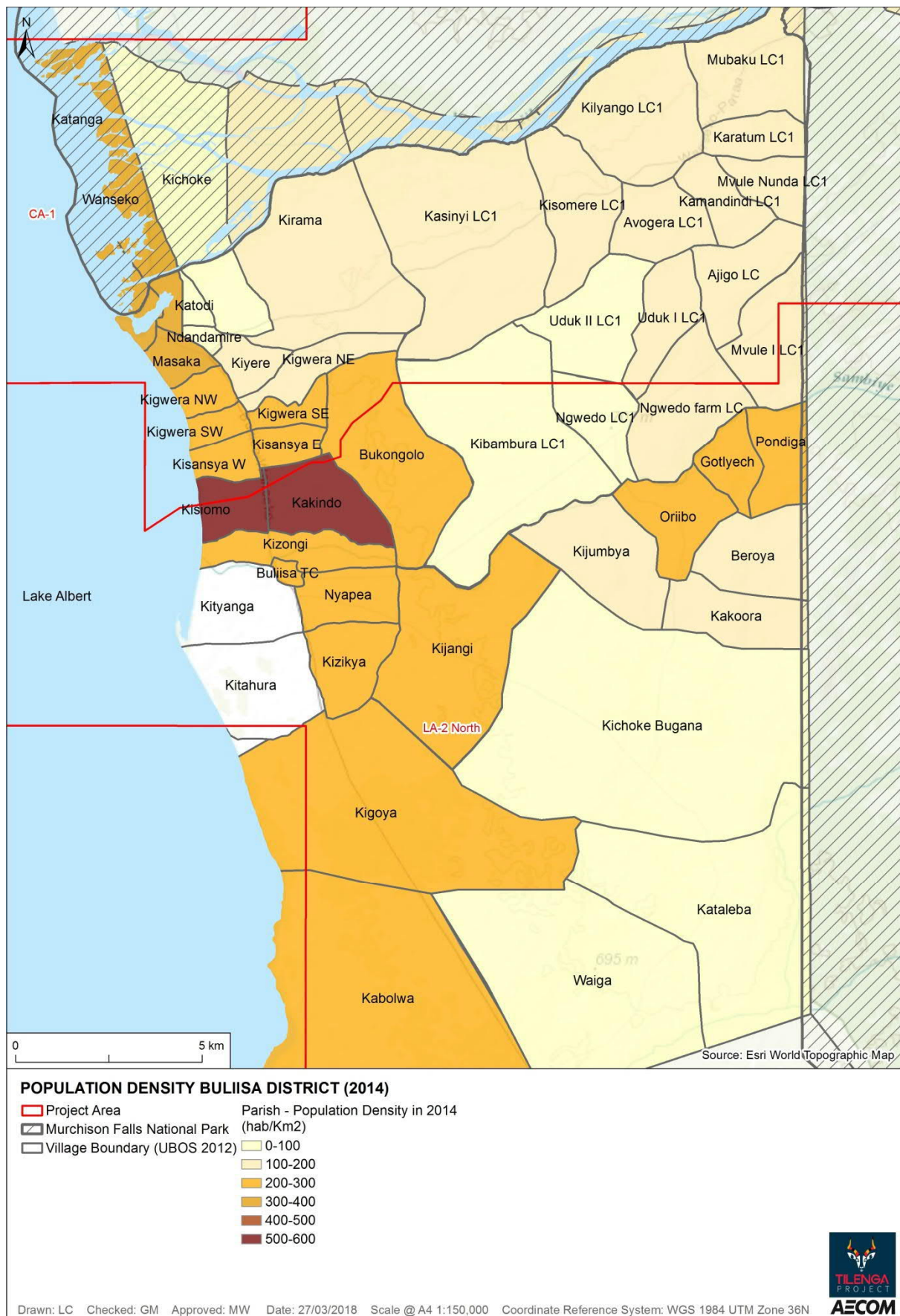


Figure 16-14: Buliisa District Population Density

The population for Nwoya District was 133,506 in 2014. Purongo Sub County has the highest sex ratio with 103 males per 100 females compared to the district average of 98. Nwoya District is one of the youngest districts in Uganda, with 61.9% of the district falling under the 0 – 19 age group. Forty nine percent of the population is of working age (age 14 - 64).

The population growth rate in the district was high at 9.5% over the period 2002 to 2014, compared to the national average of 3.03%. This is mainly attributed to the return of refugees from Internally Displace People (IDP) camps following the end of the conflict in northern Uganda in 2005. The population density is 28.5 persons per square kilometre, much lower than the national average of 174. The total number of households recorded in the district in 2014 was 24,571 (5,887 in Purongo Sub County) and the average household size is five people per household. The majority of the population (89%) live in rural areas (Ref. 16-3).

Ten percent of girls aged 10 - 17 years are married and 11.4% of girls aged 12 - 17 have given birth (Ref. 16-29).

Secondary Study Area

Nebbi District

The population of Nebbi District was 396,794 in 2014 of which women made up 51.8% (205,690) and men made up 48.2% (191,104). Just like the overall trend in Uganda, Nebbi District has a relatively young population with 56% of its population falling within the 0 – 17 age group (Ref. 16-29). Table 16-12 shows population data for Pakwach Sub county, Pakwach Town Council and Panyimur.

Table 16-12: Population of Pakwach Sub county, Pakwach Town Council and Panyimur in Nebbi District²⁴

Sub-County	Population (2014 Census)	% of District
Pakwach	20,893	5.3%
Pakwach Town Council	22,987	5.8%
Panyimur	43,229	10.9%

Source: Ref. 16-29

Hoima District

In 2014, Hoima District had a total population of 572,986. The gender ratio is relatively evenly split with 285,080 women and 287,906 men. Hoima District also has a relatively young population, with 305,652 or 53% of its population falling between the 0 – 17 age group. The largest sub county by area and population is Kyangwali with a total of 798.4 m², making up 16.8% of the total district population, and has a total population density of 631 people per m² of land area (Ref. 16-29). The population by sub county in Hoima District is shown in Table 16-13.

²⁴ To note, there seems to be a calculation error in the 2014 Census, and so only sub-counties most likely to experience Project related impacts have been included

Table 16-13: Population by Sub county in Hoima District

Sub-County	Population (2014 Census)	% of District
Bugambe	30,045	5.2%
Buhanika	14,172	2.5%
Buhimba	39,307	6.9%
Buseruka	42,505	7.4%
Kabwoya	66,830	11.7%
Kigorobyia	67,121	11.7%
Kigorobyia Town Council	5,845	1%
Kitoba	34,810	6%
Kiziranfumbi	35,184	6.1%
Kyabigambire	40,979	7.2%
Kyangwali	96,089	16.8%
Hoima Municipalities		
Bujumbura Division	22,199	3.9%
Buliisa Division	19,287	3.4%
Mparo Division	23,155	4%
Kahooro Division	35,458	6.2%

Source: Ref. 16-29

Masindi District

According to the 2014 Population Census, Masindi District had a total population of 291,113. The Central Division is the smallest area but has the highest population density, of 1,433 people per m². Masindi District has a relatively young population with 57% of its population falling between the 0 – 19 age group. The gender ratio in Masindi District is relatively equal, with women making up 49.1% of the total District population and men making up 50.9% (Ref. 16-29). Table 16-14 shows the population by sub county in Masindi District.

Table 16-14: Population by Sub county in Masindi District

Sub-County	Population (2014 Census)	% of District
Budongo	51,935	17.8%
Bwijanga	52,084	17.9%
Kimengo	14,008	4.8%
Miirya	20,246	6.9%
Pakanyi	58,402	20.1%

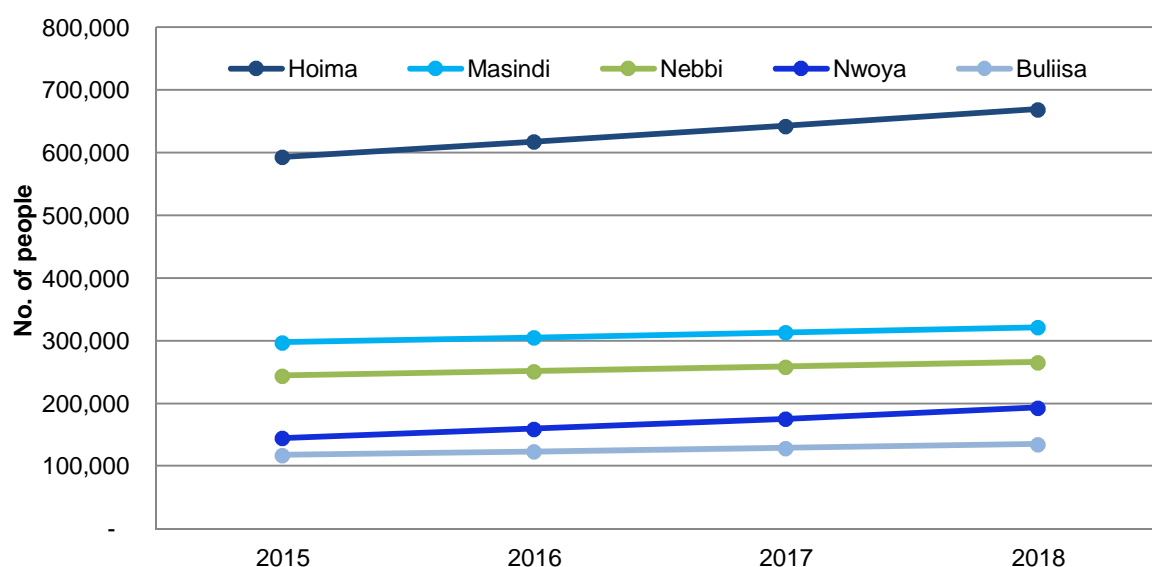
Sub-County	Population (2014 Census)	% of District
Masindi Municipalities		
Central Division	40,826	14%
Karujubu Division	27,824	9.5%
Kigulya Division	12,747	4.4%
Nyangahya Division	13,041	4.5%

Source: Ref. 16-29

Population Change

Population Projections

Figure 16-15 shows the projected population increase for districts in the Study Area.



Source: Ref. 16-29

Figure 16-15: Projected Population Increase by District in the Study Area

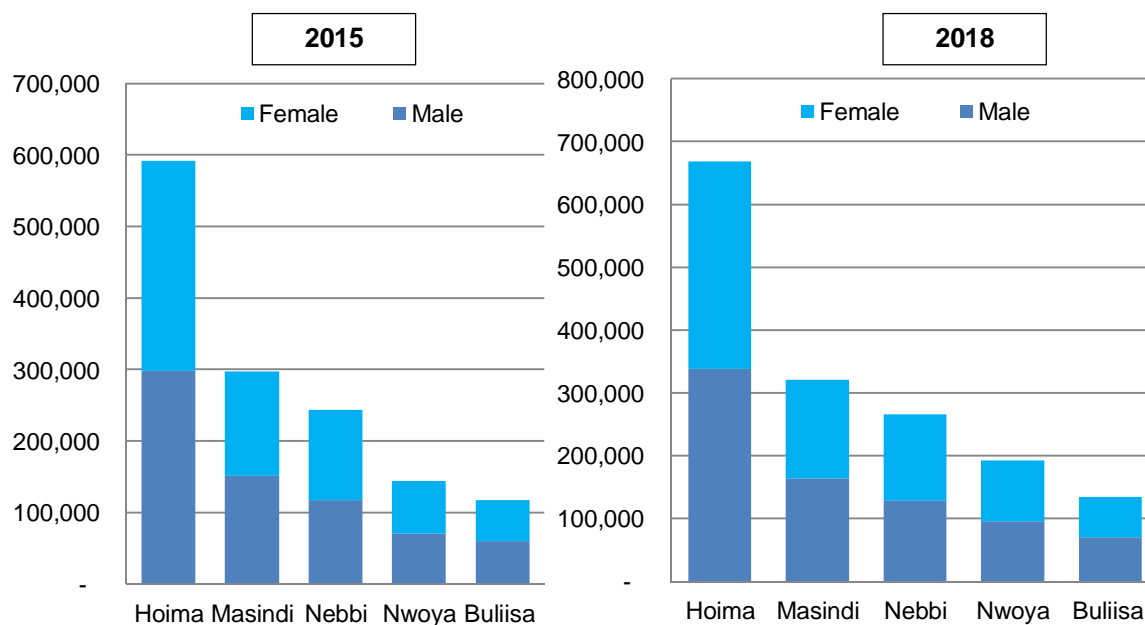
In and surrounding the Primary Study Area, the population growth rate of Nwoya (9.9%) and Buliisa (4.8%) are currently above the national average of 3.03%. Nwoya has seen a substantial rise in the population since 2002, particularly in parts of Murchison Falls National Park parish, Purongo and Koch-Goma. This rise in population is partly due to resettlement after the civil unrest in the northern region.

Urban populations within the Study Area have increased rapidly, especially at Buliisa, Wanseko and Masaka towns. This is seen to be a result of migration into the district due to economic opportunities, a porous international border, cultural ties (e.g. marriage), and violence and conflict in neighbouring countries (Ref. 16-3).

Given that the majority of the population’s livelihood is natural resource based; an increasing density indicates increasing competition over fixed natural resources. During community consultations it was suggested that the increase in population in the region has already resulted in increased pressures on existing resources and has also had an impact on the current extent of different types of land use. For example, migrants from DRC tend to settle along the lake shore with fishing communities while the

Balaalo settle where there is land for grazing (KII Buliisa, ESIA SBS, November 2016). Also, the increasing individualisation and registration of land around the Study Area is partly attributed to an increasing population in the area (For further information on the impact population pressure is perceived to be having on land and natural resources see **Chapter 19: Ecosystem Services**). Population growth is also perceived to have had a positive effect for local businesses and trade by increasing demand for goods and services (FGDs with business community, ESIA SBS November – December 2016).

Figure 16-16 shows the projected changes in gender ratio in the Study Area by district.



Source: UBOS, 2014

Figure 16-16: Projected Gender Ratio by District in 2015 (left) and 2018 (right)

The ratio of males to females from 2015 to 2018 is projected to increase in Hoima, Masindi, Nebbi and Nwoya districts by approximately one (101.3 to 102.2 in Hoima; 103.8 to 104.7 in Masindi; 92.9 to 93.9 in Nebbi; 97.8 to 98.7 in Nwoya) and in Buliisa District it is expected to increase by almost three from 105.4 to 108.2.

16.6.2.2.2 Migration

Approximately 1.5% of the total population in Uganda were recorded as non-citizens in the 2014 census. Most of the non-Ugandan population (88.7%) are citizens of neighbouring countries (Ref. 16-29).

The Rift Valley area of Africa has experienced a number of violent conflicts over the past few decades, which has resulted in migration across the region, including into the Study Area. Uganda has been, and continues to be, a major hosting country for asylum-seekers and refugees. In October 2016, the United Nations High Commission for Refugees (UNHCR) reported that as of October 2016 there were over 600,000 refugees and asylum seekers registered in Uganda. The majority originate from Burundi, the DRC, and South Sudan and are granted prima facie recognition by the Government under their “open door” policy²⁵. There have also been large numbers of internally displaced persons within Uganda. Approximately 1.7 million people in the Acholi region were displaced due to more than 20 years of armed conflict between the Lord’s Resistance Army and the Ugandan Government (Ref. 16-30).

²⁵ Uganda has one of the most favourable refugee protection environments in the world, providing refugees with freedom of movement, the right to work, and access to social services through a generous asylum policy (the Refugee Act of 2006 and the Refugee Regulations of 2010) (Ref. 16-32).

Conflict-induced migration has taken place alongside economic and traditional and seasonal migration movement. There is also a lot of cross-border movement where ethnic and family ties cut across borders, such as the Alur in Northern Uganda and DRC. According to a report by the International Organisation for Migration (IOM), environmental degradation and climatic disasters also influence migration patterns. Common natural disasters in Uganda that have led to displacement are landslides and floods, while the semi-arid climate of the Karamoja has led to a frequent mobility of its population, particularly pastoralist (Ref. 16-30).

Vulnerability of migrants is discussed in Section 16.6.8.4.1.

In-Migration in Primary Study Area

Migrants are usually not registered so it is difficult to find official migration figures, but the 2015 SHBS Household Survey provided some information about in-migration trends into the Study Area. The survey showed that in Buliisa District, 24% were not born in the district and of these, 60% were Alur and 38% were Bagungu. Of those respondents from Buliisa District, 42% were born in a different village. Migration in Buliisa District is primarily driven by economic opportunity and economic migrants mainly settle in urban areas such as Buliisa Town Council, Wanseko, and Masaka (in Wanseko Parish, Kigwera sub county). Other factors are: porous borders, cross-border cultural ties (such as marriage), and violence and instability in neighbouring countries (e.g. DRC) and other regions of Uganda (Ref. 16-3).

Migrants seeking economic opportunities have come to the Primary Study Area to find land to grow crops or graze cattle. The 2015 SHBS household survey showed that 57% of the male respondents migrated to Buliisa District in search of land for cultivation. The search for fishery livelihoods is a primary factor for those migrants coming from DRC who have settled along the lake shores. This may be as a result of the declining fisheries sector in DRC (due to overfishing and lack of control on fishing) and an increase in the market price of fish and improved market access due to improved infrastructure in Uganda. In some fishing communities migrants are estimated to form as much as 80% of the population, as well as the majority of the workforce. Recent migrants from the DRC cannot usually afford to buy land so have settled near the lake shore on government land which cannot be privately owned (Ref. 16-31).

The 2015 SHBS identified that marriage is the key driver of migration for women. Family reunification with relatives who have settled in Buliisa District is a key pull factor for migrants coming from West Nile and DRC. This trend is reported to have been increasing in recent years.

Within Nwoya District, (specifically in Purongo and Got Apwoyo sub-counties), respondents in meetings with district and sub county governments identified opportunity in the agricultural sector as one of the key pull factors for migrants. The continued return of IDPs following the end of the conflict in Northern Uganda is also a driver of population growth. During the exploration phase it was reported that Purongo experienced rapid population growth as people moved to the area for the direct and indirect job opportunities associated with exploration activities. Many economic migrants left again at the end of the exploration phase, however, new opportunities associated with the next phase of oil activities are believed to be attracting people to the area again now (including for those in the agricultural sector who hope to supply to oil companies or their contractors) (FGDs, ESIA SBS, December 2016).

In-Migration in Secondary Study Area

In urban areas such as Bisio, Pakwach TC and Hoima Municipality economic migrants seek opportunities to establish businesses such as hotels, shops and restaurants. Respondents in a FGD with migrants in Hoima Municipality noted that the main reasons for moving to the area were: business opportunities (including presence of a market and low competition); low cost of living; availability of productive agricultural land; and educational opportunities for youth. Some people that were displaced due to oil activities within Hoima District (including and land acquisition for the Refinery in Kabaale, Buseruka sub county) are also reported to have settled in Hoima Municipality. In Bisio town, FGD respondents suggested pull factors included the anticipated economic development (and increased spending power) in the area driven by oil activities as well as improving infrastructure and services (such as tarmacked roads and electricity). In Pakwach TC, reasons for in-migration were suggested to be the availability of better facilities (education and health), speculation about job opportunities with oil and gas service providers, and wider business and employment opportunities

associated with farming and agricultural processing. Masindi has experienced in-migration as the main sugar producer in the region, and is likely to continue to experience moderate growth due to development of the region driven by the agricultural, tourism, hospitality, and oil and gas sectors (Various FGDs, ESIA SBS, November to December 2016).

Seasonal Migration

Seasonal migration takes place during the rainy season within Buliisa, particularly between Kigwera and Ngwedo sub-counties. During the rainy season agricultural activities such as land clearing, ploughing and planting usually taking place between February and April. Bagungu women will move from Kigwera and Buliisa sub-counties to Ngwedo sub county temporarily for two to three months where their families own small plots of cultivated land. They will then move back to Ngwedo sub county during harvesting time. In Nwoya District there is also seasonal migration of agricultural workers who come from other parts of Uganda, especially the West Nile region, to work for commercial farming companies such as Amatheon (KII Nwoya, ESIA SBS, December 2016).

Nomadic pastoralists known as Balaalo are present in the Primary Study Area and are hired by Bagungu to take care of their cattle (see Section 0). There are no records of the number of Balaalo in the Study Area, and while some reside permanently in the area, others move into the area on a seasonal basis. Migration of Balaalo is higher during the rainy season as there are better pastures for cattle and they can earn higher salaries in this season (or in-kind payment of milk) (Ref. 16-3). Kabolwa, Kataleba and Waiga in particular experience seasonal migration of Balaalo. (FGD, Buliisa sub county leadership, ESIA SBS, December 2016).

The rainy season is also the key period for fishing activity, between March and June, and temporary migrants travel to the lake shore (landing sites such as Butiaba, Kabolwa, Wanseko) looking for employment opportunities in the fishing sector (Ref. 16-3).

Out Migration

There is limited documented information about out migration, but the 2015 SHBS revealed that there is little outward migration by the native population with people rarely leaving Buliisa District, except women who marry husbands from other districts. Focus group discussions with youth revealed that they do not plan to move out of the district, but if they do have to for economic opportunities they would move to Hoima and Masindi and rarely Kampala. This was confirmed during FGDs in the ESIA SBS.

In Hoima it was reported that some recipients of compensation for land take related to oil activities and other infrastructure development had used the money to resettle in other parts of the district or outside the district (KII, Hoima Community Development Officer, ESIA SBS, November 2016).

16.6.2.3 Ethnic Groups and Language

16.6.2.3.1 Ethnic Groups

The 2014 census records 65 ethnic groups in Uganda. The Baganda are the majority accounting for close to 17% of the population followed by the Banyankole with about 10% (Ref. 16-29).

The majority of the population in Buliisa are part of two main ethnic groups: the Bagungu (who speak Lugungu) and the Alur (who speak Alur)), while in Nwoya the dominant ethnic group is the Acholi. The Bagungu constitute just 0.25% of the total population in Uganda, while the Alur constitute 2.8%. The Acholi are one of the largest ethnic groups constituting 4.4% of the population (Ref. 16-29).

The Bagungu are a Bantu ethnic group that are part of the Bunyoro Kitara Kingdom and are considered the historic inhabitants of the area. The Bagungu are traditionally pastoralists and fishermen and are concentrated in the west of Buliisa District. The Alur are a Luo ethnic group that originate from the Nilotes from the West Nile Region or from DRC. The Luo are found across eastern and central Africa. The Alur are traditionally agriculturalists and settled in areas close to the MFNP where land was suitable for agriculture, and are concentrated in Ngwedo sub county and the north-eastern part of Buliisa sub county. Nwoya District is primarily Acholi, but there are significant populations of Alur in Purongo sub county and Got Apwoyo. The Acholi are a Luo population that

originated from South Sudan. The Acholi are traditionally pastoralists and also engage in crop production (Ref. 16-3).

Although Alur and Bagungu are the dominant ethnic groups, people from most of Uganda's tribes and ethnic groups, as well as other nationalities, can be found in Buliisa district, including Banyoro (speaking Runyoro), Bankyankore (speaking Runyankole), Rwandese (speaking Kinyarwanda), Congolese (mainly speaking French and Swahili), and Lugbara (speaking Lugbara). Vulnerability of minority groups is discussed under Section 16.6.8.4.1.

A small population of nomadic herdsman called Balaalo also live in Buliisa. The Balaalo are made up of different ethnicities including Banyankole, Banyarwanda, Basangora, and Bahema. Some Balaalo have lived in Buliisa for over 30 years while others are recent immigrants. The Balaalo are also present in Masindi, Hoima, Acholi Region, and Nebbi. In Buliisa the Balaalo have regional committees with a chairman, vice chairman, secretary, treasurer and members. The committees are responsible for disciplining members and helping to organise traditional ceremonies such as funerals and weddings. Community consultations, including discussions with Balaalo representatives, suggested that the experience of Balaalo within the Study Area is varied. In some places such as Kibambura village (Ngwedo sub county), they have integrated with the local community – there is intermarriage and their children attend local schools. In other places, however, such as Kigwera sub county, the Balaalo were reported to live in isolation from the rest of the community and are very much seen as subordinate to the dominant Bagungu community (Meetings with Balaalo representatives, Buliisa District, ESIA SBS). Section 16.6.6.3 discusses the issue of past tensions between the Balaalo and Bagungu.

Status of Indigenous and Minority Ethnic Groups

Uganda has not ratified the ILO Convention 169, but is a signatory to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). The Ugandan Constitution's definition of the term 'indigenous' refers to 'indigenous to Uganda', and does not clarify the difference between ethnic minorities and indigenous peoples according to international and regional human rights standards. The Third Schedule of the Constitution, which names the 65 ethnic groups of Uganda, is titled 'Uganda's Indigenous Communities as of 1st February 1926'. These are the ethnic groups that have lived in Uganda since it was declared a British protectorate and its boundaries demarcated. As such, every ethnic group in Uganda is indigenous but not in the context of the IFC PS 7²⁶. While there is no official government policy recognising indigenous people as understood internationally, there is a tendency to recognise some groups as marginalised and vulnerable or as minorities. Article 32 of the 1995 Constitution also places a mandatory duty on the state to take affirmative action in favour of groups who have been historically disadvantaged and discriminated against.

Ethnic minorities are defined as a group numerically inferior to the rest of the population with distinct characteristics. UBOS defines ethnic minorities as '*ethnic groups with a population less than 25,000*'. Nineteen such groups are identified in the 2014 census. Minority groups living within the Study Area include the Babukusu (Masindi), Chope (Paluo) (Masindi), and Lendu (Masindi, Hoima and Nebbi). These groups all live outside the Primary Study Area (outside the direct Project footprint) and so their

²⁶ According to PS 7, there is no universally accepted definition of "Indigenous Peoples." Indigenous Peoples may be referred to in different countries by such terms as "Indigenous ethnic minorities," "aboriginals," "hill tribes," "minority nationalities," "scheduled tribes," "first nations," or "tribal groups." In PS 7, the term "Indigenous Peoples" is used in a generic sense to refer to a distinct social and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
- Customary cultural, economic, social, or political institutions that are separate from those of the mainstream society or culture; or
- A distinct language or dialect, often different from the official language or languages of the country or region in which they reside.

land and resources will not be directly affected by the Project. The Bagungu and Alur are not considered a minority group under the UBOS definition.

In the 18th Annual Report of the Uganda Human Rights Commission (UHRC), indigenous communities are understood to be “*distinct ethnic communities who are the first inhabitants of a geographic region, and the land on which they live as well as the natural resources on which they depend are inextricably linked to their identities, culture, livelihoods, physical and spiritual well-being*” (Ref. 16-32). The difference between ethnic minorities and indigenous communities is therefore indigenous peoples’ ties to their territory of origin or specific livelihood. Minority Rights Group International (MRGI) considers how a groups’ way of life (economic and cultural) and their attachment to land may place them in positions of marginalisation or vulnerability due to clashes with modern development trends (e.g. looking at land as a communal resource clashes with the development trend for individual land rights) (KII, MRGI, ESIA SBS).

The International Work Group for Indigenous Affairs²⁷ identifies five indigenous groups (as understood by international standards) in Uganda:

- the Batwa (living mainly in the southwestern region of Uganda)
- the Karamojong (from the karamoja region in the northeast of Uganda);
- the Ik (living on the edge of the Karamoja/Turkana region along the Uganda-Kenya border);
- the Basangora (living in the lowlands adjacent to Mt. Rwenzori in western Uganda), and;
- the Benet (from Mount Elgon in the east of Uganda).

Other groups in Uganda that have previously been identified by researchers as indigenous include, Barundi, Bayaga, Bagangaizi, Meru, Basese, Mwanngwar, Bakingwe and Banyanyanja.

It is recognised that there are a number of minority and distinct ethnic groups within the Study Area (primary and secondary) that have potential vulnerabilities related to land tenure and use change and to impacts on their access to natural resources. However, based on stakeholder consultation (Appendix G and Appendix R) and review of existing reports (Section 16.13), the classification of any group as Indigenous Peoples in the context of IFC PS 7 was not considered applicable in the local context.

The Bagungu and Alur share many cultural and lifestyle characteristics (see Section 16.6.2.3.1) that share similarities with mainstream (rural) Ugandan society. Most villages in the Study Area are mixed, inter-marriage between the two groups is common, and both groups depend on natural resources for their livelihoods (predominantly fishing, pastoralism and crop farming). Customary tenure is the dominant form of land tenure for both the Bagungu and the Alur, which places them equally at risk in the context of a trend toward formalisation of land titles and increased land transactions within the Project Area (see Section 16.6.7). Within the Bagungu community the power of the clan is to a large extent vested in their control over and management of the communal land system and there are concerns that recent trends towards individualisation of land are therefore diluting the traditional clan structures.

16.6.2.4 Education and Skills Level

Information about education infrastructure provision is provided in Section 16.6.4.1.

16.6.2.4.1 Education and Skills at National Level

School Attendance

According to the 2014 census, about 87% of the boys and girls of primary school going age (6-12 years) were attending school and about 1 in every 10 children of primary school going age had never been to school. Of the total population, 19.3% have never been to school (21% for females and 16%

²⁷ The International Work Group for Indigenous Affairs is a global human rights organisation dedicated to promoting, protecting and defending indigenous peoples’ rights.

for males). The primary school completion rate²⁸ was 62% and in addition 22% of secondary school age (13 - 18) students had already left school (Ref. 16-29 and Ref. 16-33).

The gender parity index (GPI) at primary level for 2015/2016 was one, meaning that for every boy enrolled in primary school there is at least one girl. At secondary level the GPI was 0.9 and for business, vocational education and training education the GPI was 0.84 (Ref. 16-33).

Educational Attainment and Literacy

Educational attainment is an important indicator of the society's stock of human capital and level of socioeconomic development and refers to the highest level of education that an individual has completed. The majority of the working population have only attained primary education, about 4% of the population above 15 years of age has an educational attainment above the secondary school level and only 6.5% of the working population has attained some form of specialised training (Ref. 16-33 and Ref. 16-5). The proportion of the population with tertiary education increased from 3% in 2002 to 4% in 2014. The share of girls who had completed the advanced level of education is lower than the share of boys (Ref. 16-29).

Approximately 72% of the national population aged 10 and above are literate. Literacy rates among females was lower (68%) than for males (77%). Literary rates were also lower in rural areas (68%) than urban (86%) (Ref. 16-29).

Technical Training and Industrial Experience

According to the Second National Development Plan (NDPII; Ref. 16-34), Uganda's labour market continues to face a shortage of requisite skills, with only few people being in possession of some form of tertiary education qualification. The NDPII reports that there was a mismatch between the curriculum at the tertiary institutions and the labour market requirements, which explains the high graduate unemployment rates on Uganda's labour market. The student enrolment in science and technology at both private and public universities is less than 27%, which is below the United Nations Educational, Scientific and Cultural Organisation (UNESCO) minimum of 40% required for a country to economically take-off and participate in the global knowledge based economy (Ref. 16-34).

There were 129,599 students enrolled in business, technical and vocational education and training education²⁹ in 2015/2016, and 345,000 enrolled in university education (Ref. 16-33).

The majority of the working age population (64.7%) is employed in subsistence agriculture. Less than 3% work as machine operators and assemblers (of which 1.5% work as boda boda cyclists) and 7.7% work as service workers. Two percent are technicians and assistant professionals and only 0.5% are considered professionals. The remaining population are classified as clerical support workers (0.4%); market oriented agriculture workers (3.7%); craft workers (4.2%); domestic helpers (3.5%); other elementary occupations (4.8%) and other occupations (5.9%) (Ref. 16-29).

16.6.2.4.2 Education and Skills in the Primary Study Area

Buliisa

Table 16-15 shows key educational characteristics for Buliisa District.

²⁸ Total number of pupils/students who registered for the end of cycle exams regardless of age, expressed as a percentage of the population at the official primary graduation age (12 years).

²⁹ This refers to post-secondary with non-degree programs leading to one, two, or three-year certificates in preparation for middle-level occupations.

Table 16-15: Education Characteristics for Buliisa District by Age Group and Sub county, 2014

Sub county	Current Schooling status (6-12 years)		Highest grade completed (15+ years)				Literacy status (18 + years)	
	Attending School	Not attending	Never been to School	Primary	Secondary and above	Total	Literate	Not Literate
Biiso	3,235	426	1,741	4,444	1,825	8,010	3,855	3,026
Buliisa	2,875	929	2,598	4,410	1,104	8,112	3,076	4,050
Buliisa Town Council	1,304	196	684	1,860	1,073	3,617	1,963	1,228
Butiaba	3,532	870	3,511	7,670	2,448	13,629	6,998	5,119
Kigwera	2,340	428	1,403	3,896	1,550	6,849	3,461	2,502
Kihungya	2,544	394	1,417	3,123	1,297	5,837	2,849	2,102
Ngwedo	3,045	686	2,216	4,763	1,246	8,225	3,635	3,435
District	18,875	3,929	13,570	30,166	10,543	54,279	25,837	21,462

Source: Ref. 16-29

Educational attainment in Buliisa District is low; of the population aged 15 years and above 25% have never been to school, 55% have only achieved primary school completion and 20% have achieved secondary education and above. Fifty five percent of people aged 18 years and above are literate. In Buliisa District 83% of children of primary school going age are attending school (Ref. 16-29).

The number of children enrolled in the first years of primary school is higher than the number attending higher classes, especially the final year P7³⁰. The number of male pupils in primary school is slightly higher than female (52.8% and 47.2%). The difference between number of girls and boys enrolled is not significant, however, until P7 (Ref. 16-35). Recent data for secondary school enrolment rates was not available.

The main reasons for dropping out of school include lack of resources to pay school fees and domestic workload. Another challenge revolves around the economic life of the fishing and nomadic herding communities in the Primary Study Area. Around Lake Albert some families take their children in and out of school to help with fishing; some parents also expect the older children – beyond Primary 3 – to play a full economic role and see a limited (or no) value in education once the child can earn a living fishing or herding. Early marriage and teenage pregnancy constitute additional factors for girls (Ref. 16-3).

The working population in Buliisa District are generally unskilled; however, some of the population report skills in construction, carpentry and in weaving of fishing nets (mostly males); as well as in arts and crafts (mostly women). Men also report skills as lumberjacks, drivers of light and heavy vehicles, hunters, canoe and boat builders, mechanics and welders (Ref. 16-5).

Nwoya

Education characteristics for Nwoya District are given in Table 16-16. Educational attainment in Nwoya District is also low; of the population aged 15 years and above 17% have never been to school, 62% have only achieved primary school completion and 21% have achieved secondary education and above. Sixty two percent of people aged 18 years and above are literate. Eighty five percent of children of primary school going age are attending school.

³⁰ Buliisa District Development Plan 2012-2017 indicates a primary school dropout rate of 46%.

Table 16-16: Education Characteristics for Nwoya District by Age Group and Sub county, 2014

Sub county	Current Schooling status (6-12 years)		Highest grade completed (15+ years)				Literacy status (18 + years)	
	Attending School	Not attending	Never been to School	Primary	Secondary and above	Total	Literate	Not Literate
Alero	7,887	1,681	3,858	12,047	3,809	19,714	10,336	6,538
Anaka Payira	2,201	385	1,014	3,303	988	5,305	2,685	1,862
Koch-Goma	6,842	960	2,746	10,504	3,895	17,145	8,871	5,774
Anaka Town Council	2,730	272	823	3,762	2,080	6,665	4,107	1,631
Purongo	5,586	1,106	2,369	9,986	3,055	15,410	8,017	5,327
District	25,246	4,404	10,810	39,602	13,827	64,239	34,016	21,132

Source: Ref. 16-29

16.6.2.4.3 Education and Training in the Secondary Study Area

Key education characteristics for Hoima District (district level and for Hoima Municipality), Nebbi District (district level and Pakwach TC), and Masindi District (district level and Masindi Municipality) are provided in Table 16-17.

Table 16-17: Education of the Population by Selected Age Groups, Hoima, Nebbi and Masindi, 2014

Area	Current Schooling status (6-12 years)		Highest grade completed (15+ years)				Literacy status (18 + years)	
	Attending School	Not attending	Never been to School	Primary	Secondary and above	Total	Literate	Not Literate
HOIMA								
Hoima District	96,946	17,786	52,433	161,635	79,734	293,802	176,368	82,448
Hoima Municipality								
Bujumbura Division	3,906	297	1,389	5,182	5,761	12,332	9,012	1,781
Busiisi Division	3,417	185	925	5,437	4,287	10,649	7,633	1,707
Kahoorra Division	4,925	161	970	5,557	14,031	20,558	16,967	1,284
Mparo Division	3,937	195	1,076	5,272	6,164	12,512	9,378	1,643
NEBBI								
Nebbi District	67,026	19,023	39,100	118,856	40,081	392,764	101,813	68,281
Pakwach TC	3,991	967	1,867	6,554	3,711	22,733	6,875	3,439
MASINDI								
Masindi District	50,150	7,132	22,455	78,868	48,279	149,602	88,795	42,165
Masindi Municipality								
Kigulya Division	2,393	201	722	3,876	2,030	6,628	4,155	1,687
Karujubu Division	4,163	585	1,499	6,839	3,995	12,333	7,467	3,287
Nyangahya Division	2,500	104	594	3,928	2,528	7,050	4,782	1,436
Central Division	6,554	259	1,490	6,514	13,994	21,998	16,815	2,439

Source: Ref. 16-29

In Hoima District respondents to the household survey undertaken for the Lake Albert Regional Socio-Economic Baseline Assessment in 2013 (Ref. 16-5) reported the main reasons for never having been to school as: disability or illness; the school being too far away; and education not being considered valuable. The main reasons for dropping out of school were reported to be pregnancy (11.5%), lack of money for school fees (61.5%), and grades not being good enough (26.9%) (Ref. 16-5). As well as these reasons, the perception that girls should not be given an education was also given as a reason for school dropout during FGDs with youth as part of the ESIA SBS. Child labour and low value placed on education were also confirmed to be reasons for children skipping school or dropping out in Nebbi District (Meetings with Nebbi District Local Government, ESIA SBS).

16.6.3 Culture, Traditions and Social Dynamics

Information about intangible cultural heritage, including living cultural heritage, traditional governance structures and religious practices is also provided in **Chapter 17: Archaeology and Cultural Heritage**.

16.6.3.1 Religion and Traditional Beliefs

Religion

Catholics are the largest religious denomination in Uganda constituting close to 40% of the population followed by Anglicans with 32% and Muslims with about 14%. Together these denominations account for more than 80% of the population (Ref. 16-29).

Religious affiliations in the Study Area reflect the national profile and include Roman Catholic, Protestant (including the Church of Uganda and Full Gospel Church), and Muslim. Relationships between the different religious groups have been peaceful. Most villages in the Primary Study Area have several churches representing different faiths, although in some villages several different faiths will share the same venue. Otherwise, villagers travel to neighbouring villages that have a church or mosque. Religious buildings were mapped as part of the community mapping undertaken for the 2015 SHBS and ESIA SBS (see Appendix G of this ESIA (Workstream B)).

Traditional Beliefs

Animism and pagan beliefs and customs remain strong among the Bagungu, Alur and Acholi. Among Bagungu, animistic customs are based on the cult of clan ancestors and the beliefs in gods or spirits representing natural elements such as Buswa, the god of lake and water or Kagoro, the god of rain and thunder. Traditionally, the Bagungu have clan totems such as wild animals or cattle. Acholi and Alur beliefs and traditions are also rooted in the worship of ancestors and spirits.

Traditional customs include rituals and ceremonies using sacred sites, which are mostly connected to natural features such as mountains, rocks, rivers, trees, caves. Each village has a sacred site and during consultations with traditional kingdoms and local communities as part of the ESIA SBS, there were reported to be numerous sacred and cultural sites across the Primary and Secondary Study Area. Many of these sites were georeferenced as part of community mapping undertaken during the 2015 SHBS and the ESIA SBS (see Appendix G of this ESIA (Workstream B)). Clan elders are responsible for cultural rituals and knowledge of sacred sites is generally held with the elders. Families also have shrines in their homes, which are used both for the individual and the clan. Further information about traditional beliefs and sacred sites and resources is provided in **Chapter 17: Archaeology and Cultural Heritage**.

The Bagungu bury their relatives around the homestead, three days after the death. Children can be buried anywhere around the house whereas adults from the clan are buried in specific burial places around the homestead. For the Alur, each family buries its dead relatives in its own burial site, close to its homestead. Bodies are usually buried in plain ground without any sign indicating their presence (Ref. 16-3).

Belief in witchcraft is still very common in Uganda including amongst the Bagungu, Alur and Acholi in the Study Area. Most individuals branded and victimised as witches are women, especially older women and widows. Someone branded as a witch can be expelled from their village by the elders. Fear of witchcraft is strong - during community consultations, stakeholders claimed that there had been an increase in witchcraft practices during previous phases of oil activities and expressed

concerns that witchcraft would increase again with the next phase of oil activities (FGD Got Apwoyo and KII Kampala, ESIA SBS, 2016).

16.6.3.2 Customs and Traditions

16.6.3.2.1 Cultural Identity

During community consultations, when speaking about what they consider important to their cultural identity, respondents highlighted the following aspects:

- **Shared beliefs and rituals:** Bagungu, Alur and Acholi practice the same religions (mainly Christianity and Islam) but have unique traditional beliefs, cultural rituals and rites (for example to bring rain when it has been dry or to rid someone of disease), which are passed down within the clan (discussed further under **Chapter 17: Archaeology and Cultural Heritage**);
- **Language:** Language is identified as the main difference between the different ethnic groups in the Study Area. The Bagungu speak Lugungu, Alur and Acholi speak languages of the same name, and Bunyoro speak Runyoro (also known as Nyoro). Lugungu and Runyoro are taught in schools within the Bunyoro sub-region. Bagungu leaders are working to protect and promote the Lugungu language; they have established the Bagungu language board and a Lugungu Language Committee that has published a Lugungu Orthography Guide. Religious institutions are also involved in the promotion of Lugungu language. There is an Acholi Language Manual available online but there is no official Alur orthography;
- **Leadership and kinship:** Bagungu, Alur and Acholi all recognise kinship-based systems where the clan is the basic unit of social organisation. Leadership and authority stems from the King or Chief and is delegated downwards to clan leaders. At the village level all clans recognise and respect the LC1 leadership structure. The LC1 usually comes from the dominant ethnic group in the village and during community consultations it was stated that an Alur, for example, could not be the leader in a Bagungu village;
- **Livelihoods:** The Alur, Bagungu and Acholi cultures are strongly intertwined with their livelihood systems based on fishing, agriculture, pastoralism, hunting, and petty trading or a combination of these;
- **Diet:** Diet was frequently mentioned during discussions about cultural identity, although it was noted that diets are changing today. Bagungu, Alur and Acholi traditionally have similar diets and all eat local foods including cassava, millet, maize, sweet potatoes, beans, matooke (plantain), and fish. Traditionally meals are eaten together in Bagungu families but in Alur families men and women eat separately;
- **Settlement patterns and housing:** Most settlements in the Primary Study Area are scattered but based on clan structures and Bagungu, Alur and Acholi each have distinctive styles of houses (discussed further under Section 16.6.5.2). During stakeholder consultations it was noted that there should be consideration for tradition in the design of houses (e.g. use of local materials like grass thatch) and planning of relocation sites (e.g. consideration of clan affiliations); and
- **Land:** Land in the Study Area has an important historical and cultural meaning and management over access to and control over land shapes the interactions among the different ethnic groups, clans and families in the area. The Primary Study Area is characterised by a customary tenure system. In the predominantly Bagungu areas in western Buliisa land is primarily communally owned and open access to communal grazing land is an important aspect of their pastoralist culture. In the predominantly Alur areas in eastern Buliisa land is primarily individually owned (Ref. 16-6). Land tenure systems are discussed further under Section 16.6.7.

Loss of cultural identity was raised as a concern by some respondents during community consultations and it was suggested that certain aspects of traditional culture are already changing in the Study Area. This was attributed in part to an increase in the number of migrants in the area who are perceived to bring in different values and behaviours such as changes in dressing style (especially for girls) and increase in commercial sex work. Increased presence of migrants is also seen to be leading to an increase in inter-marriage between different ethnic groups, which is 'diluting' traditional clans. The main change, however, is perceived to be due to the changing values attached to land and increasing transition from a communal/ customary land ownership system to individual

ownership, which is impacting traditional livelihoods and affecting the relationships between individuals.

Culture and heritage is promoted in the Bunyoro Sub-Region through weekly cultural talk shows hosted on local radio and occasional sports galas and cultural exhibitions hosted by different clans. In Buliisa District, the Bagungu Heritage and Information Centre (BHIC) was set up to try and promote Bagungu culture and heritage. BHIC has set up a semi-museum, promotes the Lugungu language and Bagungu as an ethnic group, documents the history and culture of the Bagungu, and works with communities on land rights issues (FGDs, Hoima and Buliisa November – December 2016, ESIA SBS).

16.6.3.2.2 Marriage

Customary marriages are most common in the Primary Study Area. In practice, couples do not register their customary marriages. Formal religious or civil marriages are rare. Women are often married at a young age and will move to settle in her husband's clan. Inter-marriage between the Bagungu and Alur is frequent as inter-clan marriage is forbidden. As a result there are lots of Alur women in Bagungu villages, many of whom have come from Nebbi District and DRC. Customary marriages are based on the payment of a dowry or "bride price" which is reported to vary widely from one place to another³¹. Polygamy is common in Buliisa District; when men get additional income they will often seek a new wife. Men can have up to three or four wives. Married couples use traditional mediation mechanisms to solve domestic disputes and if these fail they usually get separated but formal divorce is rare. Separation has become more common over the past decade. If a woman under a customary marriage wants to divorce, she has to pay back the dowry and move back to her home village. Separated women can often find themselves in a vulnerable situation (no income, landless and sometimes rejected by her relatives) (Ref. 16-3).

16.6.3.2.3 Gender Roles

Women in the Primary Study Area are traditionally responsible for domestic tasks, such as collecting water and firewood, child care, children's education, cleaning the compound, taking care of small livestock (goat, sheep, chicken), and producing crops for family consumption. Women living along the Lake Albert shore are mainly involved in fish processing (salting, smoking, drying) and selling. Men are traditionally involved in cash crops (i.e. cotton), livestock keeping, and fishing. Men are traditionally in charge of household finances, and women are dependent on men for access to land. Women are responsible for small expenses including food, household supplies (paraffin, soap, etc.) and clothing. Men have more activities outside the household than women, in particular through socialising with other men at trading centres (e.g. drinking and playing cards). Women's groups represent a good opportunity for women to meet and feel empowered (Ref. 16-3).

Gender dynamics in the Study Area are beginning to change as some women are becoming more economically empowered and slowly beginning to have a bigger say in community decision making. This is partly due to sensitisation work on women's rights, and female focused livelihood support initiatives carried out by CBOs in the area.

Gender aspects of land rights are discussed under Section 16.6.7 and more information about men and women's roles in traditional livelihoods is discussed under 16.6.6.3. Section 16.6.8.4.1 discusses vulnerability of women.

³¹ In Ngwedo Farm, for example, the dowry reportedly generally comprises of 2 to 3 goats (one for the clan, one for the mother of the bride and one for her grand-mother), chickens and cash money up to UGX 500,000 (USD 135). In Beroya, it was reported that the dowry can consist of 4 cows, 12 goats and UGX 1,000,000 in cash (USD 270) (FGDs, SHBS 2015, Ref. 16-4).

16.6.3.3 Community Cohesion

16.6.3.3.1 Social Disorders

Alcohol Consumption

According to the WHO report Global Status on Alcohol and Health 2014, Uganda is the highest consumer of alcohol per capita in the East Africa region. The prevalence of alcohol use disorders is approximately 10% for males and 1.5% for females (the average for the WHO African region is 3.3%) (Ref. 16-36). Most of the alcohol consumed is unregulated, home brewed and illegally sold.

There is no disaggregated data available for alcohol consumption at the local level in the Study Area. However, the 2015 SHBS reports that secondary sources, informal interviews and direct observation confirm that alcohol abuse is a serious issue in the Study Area, especially in villages along the lake shores: landing sites and peri-urbanised areas such as Katanga, Wanseko and Buliisa Town Council. Both men and women consume alcohol but men are more common in public drinking places and it is recognised that men, such as fishermen, are more likely to be heavy drinkers. During the 2016 baseline survey children were also observed drinking alcohol. Factors contributing to alcohol abuse were reported to include poverty, unemployment and boredom, rapid cash flow (for example from fishing activity or casual labour), depression about future prospects, and availability of alcohol at affordable prices.

The consequences of alcohol abuse include (*inter alia*):

- Diseases attributable to alcohol consumption, such as cirrhosis, cardiovascular diseases, birth defect and foetal alcohol syndrome;
- Risk of road traffic accidents (boda boda motorcycles, bicycles, pedestrians and vehicles);
- High risk behaviours, such as unprotected sex with commercial sex workers (risk of HIV/AIDS infection);
- Social disorder (fighting);
- Domestic violence and family disruption (separation and divorce); and
- Lower productivity (for instance in crop fields) and absenteeism from work.

Domestic Violence

Domestic violence is reported to be one of the most common crimes in the Study Area (see Table 16-18 *Crime Cases Reported in the Study Area*), although it is underreported in official figures. Domestic violence is categorised as physical, mental and economic violence.³² The main causes of domestic violence are perceived to be polygamy, infidelity, poverty, early marriage and alcohol abuse. Child and Family Protection Units at district level police stations deal with cases of domestic violence. Cases of domestic violence increase around festive times (attributed in part to the fact that men take all the money at harvest time) (KII Nebbi DLG, ESIA SBS, December 2016).

It was widely reported in primary and secondary sources during the 2015 and 2016 baseline surveys that cash compensations during the exploration phase had a negative impact on families (increased separation, divorce) and contributed to an increase in domestic violence (cases of husbands or male relatives threatening women to get the money that women obtained from compensations of damages in their crop fields).

Commercial Sex

Commercial sex is present in the Study Area, especially in towns such as Hoima, Pakwach, and Masindi and in villages and towns along the lake shores or more populated trading centres. Fish landing sites are well known commercial sex and HIV transmission “hotspots”. Fishing communities,

³² Economic violence is a term used locally to describe a situation where a husband or parent withholds available money or resources for their own uses and fails to provide food or pay school fees for their family

(female and male) sex workers, boda boda drivers and truck drivers are among the most vulnerable groups (see also **Chapter 18: Health and Safety**).

Within the Primary Study Area, commercial sex workers can be native residents but more commonly come from neighbouring districts or DRC. Sex workers within the Study Area range in age from late teens to late fifties though the number of young women engaging in sex work is reported to be increasing. Most women engaged in sex work are separated from their husbands or widows and several entered into sex work out of economic necessity to provide for their children. Recently, however, more women are reported to be entering into sex work simply to earn 'quick money' and it is seen as one of the only options available for low-skilled women to earn an independent income (FGDs with sex workers, ESIA SBS, November-December 2016).

Commercial sex work is generally practiced in particular bars or hotels (sex workers indicated that being in the same place as fellow prostitutes afford them a level of protection). In Pakwach TC, sex workers also find customers along the road, at the truck trailer park and at work sites. Sex workers in Hoima estimated that they can earn a gross income of approximately UGX 150,000 a week but their net income after deducting expenses (including rent for the rooms they use) is closer to UGX 10,000.

Sex workers face stigmatisation within the community and are threatened by physical and sexual violence, theft, and health risks. They report that due to their work police do not treat them fairly when they try to report a crime and their access to justice is limited. In Hoima Town women reported facing discrimination from healthcare workers, however, in Pakwach TC health workers have been sensitised on working with commercial sex workers and women there reported that they had good access to healthcare (FGDs with sex workers, ESIA SBS November – December 2016).

Sex work in the Study Area is widely reported from primary and secondary sources to have increased over recent years, a trend that is attributed to oil activities (increased demand for prostitutes that came from male construction workers during the exploration phase as well as from local men who had more disposable income from casual work and compensation payments).

The main NGO working with sex workers in the Study Area is Alliance of Mayors and Municipal Leaders' Initiative for Community Action on Aids at the Local Level (AMICAAL), who distribute condoms and provide health education on sexually transmitted infections (STIs) and HIV/AIDS. AMICAAL also supports 'reconversion programmes' to help women leave sex work and find alternative livelihoods. Other NGOs mentioned by sex workers are Gods Mercy, YODI and Uganda Women's Trust in Pakwach TC and Bulamu in Hoima town.

Crime

The most commonly reported crimes in the Study Area are petty theft (food from gardens, livestock, boats and fishing equipment); land related disputes (including criminal trespass, damage to crops and property, and threatening violence) and domestic violence. Child labour is also an issue at fish landing sites and in Pakwach TC where children work in petty trade and as casual labourers in fishing and agriculture. There are very few reported cases of rape but this is thought to be due to reluctance of victims to report the crime due to fear of family break-up and intimidation from elders or others in the community. Defilement cases (sex with a minor) are common. Witchcraft is an issue, particular amongst Alur communities and migrants from DRC, with elderly women the most frequent victims. People accused of witchcraft by the community are sometimes beaten up or evicted from the village³³. Crime levels increase around festive periods.

Crime rates are higher in commercial centres and around fish landing sites. Victims of crime are mainly women and girls and perpetrators are generally youth, apart from crimes related to land disputes, which mainly involve older generations and clan elders. Police in the Study Area reported that they have not dealt with cases of targeted violence against ethnic minorities and they do not think any particular ethnic group is more vulnerable to being a victim of crime than other groups (KIIs with police personnel, ESIA SBS, November-December 2016).

³³ In August 2015 media reported that a man in Obira Parish, Purongo Sub county (now part of Got Apwoyo) was killed by people in his village after being accused of witchcraft. See <http://www.monitor.co.ug/News/National/Nwoya-mob-beats-witchcraft-suspect-to-death/688334-2849776-133w0gf/index.html>

Some key crime statistics for the Study Area are provided in Table 16-18. Statistics are only available for crimes recorded under the Ugandan Police Force Annual Crime and Traffic Road Safety Report and therefore do not capture all crimes reported by stakeholders to be common in the Study Area, such as domestic violence.

Table 16-18: Crime Cases Reported in Study Area, 2014

Crime	Buliisa	Nwoya	Nebbi	Hoima	Masindi
Total Cases	457	570	752	999	1,421
Homicide	4	21	16	44	20
Economic	18	7	61	40	40
Sex Related	62	123	91	107	105
Child Related	23	33	25	72	50
Burglary	25	21	57	48	86
Theft	61	43	147	104	208
Robbery	6	29	32	30	33
Assault	59	70	125	114	131
Other crimes	172	199	178	417	702
Terrorism	0	0	0	0	0
Political	0	0	3	0	1
Corruption	9	0	0	0	9
Narcotics	11	10	9	15	12
Other laws	5	13	6	8	24

Source: Ref. 16-37

16.6.3.3.2 Historic Conflict

The conflict between the Lord's Resistance Army (LRA) and the Government of Uganda began in 1987 and lasted for over twenty years. It affected nearly two million civilians. The LRA committed numerous atrocities including the abduction, rape, maiming and killing of civilians, including children. The conflict affected the Acholi region (including Nwoya District), and after 2002 affected other areas such as Bunyoro Sub-Region, which includes Buliisa District. Over 90% of the population in Acholi were displaced. In efforts to protect the civilian population from the LRA the Government of Uganda moved villagers into Internally Displaced Person (IDP) camps, where they spent over a decade. At the conflict's peak in 2005, there were 1.84 million IDPs living in 251 camps across 11 districts of northern Uganda (Ref 16-38). Most of the camps were located in the Kilak, Aswa and Nwoya counties of Gulu district (before Nwoya district was created). The Bunyoro Sub-Region was host to large numbers of refugees and IDPs. The war largely destroyed the Northern region's economic base, agriculture. The LRA was driven out of Northern Uganda in 2005 and there have been no major security incidents since then. The majority of IDPs returned to their villages after 2006.

16.6.3.3.3 Inter-Ethnic Relations

The Bagungu and Alur have a long history of peaceful co-existence as a result of strong kinship ties and intermarriage, as well as mutual dependence (e.g. Bagungu cultivate land in Alur villages). Tensions over land ownership and land use have escalated since the discovery of oil, however, and these often follow ethnic lines. Competition over productive resources has also created tension between Bagungu pastoralists and Alur crop farmers. Sources of tension between pastoralists and crop farmers centre on crop farming areas extending onto grazing land (such as Kasinyi, Uduk I, Kijumbya and Bugana-Kichoke villages), and cattle encroaching onto crops (frequent in rainy season).

There was an outbreak of violence against the Alur in the 1990s over a dispute at Kabolwa landing site, with local residents reporting that a parish chairman tried to evict Alur communities from the area. There have been a few reports of similar attempts at eviction of the Alur by the Bagungu but these were reported to have been stopped by national government on the request of a local MP Fred Lukumu.

In 2007 there was a conflict between the Bagungu and a group of Balaalo herdsmen³⁴ over access to a large stretch of land in Buliisa sub county. Bagungu residents accused the Balaalo of illegal land grabbing³⁵ after the Balaalo arrived in the area with large herds of cattle. The Balaalo, who migrated to Buliisa after they were evicted from government and private ranches in other parts of Uganda between 2003 and 2006, claimed that they had legally purchased the land and it is reported that some had processed land titles for the land they claimed ownership over. These claims were refuted by the Bagungu, who argued that all land in Buliisa was communally owned and ownership was not transferable to non-community members, and therefore could not have been legally sold to Balaalo by anyone acting in their individual capacities (Ref. 16-39). Several violent clashes and numerous injuries and property destruction resulted from the conflict and the Government eventually intervened to order the Balaalo's eviction from the area in 2007. The Government planned to relocate them to Kyankwanzi but the Balaalo challenged this order in court. They were eventually forcibly evicted in December 2010 and moved to various places in Hoima District, West Nile, Nwoya District, Kiryandongo and Masindi Districts. There have been no reported repercussions since; however, discriminatory attitudes, stigmatisation and distrust of Balaalo people persist among local residents and authorities (mainly Bagungu) and Balaalo are often perceived as potential threats to land ownership.

There are historic tensions between the Acholi of Nwoya District and Jonam (Alur) of Nebbi District relating to competing claims over land ownership east of the Albert Nile³⁶. The Albert Nile is the administrative boundary between Nwoya (Acholi) and Nebbi (Jonam) but the Jonam claim that their cultural boundary extends much further east of the Nile and that they have cultural sites on the Acholi side³⁷. The tensions have led to violent skirmishes in the past including around the area where Tangi camp is located. In 2013, for example, people in Got Apwoyo were reportedly threatened with guns and houses and crops were burned (FGD, Got Apwoyo sub county leaders, ESIA SBS, December 2016). Both parties accuse each other of illegal sale of the disputed land and there are reportedly cases of Jonam and Acholi selling the same pieces of land to different buyers. Acquiring and securing land in this area is thus very challenging because land claimants (other than the initial seller) can succeed in getting the transaction cancelled. There have been various attempts to build peace between Jonam and Acholi, addressing political and security aspects of the conflict. These efforts are led by the Acholi paramount chief Rwot David Onen Acana II and the Jonam paramount chief Rwot Marcellino Olarker Ali IV (Ref. 16-3).

16.6.3.3.4 Land Disputes

The majority of disputes within the Study Area (between individuals, families, clans, villages and inter and intra ethnic) relate to land³⁸. While tensions over land existed in the past, the presence of oil companies and consequent hope for compensation payments and/ or royalty benefits is reported to have exacerbated the issue. The higher monetary value of land is increasing a transition from customary land ownership to individually owned land. Robust structures and institutions with the capacity to handle this transition and resolve competing claims between communal ownership rights and individual rights have, to date, not been in place (see Ref. 16-39). There have been cases of a few members of a clan selling off land without consulting other members of the community; land speculators buying land from migrants who, according to locals, do not have the right to sell off their land; local councils giving out land titles for the same piece of land; and speculators exploiting illiterate villagers by changing contracts and claiming to have purchased larger areas of land than was initially

³⁴ The Balaalo accused of land grabbing in this instance came with their own cattle and differ from the Balaalo who have for years been peacefully migrating in and out of Buliisa and working as herders for Bagungu.

³⁵ There were accusations that the Balaalo were trying to gain control of the land to benefit from oil wealth because they were said to be interested only in land where oil wells would possibly be located (Muhereza, 2015).

³⁶ The separation between Jonam and Acholi (both belonging to the Luo group) is embedded in a myth about a fight between two brothers, Labongo and Gipir, described within the 2015 SHBS Report (see Appendix G [Workstream B "Community Profile" p 64] Ref. 16-4)

³⁷ The Albert Nile is seen by the Jonam purely as an administrative boundary between Nwoya and Nebbi Districts. The Jonam claim that they occupied the land east of the Nile until 1910, when they fled the area due to an outbreak of sleeping sickness. The colonial government later gazetted the area as a national park and any remaining Jonam had to vacate. In 1974 the park was degazetted and some Jonam moved back to the area. People had to flee again in 1987 when the area was declared a war zone. In 2007 peace was declared in Northern Uganda and IDPs then started returning to their original home places. Jonam people claim that on returning to the area East of the Nile, Acholi people had occupied what was considered Acholi ancestral land (FGD elders, Pakwach TC, 2016).

³⁸ The issue of land conflict was raised by stakeholders in almost every meeting held during the ESIA SBS.

agreed. Individuals who had migrated away from the district also started returning to reclaim their ancestral lands, also leading to conflicts between the local populations (Multiple FGD and KII, ESIA SBS).

The 2015 SHBS (Ref. 16-3) reports that boundary disputes between villages have particularly arisen in Kigwera Sub-County, Buliisa District, including between:

- Kiyere and several of its neighbours including Kigwera North East, Kichoke and Kirama; Kijangi and Bugana-Kichoke villages in 2014, which resulted in leaders from both villages and the District Physical Planner working to resolve the conflict by providing clearer demarcation of the boundary (borehole);
- Kigwera South West and Kigwera North East, where the sub county tried to intervene to demarcate the boundaries there but reportedly failed because 'the elders were not telling the reality';
- Kirama and three out of four of its neighbouring villages: Kasinyi, Kigwera North East, and Kichoke;
- Kigwera South West and Kigwera North West and Kisansya West due to the pressure on land from a growing population and lack of a clear boundary; and
- Ajigo and Muvule.

Competition over land based resources is also a source of conflict. Formerly land in the Primary Study Area was zoned into fishing villages, grazing areas, settlement areas and farming areas. Boundaries between these traditional land use zones have been changing due to increased population and increased movement of people from lake based to land based livelihoods due to declining fish stocks. The creation of Buliisa Town Council led to a bylaw of not having cattle grazing within a 2 km radius of the town council. As a result, herders were forced to move to farmland areas and this led to conflicts between herders and crop growers.

Conflicts sometimes manifest in a violent way including with use of weapons, trespass and destruction of crops or property, but this is reportedly not very common. Conflicts are mediated through the local sub county leadership structures, Area Land Committees, village LC1s, clan elders and through NGOs such as BIRUDO. Ngwedo sub county leaders reported that they register at least one case a week about a boundary dispute. Sub county governments in Buliisa District have been working on demarcating their boundaries since 2016 and, as of December 2016, the boundaries for Buliisa TC, Kigwera and Ngwedo had been demarcated (Various meetings, ESIA SBS, 2016).

16.6.3.3.5 Family Conflict

Various forms of family conflict within the Study Area were mentioned during community consultations. Most conflicts are related to land but poverty, alcoholism, early marriage, polygamy and in-migration are also seen as contributing factors to domestic violence and marriage breakdown.

Domestic violence was reported to be one of the biggest crimes in Buliisa District although this is not reflected in official crime statistics (KII, Buliisa Police Headquarters, ESIA SBS). It was widely reported that during the exploration phase, there were several family conflicts and increases in domestic violence in the Study Area centred on compensation payments. During the consultations, there were reports that, for example, when men as the registered land owners received compensation payments, they abandoned their wives and families or else took the money and spent it on alcohol. If women were paid the compensation, there were reports that some men used violence to force their wives to give them the money. In Buliisa District, cases were reported of problems between uncles and their nephews and nieces, with uncles trying to prevent their nephews and nieces from having access to land from their mother's village.

16.6.3.3.6 Integration of Migrants

Although most respondents during community consultations for the ESIA SBS stated there were no problems between migrants and original inhabitants in the Study Area, some prejudice was detectable in the way that more recent migrants (Congolese and Balaalo in particular) were referred to. Migrants were perceived to be contributing to environmental degradation particularly of forests and wetlands;

having inferior hygiene and sanitation practices; bringing in “bad behaviour” (such as prostitution and different dress styles); and they were accused of not respecting cultural sites. Congolese migrants were also perceived to be responsible for depleting fish stocks in the lake and were frequently accused of trying to “disguise” themselves as Ugandan and claiming ownership of land they had occupied for several years, and “sneaking their families in” (Various FGDs in Study Area, ESIA SBS 2016).

16.6.4 Social Infrastructure and Services

This section outlines the social infrastructure and services that exist in the Study Area and will discuss: education, water, sanitation and waste, transport, energy, communication, recreational facilities, and law enforcement infrastructure. Health facilities are discussed in **Chapter 18: Health and Safety**.

Community mapping was undertaken as part of Artelia’s 2015 Social Baseline Survey, and supplemented as part of the ESIA SBS³⁹. The maps show the social infrastructure and resources available within villages in the Primary Study Area. The maps are shown in Appendix G of this ESIA (SHBS, Workstream B).

16.6.4.1 Education Facilities

16.6.4.1.1 Policy and National Strategy Framework

The Ministry for Education and Sports (MoES) is responsible for overall policy and strategy for education in Uganda. The Ministry comprises of 11 departments headed by the Permanent Secretary, Directors and Commissioners. These Departments under four Directorates are Directorate of Basic and Secondary Education, Directorate of Higher, Technical, Vocational Education and Training, Directorate of Education Standards and the Directorate of Industrial Training. There are also affiliated institutions such as Education Service Commission, Uganda National Examination Board (UNEB), and other examination bodies including Uganda Business and Technical Examination Board, Uganda Allied Health Examination Board, Uganda Nurses and Midwives Examination Board, National Council for Higher Education (NCHE), National Curriculum Development Centre (NCDC), National Council of Sports, and Uganda National Commission for UNESCO (UNATCOM) etc. The sector is run on a principle of promoting Public Private Partnerships at all levels and the Private sector has played significant roles in provision of Education services especially at the post primary and tertiary education levels. (Ref 16-40). District governments are responsible for education delivery at the district level.

According to the MoES, 58% of GDP is spent on education, with only 2% spent on primary education (Ref. 16-33). However, at the local level, primary school education is the primary focus of local expenditure for the districts of Buliisa and Nwoya, accounting for 27% and 36% of districts budgets, respectively (Ref. 16-3). Despite education being identified as a primary target for district level budgets, the standards of education are reported to be below the national standards. Key education statistics for Buliisa and Nwoya Districts are provided in Table 16-19.

Table 16-19: Pupil and Classroom pupil ratios in the Study Area, 2015

	National (2015)	Buliisa	Nwoya	Hoima	Nebbi	Masindi
Primary						
Pupil teacher ratio	43	52	54	37	62	36
Pupil classroom ratio	63	87	62	47	104	63
Secondary						
Pupil teacher ratio	22	22	21	26	22	23
Pupil classroom ratio	52	62	37	57	49	47

³⁹ ESIA team undertook mapping of four of the villages (Kisiimo Cell, Kakindo, Kityanga and Kizongi) within the Primary Study Area that had not been included in the previous community mapping exercises undertaken by Artelia in 2013 and 2015.

Source: Ref. 16-29

Education services within the Primary Study Area are hindered by inadequate educational infrastructure and poor quality⁴⁰ and numbers of teachers. Pupil Teacher Ratio for primary schools in the Buliisa District improved between 2002 and 2010, decreasing from 57:1 to 52:1, a figure higher than the 2015 national average (43:1). In Nwoya, the Primary School Pupil Teacher Ratio is also higher than the average in Buliisa and at the national level, at 54:1.

School enrolment in the Buliisa and Nwoya districts has increased with the approval and passing of the national Universal Primary Education (UPE) Policy and the Universal Secondary Education (USE) Policy; however, increased enrolment rates has increased pressure on limited educational services and infrastructure within the districts. Whilst funding from the government and donor partners (World Bank and African Development Bank) was divested on expanding and improving classrooms, training teachers and institutional materials, limited focus was placed on the systems and institutions delivering the service. A study conducted by the Overseas Development Institute⁴¹ suggested District Education Offices were weakly facilitated and their staff were poorly motivated. Therefore, districts have largely been unable to perform their function of supervision and inspection of schools. The lack of attention to district level management has likely contributed to local inequities in service provision, and poor motivation of teachers. Furthermore the cost and management implications of reforms to the curriculum have not been rigorously considered.

Residents in and around the Project Area have stated that access to school and transport costs make school attendance difficult and unaffordable for many families, with schools typically between 2-8 km away and the only means of access being on foot, by bicycle or by vehicle (a one-way bus ticket costs approximately UGX 4,000) (Ref. 16-29).

According to the 2015 SHBS (Ref. 16-3) there are reportedly 44 primary schools in Nwoya District, eight of which are located in Purongo sub county, and 54 primary schools in Buliisa District. Nwoya District has three secondary schools and Buliisa has five secondary schools. Children within the Primary Study Area in Nwoya district usually attend one of two primary schools in Got Apwoyo or Pakwach; however given the distance some children have to travel, they do not attend school on a regular basis (Ref. 16-3).

There are no Business, Technical and Vocational Education and Training (BTVET) institutions in Buliisa District; however NGOs are implementing programs supporting the development and delivery of vocational training. There are six BTVET in Gulu, Masindi and Hoima districts which students can attend. In Nwoya District, there are two BTVETs, one in Anaka and one in Purongo. In order to attend university or technical college, students from the Primary Study Area have to travel to larger urban areas such as Gulu and Kampala. Figure 16-17 presents a map of the educational infrastructure and services in the Primary Study Area.

⁴⁰ At the national level only 4.5% of primary school teachers are licensed (Ref. 16-29)

⁴¹ Overseas Development Institute (2010) *Sector Budget Support in Practice. Case Study: Education Sector in Uganda.* <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/6077.pdf>

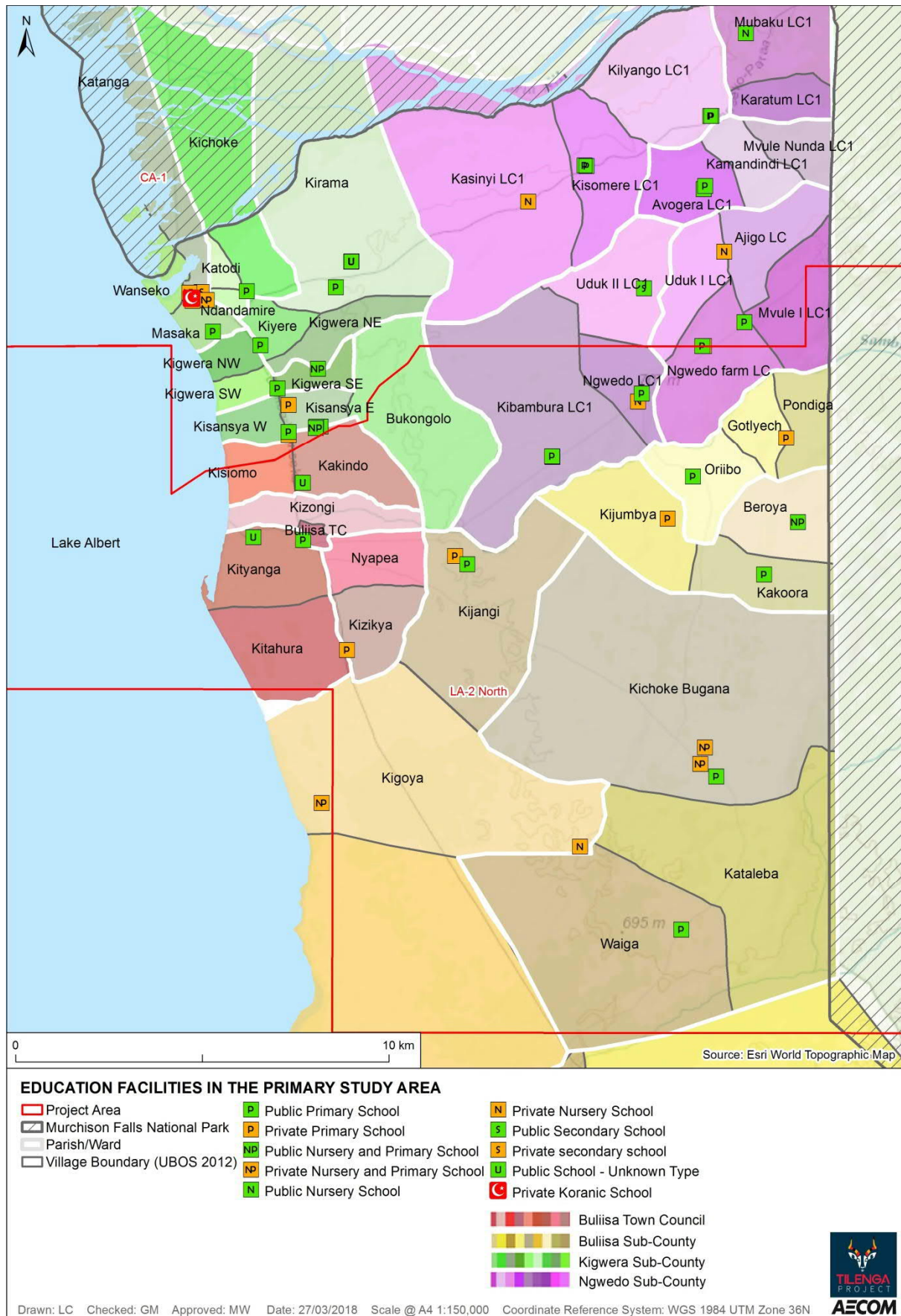


Figure 16-17: Education Infrastructure in the Primary Study Area

A number of NGOs and international organisations currently provide educational support in Uganda and the districts of Nwoya and Buliisa. The World Bank Group is currently supporting the Albertine Region Sustainable Development Project in Uganda, to improve regional and local access to infrastructure, markets, and skills development in the Albertine region. The 2015 SHBS describes this project:

“One of the three components⁴² of this project focuses on skills access and upgrading (USD 25 million through the International Development Association; and USD 2 million financed by the Government of Uganda); it is designed to upgrade business, technical and vocational education, and training (BTVET) quality in the oil and gas sector, make it more in line with private sector demands, and provide greater access to the BTVET system to people living in the Albertine region.” (Ref. 16-3). This component will finance the upgrading of selected institutes which support the objectives of the skilling Uganda strategy, including Uganda Petroleum Institute in Kigumba (UPIK) and Uganda Technical College of Kichwamba (UTC) and a new third institute in Nwoya district, including, inter alia, physical infrastructure, goods, curricula development, and instructor training. (Ref. 16-41)

Other organisations investing in the educational sector include UNICEF, World Vision Uganda, Soft Power Education, Link Community Development, Build Africa; Living Earth Uganda; TEP Uganda and TUOP. These organisations have built schools; provided scholarships for students; provided funding for educational programmes; provided intensive training and promoted local enterprises (Ref. 16-3).

16.6.4.2 Water

Access to improved water sources⁴³ is steadily increasing in Uganda; 72.8% of the population had access to improved water sources in 2012 compared to 68% in 2010. Urban areas generally have better access to safe water than rural areas. In 2015, the national access rate to safe water supplies in urban areas was 73% compared to 65% in rural areas. Additionally, the average functionality of urban water supply was 92% in 2015, whereas in rural areas, average functionality of urban water supply was 88% (Ref. 16-42).

Although urban areas tend to have better access to safe water sources, the functionality of rural water supply in Uganda has improved over the last two years, increasing from 84% in June 2013 to 88% in June 2015 (Ref. 16-42). These improvements can be attributed to continued investments into rehabilitating water facilities as well as increasing District Water and Sanitation Conditional Development Grant budgets for water rehabilitation, which have gone up three times in the last two years (Ref. 16-42).

Local governments (Districts and Town Councils) are legally in charge of water service delivery under the Decentralisation Act. The National Water and Sewerage Corporation (NWSC) is a parastatal that operates and provides water and sewerage services in 66 large urban centres across the country including Kampala. The Ministry of Health (MoH) is responsible for hygiene and sanitation promotion for households through the Environmental Health Division (EHD) and the Ministry of Education and Sports (MoES) is responsible for hygiene education and provision of sanitation facilities in primary schools (Ref. 16-42).

The Uganda Water and Sanitation NGO Network (UWASNET) is a national network organisation established in 2000 to strengthen the contribution of NGOs/CBOs in achieving the Water and Sanitation Sector goals. By June 2014, the Network had a membership of 235 NGOs and CBOs. There is a strategic framework for cooperation between local Governments and NGOs for water and sanitation. It guides Local Governments and NGOs on how to jointly plan and implement community

⁴² The first component, regional access and connectivity, aims to improve overall accessibility to the Albertine region, reduce travel times, and improve access to markets and services; the second component, local access, planning, and development aims to increase rural accessibility to markets and services, prepare selected key urban centres for growth, and provide economic infrastructure targeted to key sectors in the region.

⁴³ Under the Water and Environment Sector Performance Report (2015), improved water sources refer to: protected spring; shallow well; deep borehole; kiosk; rainwater harvesting tanks; house connection; and institutional connection. The calculation of access to one of these sources is based on an assumed standard number of people served for each type of water source. This number is then multiplied by the total number of that source type existing in a particular area to get the total number of people served in that area. The access rate is the ratio of the total number of served people from the total population. In the access calculation, “Functional”, “Functional (not-in-use)” and “Non-Functional” sources are considered. Decommissioned sources are not considered. Sources with a downtime of over 5 years are also not counted. (Ref 16-42)

mobilisation/software activities with respect to water supply and sanitation. It also provides guidance to districts on how to procure NGOs to undertake software activities (Ref. 16-42).

Within the Study Area, NGOs active in implementing programmes to improve access to clean water and sanitation include Uganda Red Cross Society, World Vision Uganda, International Water Stewardship Programme (multi-donor), USAID, UNICEF, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and JICA have constructed water points (boreholes, shallow wells) and trained community members to maintain the boreholes.

16.6.4.2.1 Access to Water in the Primary Study Area

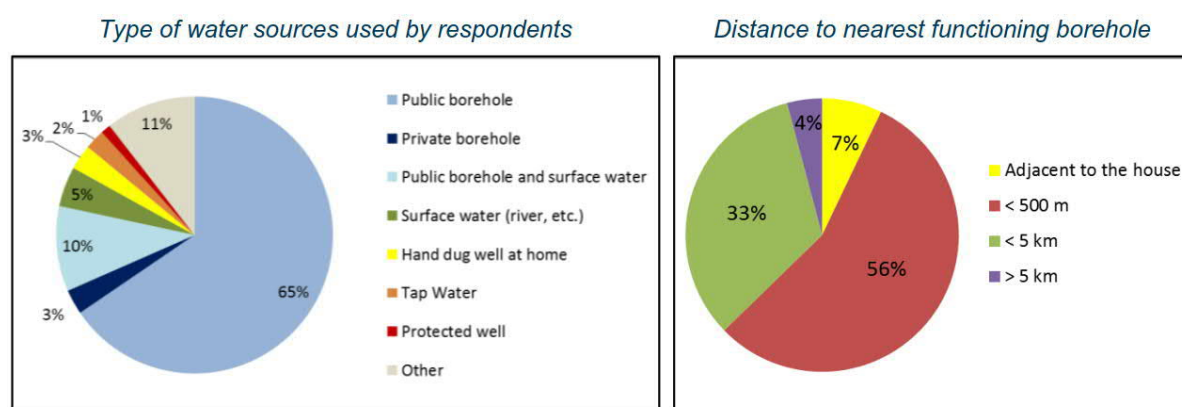
Increasing access to safe water and sanitation is a key priority across all district five year development plans. Expenditure on water accounted for approximately 7% and 10% of the Buliisa and Nwoya District budgets, respectively for 2014/2015.

The average water use within the Study Area was reported to be 13 litres a day, a figure significantly lower than the recommended amount set by the WHO at 50 to 100 litres per day. Boiling contaminated water is not an option given the shortage and high cost of firewood (Ref. 16-8).

The 2015 SHBS found that access to water and sanitation is unequally distributed throughout the Primary Study Area, which is attributed to a lack of coordination between different actors responsible for building this infrastructure. The 2015/16 – 2019/20 Buliisa District Five Year Development Plan reports the district average safe water coverage⁴⁴ at 62%. Buliisa and Kigwera sub-counties had very low coverage of less than 50%, while Buliisa TC had above average at 73%. Ngwedo sub county was close to the average at 60% (Ref. 16-35).

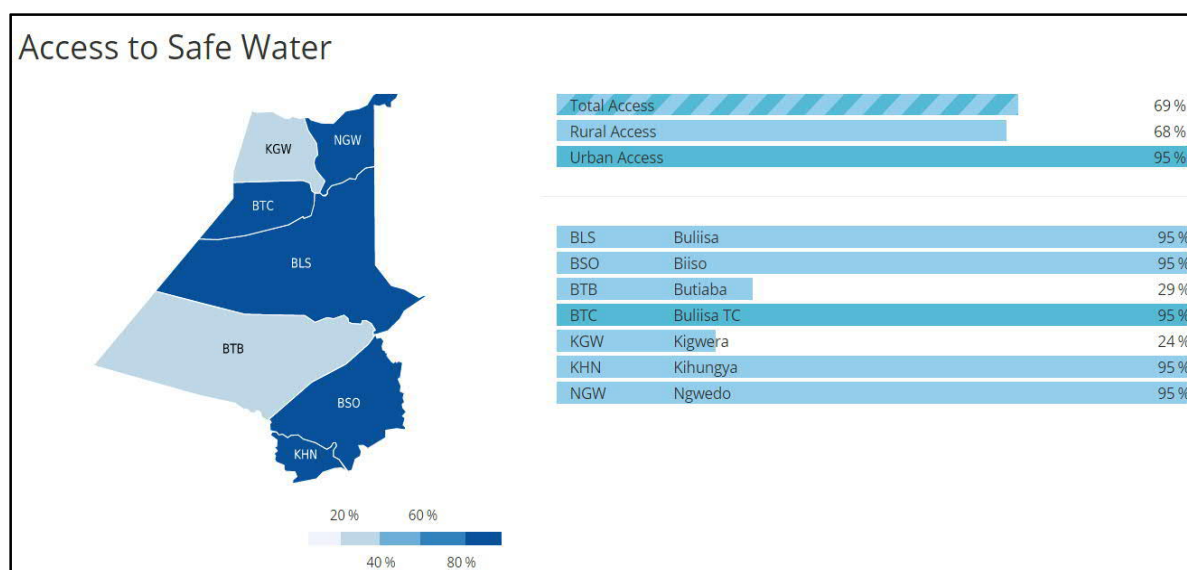
The 2010/11 – 2014/15 Nwoya District Five Year Development Plan estimated that in Nwoya District approximately 44% of the population have access to safe water with the highest concentration of water points in areas where IDP camps had been located.

Access to safe water for Buliisa and Nwoya districts is represented in Figure 16-18 and Figure 16-19. These figures are based on data from Ministry for Water and Environment Water Supply Atlas (Ref. 16-43) (accessed in March 2017) and show figures higher than those reported in the district development plans, suggesting there has been some improvement in access to water in the years since the DDPs were developed.



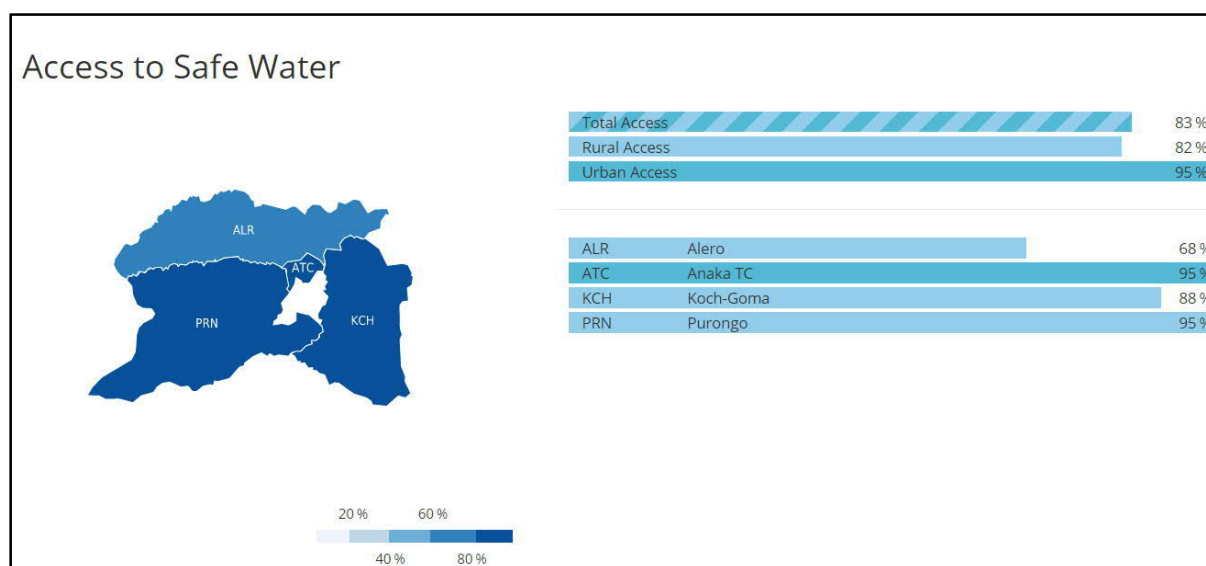
Source: Artelia, 2015

⁴⁴ The MWE categorises water sources into two i.e. the safe water sources and the non-safe water sources. The safe water sources are ideal for human consumption. According to the MWE, the safe water sources include: Boreholes, protected springs, shallow wells fitted with hand pumps, rainwater harvesting (RWH) facilities (storage >6m³) and piped water supplies. The MWE also stipulates the number of users per source: Protected springs – 200; shallow well with hand pump – 300; deep borehole with hand pump – 300; gravity flow scheme communal tap or other piped water communal tap – 150. The Coverage for RWH depends on the volume of the tank (Ref. 16-42).



Source: Ref. 16-43

Figure 16-18: Access to Safe Water Buliisa District



Source: Ref. 16-43

Figure 16-19: Access to Safe Water Nwoya District

Water sources used by communities include swamps, streams/ rivers, springs, and Lake Albert, hand-dug wells, hand pumped community boreholes, and public water taps (Figure 16-20). Only 2% of respondents in the 2015 SHBS Household Survey had access to tap water, while the majority (65%) use public boreholes. Hand pumped community boreholes are built by the local district government, UWA, or NGOs (e.g. Uganda Red Cross), and some boreholes have been built by oil companies. Swamps and some streams/ rivers (e.g. Victoria Nile, Zolya, Sambiye, Waiga) are seasonal so water is only available during the rainy season. Hand dug wells are normally built during the dry season and close to river banks, ponds or swamps but the water can be of poor quality (unclear, salty and with residues). Some households report using unprotected springs or wells, which usually have reduced quality water, consumption of which is likely to result in sickness.



Figure 16-20: Types of Water Points Available in the Primary Study Area

According to the Uganda Water Supply Atlas (accessed in 2017), Buliisa District currently has 437 domestic water points (including both functioning and non-functioning). Of these, 104 water points have been non-functioning for over five years and are considered abandoned (Ref. 16-43).

Figure 16-21 shows a map of the different water sources identified in the Study Area during the 2015 SHBS. The water sources used for drinking water for animals, such as cattle, is discussed in **Chapter 19: Ecosystem Services**.

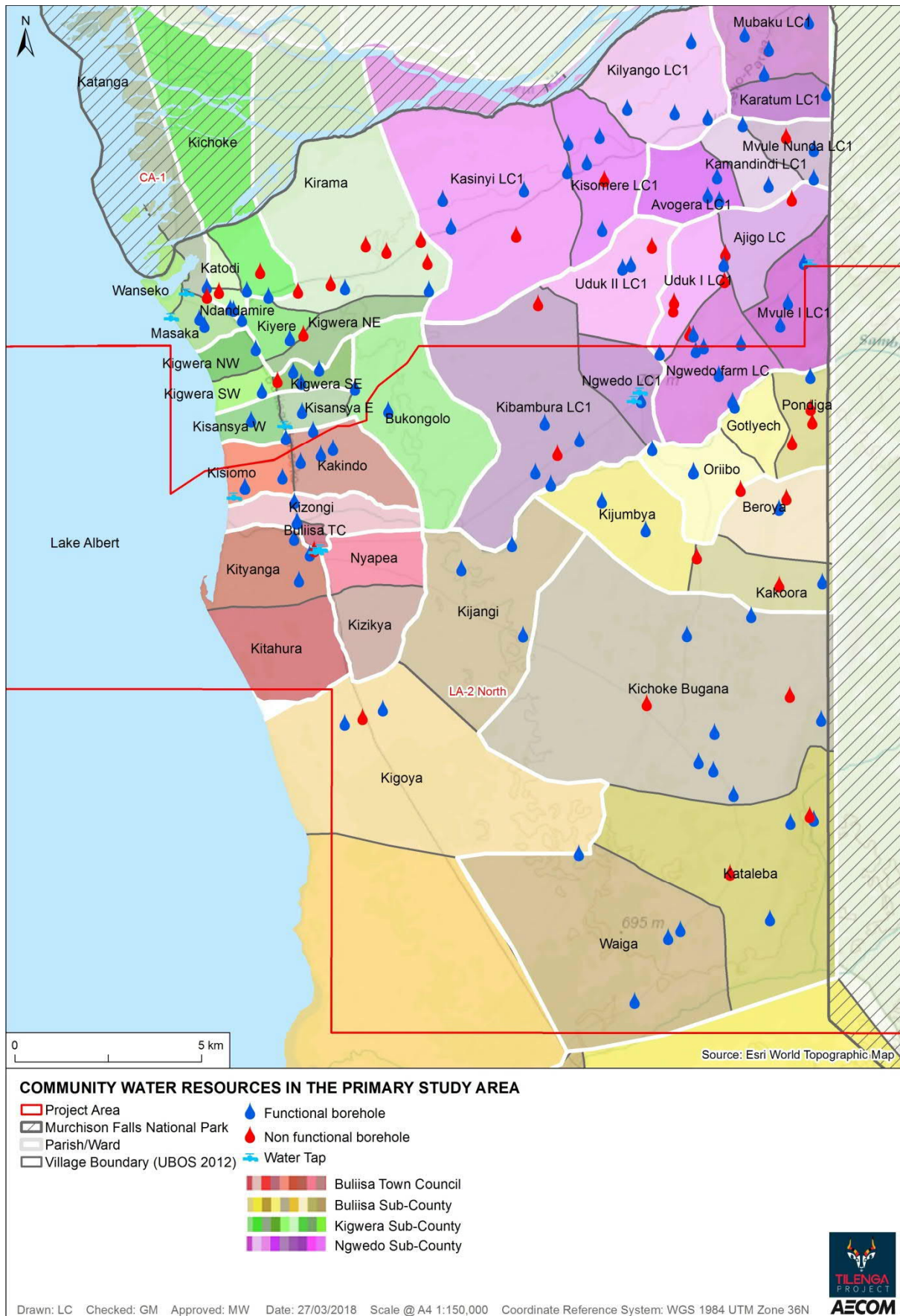


Figure 16-21: Community Water Sources

Table 16-20 shows the number of safe water sources in Buliisa District by sub county and type. The table shows that boreholes were the most common safe water source, representing about 53% of all the safe water sources in the district. Buliisa sub county had only 19 functional boreholes: it didn't have any other type of water source. Protected springs/wells were in Biso, Kihungya and Ngwedo sub-counties.

Table 16-20: Number of Safe Water Sources by Sub county and Type, Buliisa District, 2016

Sub county	Public Stand Taps	Protected Wells / Springs	Boreholes	Public Water Tanks	Total
Biso	20	17	36	1	74
Buliisa	0	0	19	0	19
Buliisa Town Council	11	0	9	0	20
Butiaba	18	0	4	0	22
Kigwera	6	0	9	0	15
Kihungya	4	19	30	0	53
Ngwedo	16	4	24	1	45
Total	75	40	131	2	248
Percentages	30.2	16.1	52.8	0.8	100

Source: Ref. 16-35

On average, there are 2-3 boreholes per village although several villages do not have functioning boreholes due to a lack of funds or local organisational capacity, or boreholes dry up during the dry season. According to the 2015 SHBS Household Survey (Ref. 16-3), up to 40% of boreholes are not functional. As a result women and children who collect water are sometimes required to walk long distances and queue for hours to access potable water. Approximately 56% of respondents to the 2015 SHBS Household Survey (Ref. 16-3) are within less than 500 m from an operating borehole, while 33% have to travel a long distance (up to 5 km) to reach the nearest borehole. The distances travelled to reach water sources increases during the dry season when boreholes dry up.

Community boreholes are managed by a Water User Committees (WUC). The WUC is composed of local community members who manage the fund they collect on a monthly basis to maintain and repair the borehole. Residents of the community accessing the boreholes are required to pay a monthly fee between UGX 1,000 to 2,000.

Table 16-21 shows that Buliisa District had 71 safe water sources with functional WUC in 2014. Buliisa sub county had the highest percentage (52.6%) of water sources with WUC, followed by Ngwedo sub county at 31.1% while Butiaba sub county had the least percentage of 18.2. All the functional water user committees comprised of both men and women (Ref. 16-35).

Table 16-21: Safe Water Sources and Water User Committees, Buliisa District, 2016

Sub County	Total No of Safe Water Sources	Water Sources with WUC	% of Water Sources with WUC
Biso	74	19	25.7
Buliisa	19	10	52.6
Buliisa TC	20	6	30.0
Butiaba	22	4	18.2
Kigwera	15	4	26.7
Kihungya	53	14	26.4
Ngwedo	45	14	31.1
Total	248	71	28.6

Source: Ref. 16-35

Water can also be bought from outdoor taps. The 2015 SHBS reports that in 2015 the cost of one jerry can was UGX 100, however, during the ESIA SBS the price was reported to have risen to up to UGX 200 per jerry can. Public water taps are only available in major trading centres, such as

Wanseko, Masaka, Buliisa TC or Ngwedo. Within the Primary Study Area the piped water system is limited to parts of Buliisa District, where two groundwater based pumped piped water supply systems serve approximately 20 % of the population having access to safe water, while 80 % of the served population use point water sources (Ref. 16-3).

16.6.4.2.2 Access to Water in the Secondary Study Area

Hoima District has a 59% access rate to safe water sources; however, this differs depending on sub-counties: Kyangwali sub county for example only has 33% access to safe water while Kyabigambire sub county has 95%. Access to safe water in Hoima Municipality is 26% of which 85% of water sources are functional. Hoima has 1,788 domestic water points which serve 376,351 people, of which 91% live in rural areas. The main water sources within the municipality are deep boreholes and connection to piped water. Other sources include tap stands, shallow wells and rainwater harvesting tanks (Ref. 16-42). Hoima District has nine piped water supply systems. One of the key Municipal Goals under Hoima's Five Year Development Plan (2010 – 2015) was to improve public infrastructure and quality of life of the population of Hoima Municipality by improving, among other things, access to clean and reliable water sources, to ensure robust wastewater treatment and to treat environmentally-sensitive storm water (Ref. 16-44).

Nebbi District has a total of 71% access to safe water, with access to safe water being higher in rural areas than urban (72% vs. 66%) Of all the sub-counties in Nebbi District, Pakwach Town Council has the highest population density but has the lowest access to safe water at only 21%, of which 73% are functional. Water sources include deep boreholes, rain water harvesting tanks, tap stands, and piped water (Ref. 16-42). The National Water and Sewerage Company is currently undertaking water mains extension projects across Nebbi District and is also investing in water supply stabilisation projects.

In Masindi District, 72% of the population have access to safe water supply. Access within Masindi Municipality is far lower, however, at only 26% of which 95% of water sources are functional. The main types of water sources in Masindi Municipality are shallow wells, protected springs and piped water. There are five piped water supply systems that serve the busier settlements of Masindi Town, and Kabango, Kyatiri, Bikonzi and Bwijanga (Ref. 16-42).

16.6.4.3 Sanitation and Waste

In 2014/15, access to sanitation in Uganda was 77%. Although Uganda as a whole achieved the 2015 national sanitation target, only 64 districts (58%) achieved the national target of 77% (Ref. 16-42).

As of June 2015, the access to sanitation in urban areas is estimated at 84% while access to rural sanitation was 77% (Ref. 16-42). Although 77% of the rural population in Uganda is reported to have access to improved sanitation, most of these toilets do not meet the standards of the WHO/UNICEF Joint Monitoring Program (JMP), which estimates that only 35% of rural Uganda has access to improved sanitation (defined as not shared, cleanable, sealable and durable) with an estimated 10% still practicing open defecation (Ref. 16-42).

The national average pit latrine coverage is 74.6% and at national level hand washing facilities were accessed by on average 32.7% of the population (Ref. 16-43).

The Uganda Sanitation Fund (USF) provides financial support to the development and utilisation of sanitation and hygiene facilities in Uganda. The USF is a 5-year programme funded by the Water Supply and Sanitation Collaborative Council managed by United Nations Office for Project Services, and is being overseen by the Environmental Health Division of the Ministry of Health with support from the Ministry of Finance, Planning and Economic Development. Of the project-affected districts, the USF currently only operates in Nebbi District, but there are plans to extend it in 2017 to include 8 new districts, including Buliisa and Hoima (KII Ministry of Health, ESIA SBS, November 2016).

The most commonly used method of household solid waste disposal in Uganda is garden (44%) followed by burning (23%). Other methods are use of a local urban supervised facility (7%), local dump not local urban supervised (11%), waste vendor (3%), lake/river/pond (1%), and others (4%). (Ref. 16-42).

16.6.4.3.1 Sanitation and Waste in the Primary Study Area

According to the 2014 Census, 22% of households in Buliisa District and 14% of households in Nwoya District had access to an improved toilet facility⁴⁵ in 2014 (Ref. 16-29). Figure 16-22 shows percentage access to improved toilet facilities in the districts within the Primary and Secondary Study Areas.

Latrines have been built in most villages but overall latrine coverage is low in Buliisa and Nwoya districts, increasing the risk of water borne diseases such as cholera. The poorest sanitation conditions are found along the shores of Lake Albert and around landing sites. Schools and health facilities also usually lack sufficient sanitary facilities. There is no central waste management in the districts.

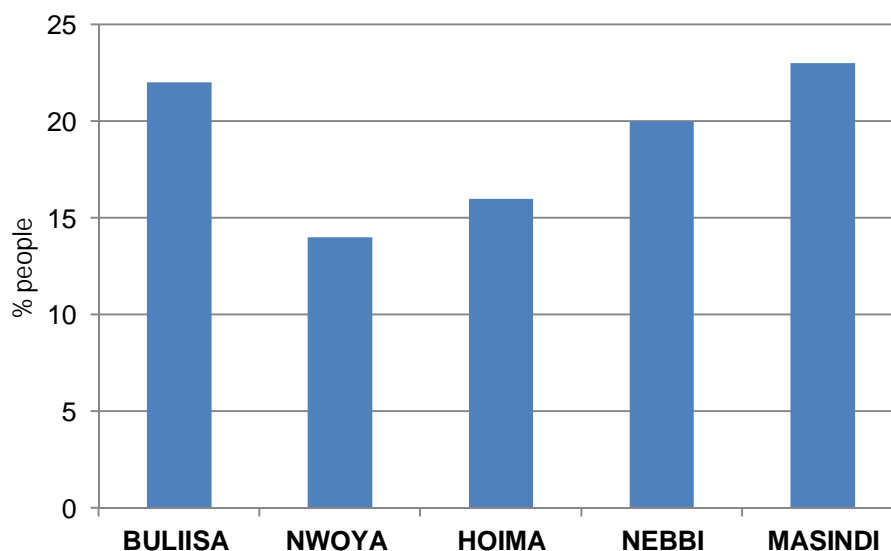


Figure 16-22: Access to improved toilet facilities (%)

The soil texture in most areas in Buliisa District does not allow for the construction of durable and long lasting pit latrines, with most latrines collapsing within a short period of time (Buliisa DLG, 2015). An additional problem is that there remains a negative cultural belief and practice towards the use of latrine, which further hinders sanitation levels. The Buliisa DDP (2015-2100) (Ref. 16-35) describes the aim to construct pit and ventilated improved pit (VIP) latrines in areas with the lowest sanitation levels and aims to increase the construction of latrines in primary schools.

Distribution of the main types of latrine used in the Primary Study Area are shown in Figure 16.23. Households covered in the 2015 SHBS Household Survey (Ref. 16-3) reported that the primary type of latrine used is a covered pit latrine (49%) followed by open pit latrine (23%). Only 2% of households reported a permanent latrine and as many as 20% of households practice open defecation in the bush. Figure 16-24 illustrates typical pit latrines found in the Study Area.

⁴⁵ An improved toilet facility includes flush toilet, ventilated improved pit (VIP) latrine, covered pit latrine with a slab, compost toilet that is not shared with other households.

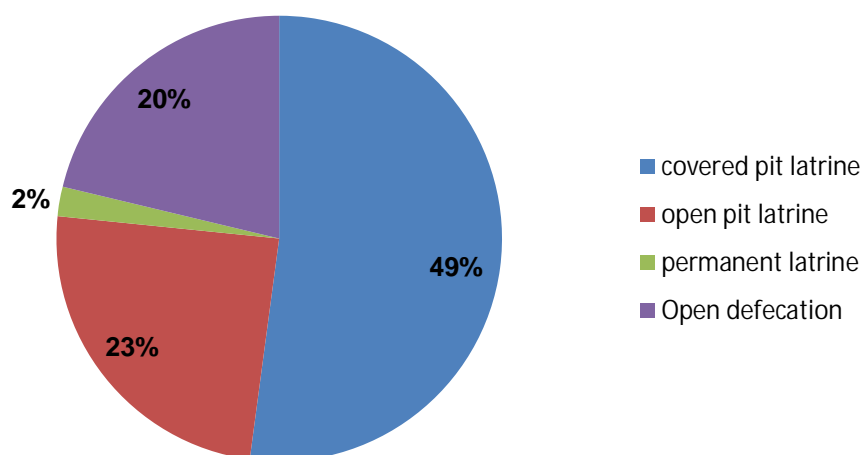


Figure 16-23: Types of latrines used in Primary Study Area

Most households manage their waste through open disposal followed by rubbish pit. Only 3% of households burn their waste and a few feed it to animals. In Buliisa District, 1% of households report dumping waste in waterways (river or stream). There are free and fee-charging waste disposal sites available.



Figure 16-24: Covered Pit Latrines

16.6.4.3.2 Sanitation and Waste in the Secondary Study Area

In Hoima District 16% of households have access to an improved toilet facility (Ref. 16-29). Most (82 %) people surveyed for the 2014 Hoima Municipality Situation Analysis report (Ref. 16-23) used ordinary pit latrines, with 14% VIP Latrines, and 4% use flushing to septic tank for disposal. There is reported to be poor sanitation awareness, for example, lack of hand washing facilities, open defaecation, unsafe cooking practices, and poor access to potable water of WHO standards (Ref. 16-23). In Hoima District there is a small and under-developed solid waste management system. There is no sorting of wastes and the town council relies on open dumping of all wastes generated in the Town, including Medical wastes. This issue is made worse due to a lack of understanding and poor attitude towards using designated points and facilities for solid waste management and sanitation. There is a sewerage treatment plant along Kampala- Hoima-Tonya-Kasio road in western ward; however, the sewerage system is not sufficiently maintained which results in leaks contaminating the water (Ref. 16-23).

The percentage of households with access to an improved toilet facility in Nebbi District is 20% (Ref. 16-29). Percentage of households with latrines increased from 74% in 2010/2011 to 77.6 in 2014/2015⁴⁶ (Ref. 16-45). Low sanitation coverage is identified as a key population issue in the Nebbi District Five Year DDP (2015-2020) (Ref. 16-45) and the district government has identified measures to try and address this including undertaking a sanitation baseline survey and community sensitisation programmes. Pakwach Town Council has a solid waste disposal site. However, the local community insufficiently uses the disposal site, which is predominantly due to poor attitude and a lack of understanding about safe and proper use of solid waste management facilities (Ref. 16-46). For instance, despite the existence of waste bins, people still dump wastes on the ground rather than in the facilities provided for them by the Urban Councils/Authorities. During a meeting with Pakwach TC leadership in December 2016 respondents reported that increased population within the town council leads to larger volumes of domestic waste but that efforts are being made to address this by implementing door to door garbage collection. The town council reported that it is also planning on establishing sanitary facilities in public places.

In Masindi District, 23% of households have access to an improved toilet facility (Ref. 16-29). Latrine coverage was 78% while hand washing facilities were accessed by 33.6% of the population. Latrine coverage in Masindi Municipality averages 77.5%. Details about waste management practices for Masindi District are not available, however, poor solid waste management practices particularly in urban areas was identified as a key challenge for Masindi District in the District Development Plan, 2015 (Ref. 16-25).

16.6.4.4 Transport

16.6.4.4.1 Road Transport

Only a small proportion of the population in Uganda, mostly in urban areas, have adequate access to transport infrastructure services. For some people in rural areas, roads are either inaccessible or unavailable. The road network in Uganda consists of: i) national (trunk) roads that connect the respective districts and the country with neighbouring countries; ii) district roads, which link communities and connect the rural to urban areas and to the national road network; iii) urban road network and; iv) community access roads that provide access to and from schools, villages, community centres and national and district roads. In 2016, Uganda had a national road network of 20,544 km comprising of paved and unpaved roads. As of June 2016, the paved network was 4,157 km (20 %) and the unpaved 16,388 km (80 %) (Ref. 16-47).

National roads fall under the jurisdiction of the Uganda National Roads Authority (UNRA) affiliated to the Ministry of Works and Transport (MoWT) and district and urban roads fall under the jurisdiction of the District Local Governments and Urban Local Governments respectively, while Local Council III (sub county) Governments are responsible for community roads.

The Annual Sector Performance Report for the transport sector in 2015/16 reports that even though road transport accounts for over 90% of passenger and cargo traffic, there is still no reliable data on the actual number of vehicles on the country's roads. It is, however, estimated that the total number of vehicles in the country including motorcycles lies between 700,000 and 1,200,000. The average annual growth rate in vehicle registration for all vehicles since FY 2002/3 has been 15%. The fastest growth rate has been in the motorcycles category (Ref. 16-47).

Roads in the Primary Study Area

Figure 16-25 shows the existing road network within the Primary Study Area.

⁴⁶ Since 2014/15 Nebbi District has been included in the USF programme therefore it is likely that the number of households with latrines has increased since the last survey in 2014.

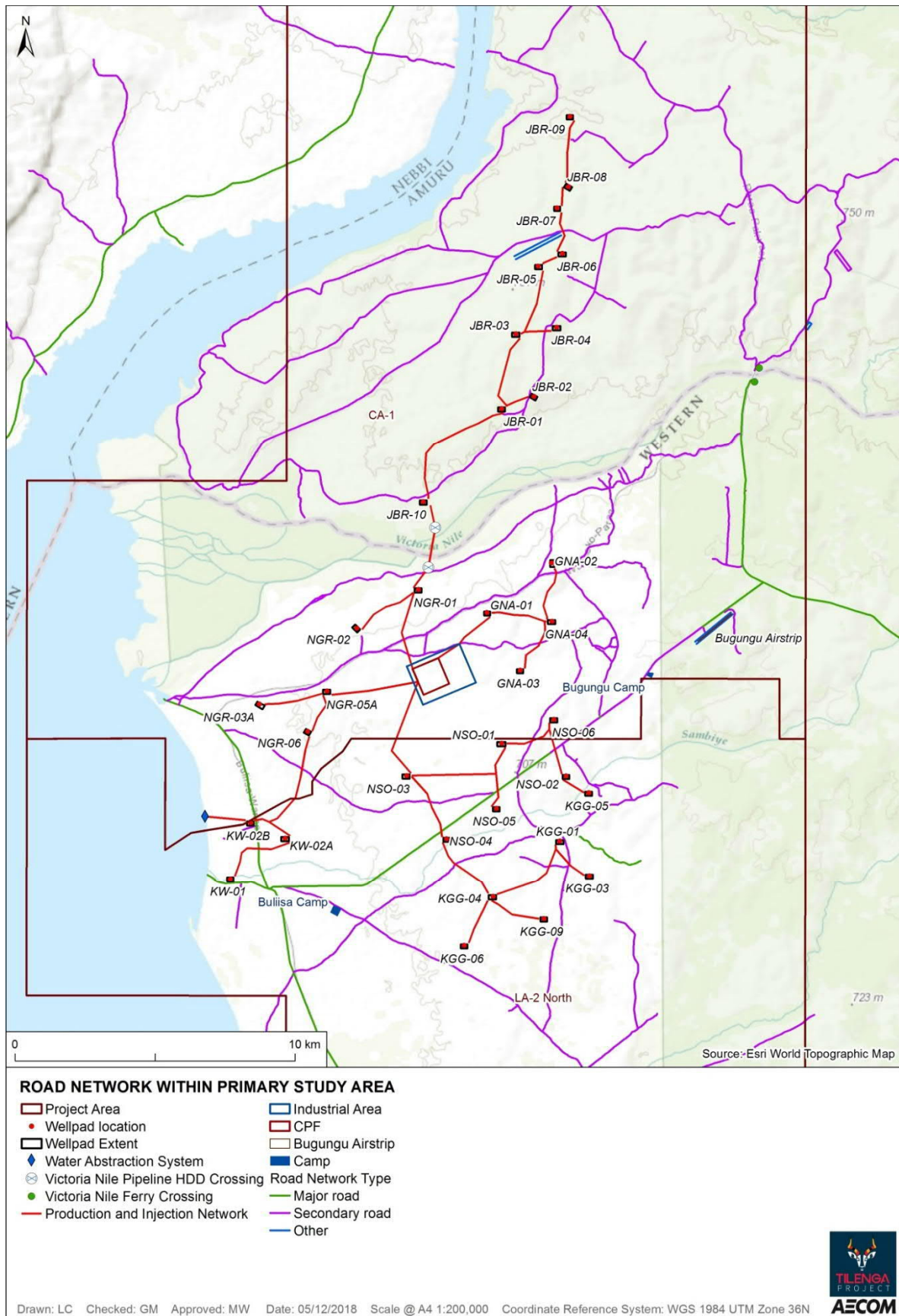


Figure 16-25: Existing road network within Primary Study Area

The roads in the Study Area are generally in poor condition. The majority of roads are surfaced with murrum and there are no tarmacked roads. Seasonal changes affect the road conditions and during the rainy season potholes, water-logged areas, and slippery mud make access difficult. Public transportation is reported to be poor to non-existent in some areas. Walking, bicycles and local motorcycle taxis ('boda boda') are the more common means of transport.

Buliisa District has approximately 160 km of trunk roads, 85 km feeder roads, and 130 km of community access roads. UNRA is responsible for management and maintenance of trunk roads while the district government is responsible for the maintenance and rehabilitation of feeder and community access roads. Most of the feeder and community roads are sandy and soft soil in low lying areas, with inadequate gravel on steep sections, inadequate drainage, and lots of bushes. UNRA has been active in the Study Area rehabilitating roads with ditches and large speed bumps, primarily those roads used by oil and gas companies. Renovations were of the following key strategic roads: Butiaba-Wanseko, Buliisa Town Council- Bugungu Airstrip, Wanseko-Mubako (through Kasinyi), and Buliisa Town Council to Waiga (through Bugana-Kichoke). Local youths were hired to work on these road improvements. Figure 16-26 shows typical roads in the Study Area (Ref. 16-3). The UNRA has plans to upgrade the Hoima-Butiaba-Wanseko road (111 km) to paved standard as part of the wider road upgrade projects for the oil region. As of January 2018, designs for the road upgrade had been completed and civil works were scheduled to start in March 2018 (Ref. 16-48)



Figure 16-26: Road Conditions in Primary Study Area

Respondents during a meeting with Buliisa Town Council reported that the road network in Buliisa District remains poor and this also increases challenges to business activity. Bad roads affect supply routes, especially as roads from Hoima to Buliisa District are reported to be in bad condition and often lead to vehicle breakdown. Poor road networks were also reported to increase the cost to farmers and other business related activities and are perceived to be a cause of traffic road accidents.

The Karuma-Pakwach-Nebbi-Aura road runs through Nwoya District and gives access to DRC. The road network in Nwoya District proportionally covers the whole district; however, the total length of roads is much shorter than in other districts, especially considering the size of the Nwoya District population (Ref. 16-49). Most roads in Nwoya District are earth or dirt roads and tend to be quite dangerous during the rainy seasons as the roads become increasingly slippery or muddy, and do not allow the passage of vehicles. There are many road links; however they tend to be broken up by bottlenecks, which hinder vehicle traffic. There are more than 60 points of bottlenecks caused by bushes and over 40 points by rivers. Wooden bridges are constructed by the local government or NGOs to enable pedestrians and bicycles to cross rivers or streams; however, they do not have adequate structural strength to enable passage of motor vehicles. Although vehicle roads run through most villages in Nwoya District, there are no direct access roads to some villages or the access roads are in very poor condition creating a disparity between urban and rural access to transport links (Ref. 16-49).

Road Users other than Cars

The 2014 Census reports that 7.5% of households in Buliisa District and 9% in Nwoya own motorcycles (Ref. 16-29). Local motorbike taxis called boda bodas are the main public transport available in the Primary Study Area. Boda boda's are an important form of transport for local communities that are used to access markets, health facilities, transport people and local produce (e.g. fruit, wood). The cost of transportation via boda bodas depends on the cost of fuel and the distance to be covered. Indicative journey prices given by respondents in a FGD with boda boda drivers in Wanseko during the ESIA SBS were:

- Within Wanseko – 5,000 UGX;
- Wanseko - Buliisa T.C.– 6,000 UGX;
- Wanseko - Hoima Municipality- 50,000 UGX;
- Wanseko - Nwoya - 40,000 UGX;
- Wanseko - Pakwach - 50,000 UGX;
- Wanseko - Masindi Municipality - 50,000 UGX; and
- Wanseko - Gulu Municipality - 70,000 UGX.

Mini-bus taxis travel frequently to Kampala from Hoima as well as between Hoima and Buliisa.

Bicycles are another important means of transport for local residents that can't afford a motorbike. However, bicycles cost approximately 200,000 UGX and owners have to pay for repairs so not everyone can afford this. In Buliisa and Nwoya Districts 38% and 47% of households respectively own a bicycle (Ref. 16-29).

For those that cannot afford bikes, the most popular form of getting around is by walking and this is the predominant means of movement in the Primary Study Area. Women tend to carry out more walking journeys than men because of their domestic responsibilities, such as collecting wood and water.

Roads in the Secondary Study Area

Hoima Municipality has approximately 606 km of roads, of which 8 km are tarmacked, 291 km are gravel roads, and 307 km are earth roads (Ref. 16-50). The majority of roads are earth roads, which release a lot of dust during the dry season, and become quite slippery and muddy during the rainy season. However, the main road from Kampala to Hoima is well-developed and has an all-weather surface, which doesn't make it susceptible to changing seasons (Ref. 16-50). Portions of this road are being upgraded, however, because of bad conditions. The Hoima 5 Year Development Plan aims to facilitate sustainable and resilient infrastructure through upgrading of urban roads and periodic/routine maintenance of earth roads.

In Masindi District there are approximately 51 km of tarmacked road, 191 km are gravel roads, and 389 km are earth roads (of which the majority are of good and fair quality) (Ref. 16-25). This shows that Masindi District has a higher proportion of tarmacked roads compared to Hoima District. Tarmac roads are only found in the central division of Masindi District while the rest of the roads in the municipality are murrum.

Nebbi District road network has approximately 635 km of trunk roads, 595 km of feeder roads (310 km of which is used by the public), 65 km of tarmac road and 30 km of total urban road. Nebbi District is relatively easily accessible; it has a large highway with many access roads. However, the state of roads within the district is poor, with many roads having developed gullies, no culverts, and many are bushy and narrow (Ref. 16-46). During a meeting with Nebbi District Police in December 2016 it was reported that the district annually reports a high number of traffic accidents. Although most of the accidents reportedly occur due to speeding, other causes were said to include built up areas along highways, narrow roads and roads in bad condition (ESIA SBS December 2016).

16.6.4.4.2 Ferry and Water Transport

There are two separate ferry crossings within the Study Area for vehicles and foot passengers: one is at Paraa connecting Buliisa and Nwoya districts to cross the River Nile, which is mainly used for tourism. The other is at Wanseko connecting Wanseko in Buliisa District and Panyimur town in Nebbi District. The ferry is particularly important for the economic development of Buliisa District as it provides residents the opportunity to trade agricultural and fishery products to northern Uganda, and up to the Democratic Republic of Congo and South Sudan.

Fishing boats and other privately owned motorised and non-motorised vessels are also used to transport passengers across Lake Albert between Buliisa and Nebbi District, and from Buliisa south to Hoima District. During meetings in December 2016 with the Buliisa District Police and Kigwera Health Centre II it was reported that such vessels are often overloaded with passengers and goods, which can cause them to capsize. In November – December 2016 it was reported that 40 people drowned on Lake Albert, in two separate incidents, after their boats capsized (ESIA SBS November-December 2016).

16.6.4.4.3 Air Travel

Air Travel in Uganda is managed by the Civil Aviation Authority (CAA) under the Ministry of Works and Transport. Within the Study Area there are two unpaved airstrips in Bugungu (MFNP, Masindi District) and Pakuba (MFNP, Nwoya District); both are located within the boundaries of MFNP. These are only suitable for light aircraft. Bugungu Airstrip is operated by UWA and Masindi by the CAA. The Bugungu airstrip will be expanded and upgraded as part of the Project. In the short term, whilst construction work is underway, flights would be diverted by UWA to other nearby airstrips (such as Pakuba airstrip). However, long term, the improved airstrip and associated facilities will contribute to improving access to MFNP for tourists. There is one international airport, Entebbe International Airport, in Entebbe, to the south of Kampala and 12 regional airfields (Ref. 16-51).

There are plans to construct another international airport at Kabaale in Buseruka sub county, Hoima District. The airport is planned as part of the infrastructure required to support the oil industry in the Albertine region. The proposed Kabaale airport with a runway length of 3,500 m and a width of 75 m including shoulders will be constructed within the already acquired refinery land of approximately 29 km². The planned airport will be capable of handling large passenger and cargo aircraft. The project will be divided into two phases: phase 1 and phase 2. Phase I will comprise an airport servicing cargo aircraft and passenger aircraft for the construction and operation of the refinery and oil fields. Phase II will involve further development of the airport to service increased commercial passenger flights and cargo flights for the fish and flower export industry (Ref. 16-52).

16.6.4.4.4 Railway

The Uganda Railways Corporation (also reporting to the MoWT) manages the country's 1,260 km of railway, although currently there are only 337 km of railway in operation in the country, only for freight. The two lines currently operated are:

- The first line runs west from Malaba, via Jinja and Kampala, terminating at Kasese adjacent to Queen Elizabeth National Park; and
- The second, parts of which have recently been re-opened but which is not yet fully open, heads north, running close to Mt. Elgon National Park, and then heads northwest via Lira and Gulu, running close to the northern boundary of Murchison Falls National Park, before terminating at Pakwach in Nebbi District (no passenger service and no stopover stations in key tourist areas).

The railway transport system in Uganda also includes rail wagon ferry services on Lake Victoria connecting Port Bell and/or Jinja to rail networks in Tanzania at Mwanza and Kisumu in Kenya (Ref. 16-47).

The government is in the process of constructing a standard gauge railway between Tororo – Pakwach and Kampala – Tororo Malaba – Kampala (Ref. 16-47). This project has been delayed, however, due in part to challenges faced during the land acquisition process because of delays in valuations and payment of compensation to PAPs, which has delayed access to the Right of Way for the railway construction to begin. As of January 2018 all PAPs along the route had been surveyed and 60% had been paid and vacated the Right of Way for construction. (Ref 16-53). There are also

plans to increase the railway network under the Northern Corridor integration project – a regional initiative conducted by Kenya, Uganda, Rwanda and South Sudan to jointly construct and operate a new and modern standard gauge line from Mombasa, connecting to Nairobi, Kampala, Kigali and Juba.

16.6.4.5 Access to Energy

16.6.4.5.1 Institutional and Policy Framework

The Ministry of Energy and Mineral Development (MEMD) oversees the energy sector in Uganda. The Electricity Regulatory Authority sits under the MEMD and is divided into three departments for generation, transmission and distribution. The national energy resource base comprises (in order of share of energy consumption) biomass, hydropower, renewable/alternative sources of energy (includes solar, geothermal, micro hydro and wind).

The Rural Electrification Agency (REA) was established as a semi-autonomous Agency by MEMD in 1999. The REA is mandated to facilitate the Government's goal of achieving a rural electrification rate of at-least 22% by the year 2022 from 1% at the beginning of the decade as indicated in REA's strategy and plan (2013-2022). Relevant policies and regulations for the energy sector are summarised in Table 16-1.

16.6.4.5.2 Energy Access in Uganda

Electricity remains critical for Uganda to achieve socio-economic growth and transformation of the country's fast-evolving population. Access to the national grid is not widespread, with approximately 15% of the national population having access to electricity, and only 7% in rural areas. The limited access to electricity limits the delivery of social services, the development of small-scale industrial and commercial enterprises and adversely affects larger-scale industrial and commercial investment. Additionally, high energy costs and unreliable energy supply contributes to the high cost of doing business, ultimately reducing the country's competitiveness (Ref. 16-54).

The majority of households (52%) use tadooba (local paraffin candle) as the main source of energy for lighting while about 20% use electricity. The tadooba is used predominantly in rural areas (60%) compared to urban areas (25%). The government has a programme on rural electrification and use of electricity for lighting in rural areas increased from 3% in 2002 to 10% in 2014 (Ref. 16-29).

Most households (71%) use firewood as the main source for cooking with 85% in rural and 31% in urban areas. This has declined from 82% registered in 2002. Charcoal is used for cooking by 23% of households (12% in rural areas and 58% in urban). Only 2% of households use electricity and 1% use gas (Ref. 16-29).

16.6.4.5.3 Access to Energy in the Primary Study Area

In the Primary Study Area Buliisa TC is the only area connected to the national grid, although Nwoya District has been wired for electricity antici

pated for 2017. In Buliisa District 13% of households use paraffin lanterns for lighting and 62% use paraffin-tadooba, while 8% use electricity and 17% use another source (including firewood) (Ref. 16-29).

Trading centres such as Buliisa Town Council, Wanseko TC, and Ngwedo TC are powered by generators fuelled with kerosene. Generators are also used to power portable and fixed grinding machines. Solar power is also used by shops in trading centres to power mobile phones, radio, and lights (Figure 16-27).

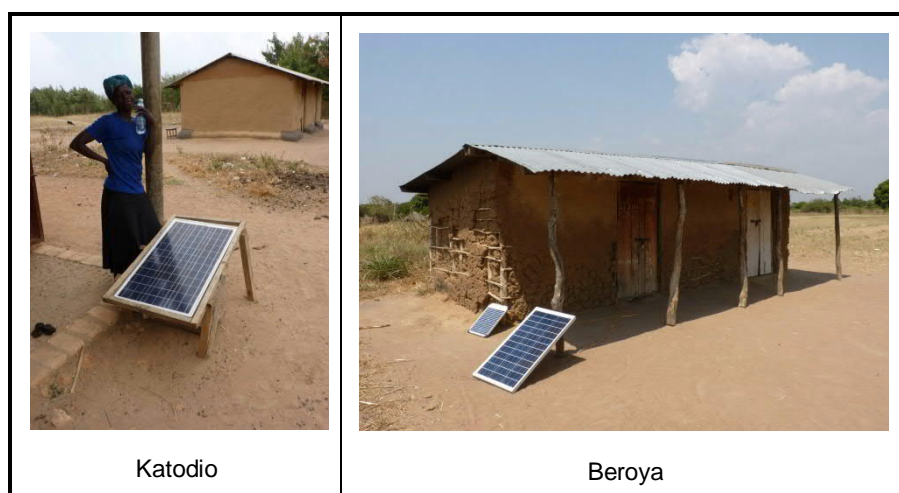


Figure 16-27: Using Solar Panels in the Study Area

In the 2015 SHBS Household Survey (Ref. 16-3) wood is reported to be the primary source of fuel for cooking (Figure 16-28); charcoal is also used but to a lesser extent. Wood fuel is used for stone fires and charcoal is used in traditional stoves; the latter is more common in households located along the shores of Lake Albert whereas wood fuel is used by households located further inland.



Figure 16-28: Typical Cooking Stove in the Study Area (Bugana-Kichoke)

Wood within the Primary Study Area is typically collected by women near the river Nile or on communal grazing grounds. Across the 2015 Ecosystem Review Study Area it was estimated that each household uses approximately 150 kilograms (kg) of wood per month and for a large majority of households, wood is the only source of fuel for cooking and heating water (Ref. 16-8). It is reported that for the majority of households in Bullisa District, women have to travel between 1 km and 5 km in order to collect or buy wood for fuel (Ref. 16-5). Concerns have been expressed about the

environmental impact of indiscriminate cutting of trees and burning of charcoal in the district⁴⁷. Levels of supply of wood within the Study Area are significantly declining due to over-harvesting and land conversion to other uses (e.g. clearance of woodland for farming) (Ref. 16-8). Further information about use of forest resources for fuel is provided in **Chapter 19: Ecosystem Services**.

16.6.4.5.4 Access to Energy in the Secondary Study Area

In Hoima District, the major energy source used in cooking is firewood (57%) and charcoal (32%) (Ref. 16-23). The Paraffin-tadooba is the major energy source used for lighting purposes in Hoima (58%), Nebbi (70%) and Masindi Districts (57%) followed by electricity in Hoima (17%) and Masindi (21%) and the paraffin-lantern in Nebbi District (15%). Urban centres differ from the wider region, however. In Hoima Municipality, electricity is the main source of lighting at 39%, followed by the paraffin-tadooba at 37%. In Pakwach Town Council the paraffin-tadooba is used as the main source of lighting by 47% of the population, followed by the paraffin-lantern (30%). In Masindi Central Division 54% of the population uses electricity as their main source of lighting followed by the paraffin-tadooba at 20% (Ref. 16-29).

16.6.4.6 Telecommunications

Results from the 2014 census showed that with respect to Information and Communications Technology (ICT) equipment, a radio was the most common means by which the population received and shared information at 55%. This is followed by word of mouth (20%), television and internet (both about 7%). In total 60% of households own a radio, 14% own a television, 5% own a fixed phone and 4% own a computer (Ref. 16-29).

The internet penetration rate (number of internet subscribers and users in the population) is approximately 43%. Total mobile phone subscriptions in Uganda number 22 million (Ref. 16-55).

Local stakeholders noted that radio is an important source of communication and information for local communities and 77% of respondents to the 2015 SHBS Household Survey had a radio. There is one radio station in Buliisa District called Biso FM, which opened in 2016. Radio waves can also be picked up from neighbouring districts including Gulu (Mega FM, Choicera, King FM and Rupiny FM), Pakwach town (Radio Puchane and Pakwach FM, which opened in 2016), Radio Hoima, and Kings Broadcasting Service, Masindi (Ref. 16-35).

In the Primary Study Area, mobile phone coverage is regarded as relatively good, with coverage provided by MTN, UTL, Airtel and Orange. Within the Primary Study Area, 58% of respondents indicated that they owned a mobile phone (Ref. 16-11) using the networks MTN, Airtell, Uganda Telecom and Africell. Some young respondents stated that although there is little internet access they access the internet through their mobile phones. Mobile phone use at the district level in Buliisa is increasing, with 52% of the population reporting mobile phone subscriptions in 2014 compared to 38% in 2010 (Ref. 16-29).

Television coverage is poor: only a few households or public spaces in urban centres have digital pay TV DSTV (Ref. 16-35).

16.6.4.7 Recreational Facilities

There are a number of places and public spaces used for social and recreational purposes. Most villages have a central meeting point for community meetings, typically under a large tree. The 2015 SHBS (Ref. 16-3) reports that trading centres are important public spaces in rural areas where local residents, particularly men, meet to talk, drink, and play cards or chess. Urban centres have established entertainment facilities such as cafes, bars, and discos that are popular with young people. There are also 'ladies nights' which are popular. Markets provide an important space for trading and socialising. Football games are popular with young people with village teams playing against each other. Almost every village within the Primary Study Area has a football field and there are 32 football fields in Buliisa District. Inter-village tournaments are organised regularly. Football fields are also used for other sporting activities such as athletics, and as a venue for community

⁴⁷ Although there is officially a ban on charcoal making in Buliisa district this is still practiced.

functions such as film screenings, seminars and religious meetings. Places of worship such as churches and mosques are important places where local residents come together and share in their faith and they are also used as venues for community meetings, seminars and conferences. School buildings are also often used for community functions including meetings, weddings, film screenings, learning events or conferences, and in some cases for accommodating visitors. Community events such as weddings and funerals are important occasions during which community members gather, share food and drinks, and sometimes organise traditional rituals (ESIA SBS 2016).

Figure 16-29 shows local communities socialising and typical recreational facilities.



Figure 16-29: Local Recreational Facilities

16.6.4.8 Law Enforcement

The Uganda Police Force (UPF) is headed by the Inspector General of Police and organised under 19 directorates. At the local level it is organised under Regional Divisions, Police Districts, Police Stations and Police Posts. The Resident District Commissioner (RDC) is the administrative head in all districts that supervises government programs and security agencies including UPF units. Police within any district are answerable to the RDC. They are the Chairperson of the Security Committee that includes the UPF, Uganda People's Defence Force and Internal Security Organisation. Grievances related to police officers can be reported to them.

There are police stations at the following communities (see Figure 16-30):

- Ngwedo Town Centre;
- Wanseko;
- Buliisa Town Council;
- Butiaba;
- Warukuba;
- Kabolwa;
- Got Awpoyo;
- Hoima Municipality;
- Pakwach Town Council; and
- Nebbi.

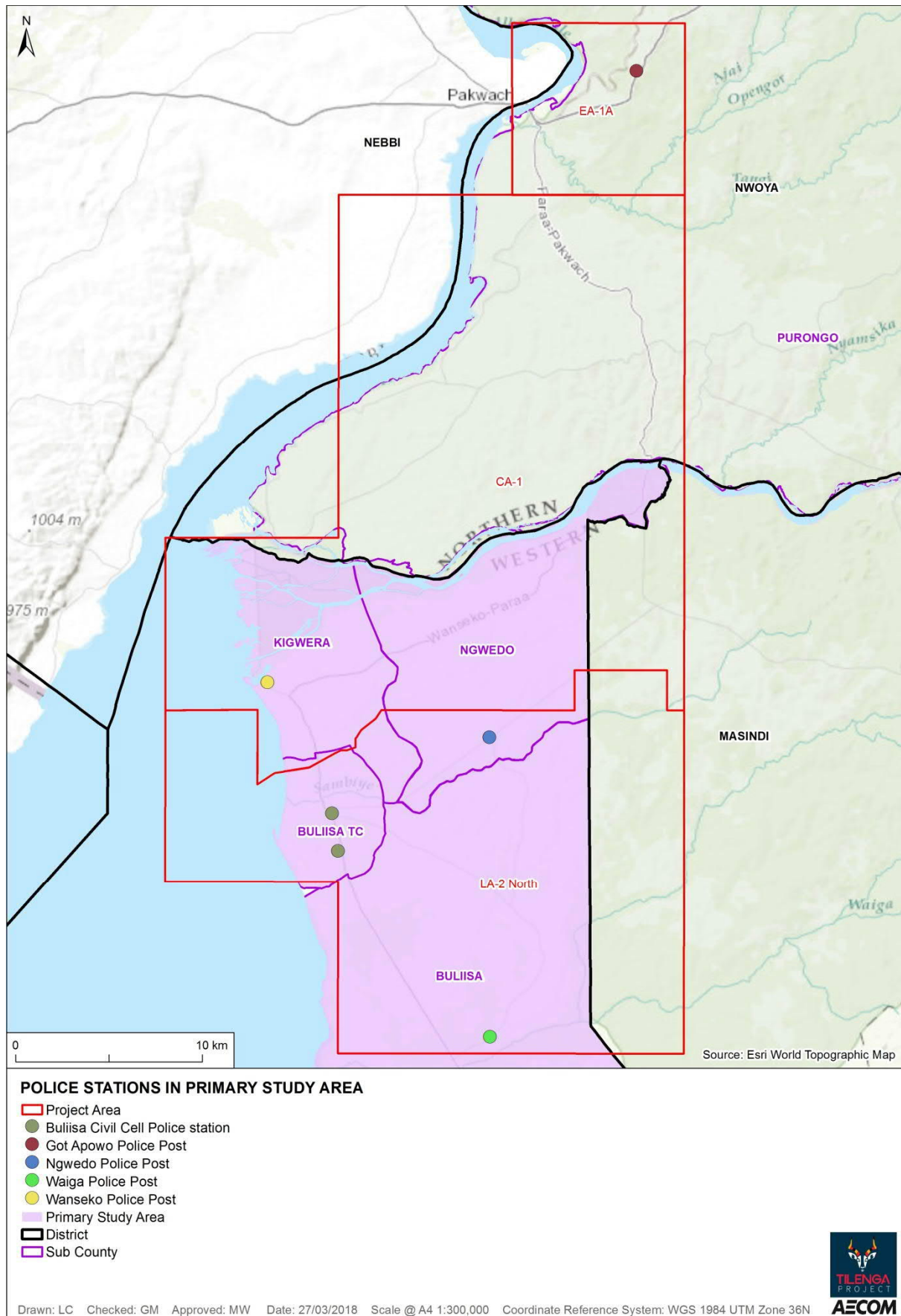


Figure 16-30: Police Stations in Primary Study Area

The 2015 SHBS reports (Ref. 16-3) that within the Primary Study Area each police station has approximately 10 officers. There is a policy of 'Community Policing', which aims to recognise the importance of community members in crime prevention by promoting community vigilance in a 'neighbourhood watch' approach by getting community members to identify security concerns in a proactive way. In 2015 there were 120 community crime preventers (including approximately 30 women) in Buliisa District who have been trained by the police. Police also work with local leaders to sensitise communities about the law and raise awareness about dispute resolution mechanisms.

During interviews with local police as part of the ESIA SBS it was noted that a lack of transport and logistical support (including lack of vehicles, lack of fuel and lack of mechanics to repair broken vehicles) is the main challenge currently facing local police. In Buliisa, for example, the police only had one working vehicle at the time of the survey. Another challenge noted in Pakwach was a lack of accommodation for officers.

Oil and Gas Police

The Oil and Gas Directorate was established to safeguard the country's oil and gas resources. They work in coordination with other security agencies on issues related to security in the oil and gas sector, including other divisions within the UPF as well as the Internal Security Organisation (ISO), External Security Organisation (ESO) and Uganda Peoples Defence Forces (UPDF).

The oil and gas police currently have a presence in Hoima, Kaiso-Tonya, Buliisa and Kabaale.

UWA Rangers

UWA rangers work in National Parks and Wildlife Reserves to both protect tourists from wildlife, as well as protecting wildlife from poachers, traps and encroachment into protected areas. UWA rangers include marine anti-poaching boat patrols to monitor boats on Lake Albert for potential poaching activity. UWA also patrols and investigates trafficking of ivory and other wildlife products. UWA rangers are also involved in managing community relations and helping to address human-wildlife conflict within communities bordering national parks.

Tourism Police

A specialist tourism police force was set up in Uganda to protect tourism facilities as part of counter-terrorism measures.

Border Control

According to International Organisation for Migration (IOM) there is a *de facto* local movement regulatory regime at the Ugandan-DRC border: DRC nationals who wish to come into Uganda and stay within a certain distance of the border can do so with a *Jeton de Visite Frontalière* (a document which is issued by the Government of the DRC). The document includes the traveller's name, date of birth and details regarding his place of residence (it does not include a picture of the document holder). All Border Control Posts (BCPs) accept this document, although it is not mentioned in the Citizenship and Immigration Act or the Border Procedures Manual. In some BCPs, Congolese residents are able to remain within 6 km inside the Ugandan territory and in others BCPs, Congolese residents can travel up to 20 km within Uganda. Travellers who wish to travel beyond the distance set by each BCP must obtain a visa. In some BCPs, the *Jeton* is retained by the Directorate of Citizenship and Immigration (DCIC) or Police while the traveller remains in Ugandan territory. In other BCPs, the traveller only shows the *Jeton* to a government official and keeps it during his or her stay in the country. During market days, most BCPs do not control any of the cross border movement and allow people to walk freely back and forth.

In 2014, the IOM conducted an assessment of a selection of BCPs across the country (Ref 16-56), and identified the following key findings for posts within the Study Area:

- Tonya (Buliisa district). The BCP is staffed by one officer. The lack of electricity supply means that there is no Information Technology (IT). The office does not have any anti-forgery or equipment. The officer uses his personal mobile phone for communication. The officer records all arrivals and departures in a manual log book. The border agencies do not have any vehicles or boats, and patrolling is done on foot. The local police officer stated that he has a system of local informants who advise on irregular migrants. Border agencies at Tonya are Police, Immigration and Internal

Security Organisation (ISO). There is no Customs presence. There is good evidence of inter-agency cooperation with regular meetings and informal exchanges of information. The UPDF has a marine unit comprising of three officers, who patrol by boat and share information with the Immigration Officer; and

- Wanseko (Buliisa district). Wanseko is primarily an internal border post connecting the port with the Ugandan town of Panyimur. It has one Immigration Officer in post who is often required to provide additional support to the international BCP in Panyimur, leaving the post in Wanseko often only attended by the local police officer. The BCP occasionally gets people arriving by canoe from the Democratic Republic of the Congo, and canoes are used to smuggle opium.

Other BCPs in the Study Area include:

- Rungo (Hoima district);
- Kaiso (Hoima district);
- Paidha (Zombo district); and
- Goli (Nebbi district).

16.6.5 Settlements and Housing

16.6.5.1 Settlement Patterns

Community mapping within the Primary Study Area was undertaken as part of the social screening study and SHBS (undertaken by Artelia in 2013 and 2015 respectively), and the additional field survey undertaken by ESIA team in 2016. In total 46 villages were mapped to show community infrastructure and resources and other significant sites⁴⁸. These maps are presented in Appendix G of this ESIA (Workstream B). They represent typical settlement patterns within the Primary Study Area.

The community maps show that settlement patterns within the Primary Study Area are primarily centred on major and minor transportation routes. Villages vary in size between approximately 60 and 600 households. Three of the largest villages in terms of population are Kijumbya, in Buliisa sub-county, Kibambura and Muvule I both in Ngwedo sub-county. The majority of villages have trading hubs centred within close proximity to major roads where businesses and main social activities usually take place (retail shops, community meetings, and grinding mills for example). Housing in most villages is scattered although if there is a main road passing through a village there tends to be clustering of houses along the road. Settlements in the northwest and west of Buliisa District are more concentrated and have more of an urban feel than the central and eastern areas. In Katanga, Katodio and Wanseko in Kigwera sub-county, and Ndandamire and Masaka in Buliisa sub county, housing is quite congested and in some places described as 'slum like'. Housing in Kijangi in Buliisa sub-county is also quite concentrated.

Typical village infrastructure and resources include religious buildings, trading centres, meeting points, boreholes and open water sources, grinding mills, community access roads, football fields, crop farming areas (mainly in the east of Buliisa) and grazing areas (mainly in the west of Buliisa). Graves are located within homesteads and are therefore scattered across village territories. More information about community infrastructure and services is provided in Section 16.6.4 and information about land use patterns is provided in Section 16.6.7.

As well as being a political and administrative entity and decision making unit, the village represents a place of shared history, socio-economic system and a social unit over a defined geographical territory. The village borders are generally defined by natural features (valleys, rivers, swamps or trees) or other physical marks (cattle corridors, parks or roads). Most of the Alur villages were "created" between the 1960s and 1980s when migrants from Nebbi and DRC settled in the area. Bagungu villages have a longer history and the Bagungu are considered as the original inhabitants of the area (it is hard to date the origin of the villages). Most villages are made up of multiple ethnic groups but

⁴⁸ The villages mapped included all the villages in the Primary Study Area listed in Table 16-2 except for Kizikya, Kitahura and Lagaji, which are not directly affected (i.e. outside the footprint of the Project).

are dominated by one ethnic group and clan (extended family), who usually originate from the original founders of the village. Settlement patterns are generally organised around clans and families, though some have mixed settlement patterns, especially in Ngwedo sub-county where seasonal migrants come for cultivation and settle in temporary or semi-temporary structures.

16.6.5.2 Housing

Table 16-22 shows the type of housing across Buliisa, Nwoya, Hoima, Masindi and Nebbi districts.

Table 16-22: Housing in the Study Area

District	Total households	Wall		Roof		Floor	
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Buliisa District	21,652	19,126	2,526	13,330	8,322	18,817	2,835
Nwoya District	26,231 ⁴⁹	24,571	1,660	23,160	3,071	24,900	1,331
Hoima District	125,576	80,895	44,681	40,094	85,482	97,607	27,969
Masindi District	64,929	31,304	33,625	22,709	42,220	41,196	23,733
Nebbi District	77,503	67,692	9,811	62,586	14,917	67,699	9,804

Definitions:

- Temporary Wall: mud and pole; unburnt bricks with cement; unburnt bricks with mud; wood; tin/iron sheets; others.
- Permanent wall: burnt/stabilized bricks; cement blocks; concrete/stones
- Temporary roof: thatch; tin; other
- Permanent roof: Iron sheets; tiles; asbestos; concrete
- Temporary floor: total earth; rammed earth; earth (other); wood; others
- Permanent floor: concrete; brick; stone cement screed; tiles

Source: Ref. 16-29

16.6.5.2.1 Housing Types in the Primary Study Area

From Table 16-22, approximately 88% of houses in Buliisa district and 97% of houses in Nwoya district, which make up the Primary Study Area, are traditional structures, built from mud with wattle walls and grass thatched roofs. However, there have been an increasing number of permanent, iron-roofed houses being built, and this varies depending on the level of wealth in the different sub-counties and villages. For example, in Bikongoro Village in Kigwera sub-county there have been no iron-roof houses observed and all houses are traditional grass-thatched huts. On the other hand, Bugana-Kataleba Village in Buliisa sub-county has a number of new iron roof and bricked houses being built, reportedly paid for by people who work in Buliisa Town Council.

Within the Primary Study Area there are three main types of traditional grass-thatched houses, which relate to the main ethnic groups of the area: Alur, Bagungu and Acholi. The difference between the traditional houses can be observed in how the grass is laid out on the thatched roofs, whether they are round or square, and sometimes the mud walls are painted (Figure 16-31).

The 'flounced effect' of the thatch roofing (as pictured in the image of the Bagungu traditional house) is typical of the Nile area. Thatching specialists are employed during the dry season and paid either in-kind or with money. The walls are usually made during the rainy season when it is easier to collect soil from swamps as the ground is softer and easier to dig.

⁴⁹ The source document states 24,571 total households. This has been altered by ESIA team to be consistent with the rest of the data in this row for Nwoya District.



Figure 16-31: Thatched Houses in the Study Area

The 2015 SHBS (Ref. 16-3) found that more permanent and modern housing using iron roofing and brick walls are less common within the Primary Study Area (Figure 16-32), and are primarily found in urbanised areas, such as the western part of Buliisa District. These types of houses can be considered a primary indicator of wealth. They usually belong to business men or politicians, but it has been reported that compensation received from exploration activities from extractive companies has also allowed families to change the structure of their households to incorporate tin-roofs.

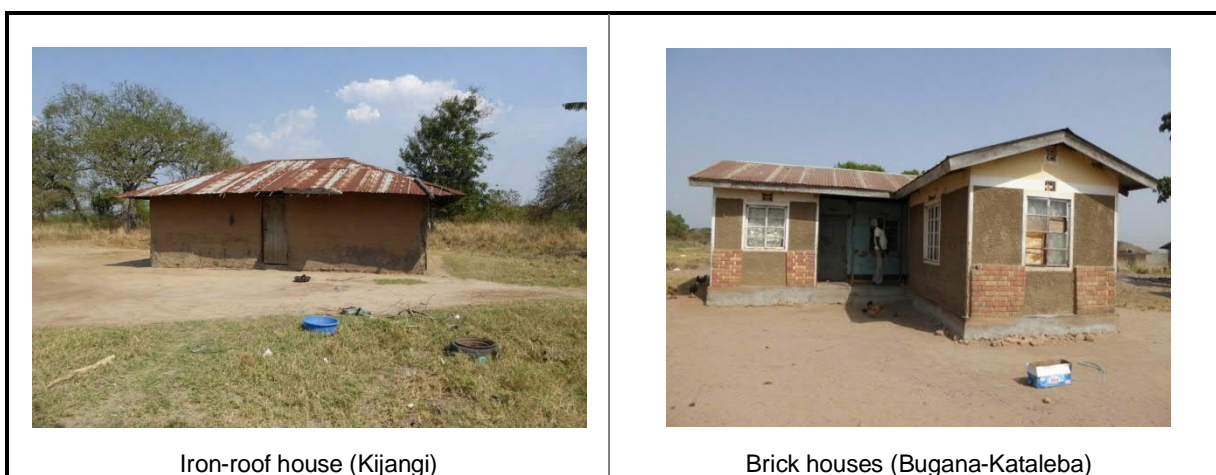


Figure 16-32: Iron Roof and Brick Wall Houses

16.6.5.2.2 Compound Characteristics

Compounds are generally comprised of several huts, which serve as bedrooms (separate for girls, boys, and parents), a communal living area, a kitchen and occasionally a sheltered pit-latrine. The compound usually includes a cooking stove (if there is no hut for the kitchen), a wooden stand to dry and store cooking utensils, firewood, fruit trees and/ or a small garden for growing vegetables (Figure 16-33).

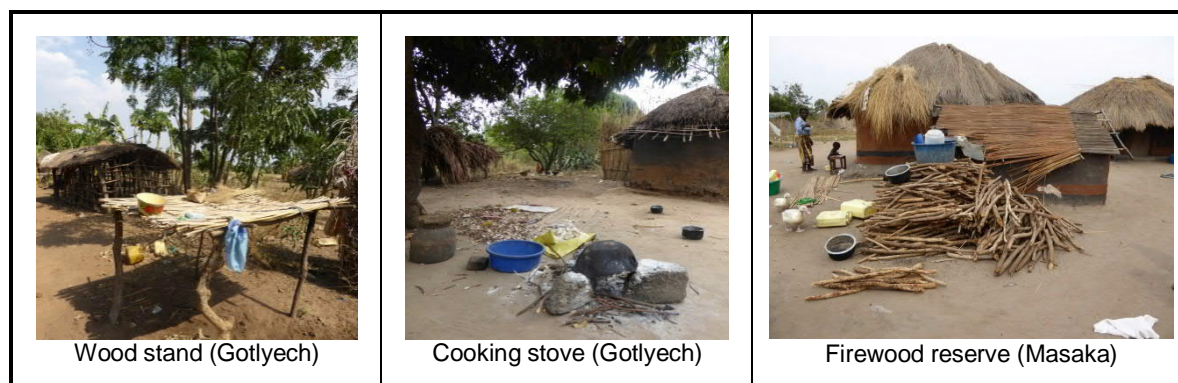


Figure 16-33: Compound Storage and Cooking Facilities

Bagungu livestock herders tend to have a cattle enclosure (kraal) within relatively close proximity to the huts to keep their cattle in for the night. Temporary huts may also be built to house Balaalo employees and their families. The Alur and Bagungu tend to have smaller enclosures constructed by each household to keep smaller livestock such as pigs, chicken and goats. Figure 16-34 shows a typical kraal and structures for smaller livestock.

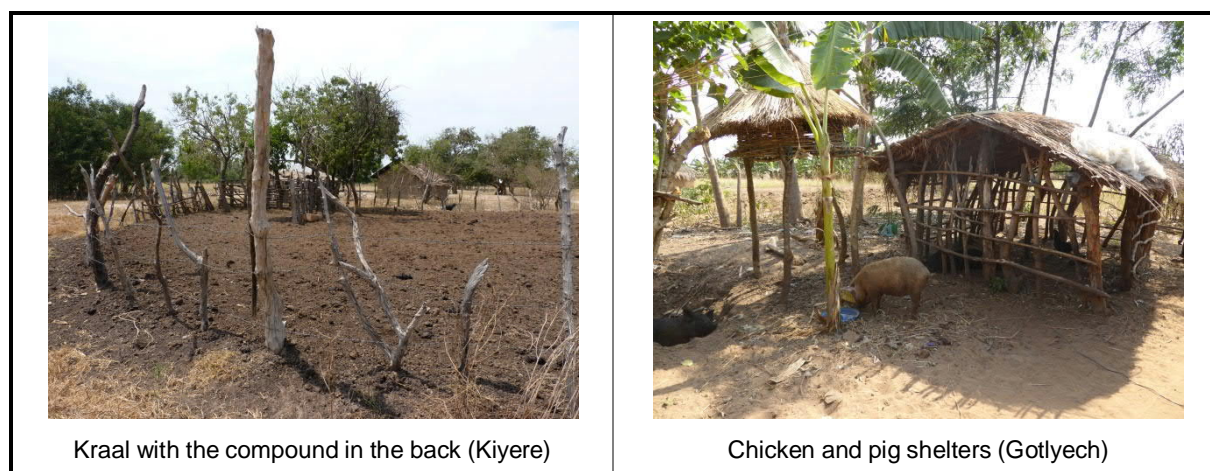


Figure 16-34: Examples of Animal Enclosures in the Study Area

16.6.5.2.3 Housing Construction

Traditional houses are built using natural resources including wood, grass, loam soil (from anthills) and mud. Poles are typically made from lira, eucalyptus or acacia. Doors are usually made of either wood or sheet iron. Households will access these natural resources by buying grass and poles, growing them themselves, or gathering from the surrounding environment, and it is usually a combination of these things. Construction is usually carried out by household members with women responsible for cutting the grass and tying into bundles, while men are responsible for cutting poles, transportation, mixing soil, thatching and making the foundation. In some cases the household will employ local builders, thatcher's, and carpenters to help construct the house. Figure 16-35 shows houses being constructed. Housing costs will be provided in the RAP.

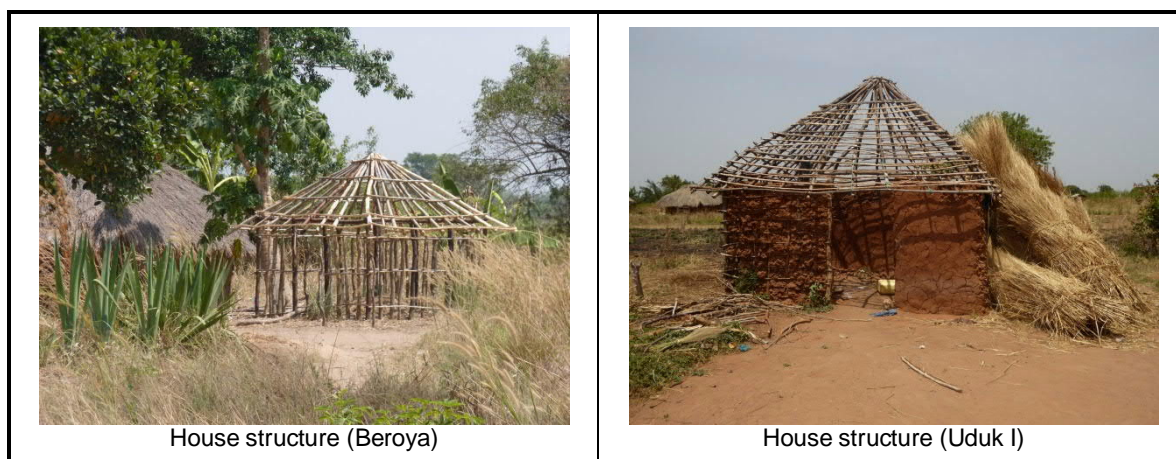
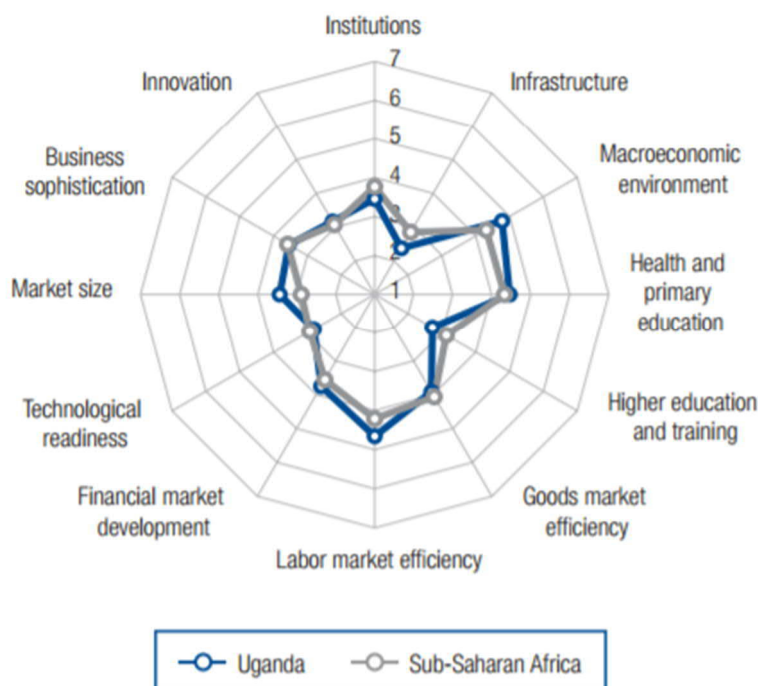


Figure 16-35: Constructing Traditional Houses

16.6.6 Economy and Livelihoods

In 2016, Uganda’s Gross Domestic Product (GDP) was USD 24 billion, with a Gross National Income (GNI) per capita of USD 630. Uganda’s GDP has been steadily growing since 2012, averaging 5.5% between 2010/11 and 2013/14, and is forecast to grow by 6.7% in 2018 (Ref. 16-57). This growth is primarily due to growth in services and construction (Ref. 16-54).

Uganda ranked 115 out of 140 in the 2015-2016 Global Competitiveness Index. Figure 16-36 represents Uganda’s position in key areas compared to other factor driven economies⁵⁰.



Source: Ref. 16-58

Figure 16-36: Comparison of Uganda’s Competitiveness Position Compared to Peers

⁵⁰ Factor-driven economies are those whose growth is dependent on their factor endowments - primarily unskilled labour and natural resources.

Uganda's exports per capita are amongst the lowest in the world and exports are dominated by primary products. Important exports include coffee, tobacco, fish and fish products, flowers, maize, cocoa beans, gold and gold compounds, and beans and other legumes. Coffee, fish and fish products are the highest value exports. According to the NDP II, the minerals sector (including the oil and gas sector) contributed 0.3% to GDP in 2013. According to the Second National Development Plan (NDP II) (Ref. 16-34), Uganda's reliance on a relatively narrow range of exports increases Uganda's vulnerability to fluctuations in world market prices and changes in weather and has led to a significant long-term decline in the country's terms of trade.

Significant progress has been made in addressing poverty, and the national poverty rate⁵¹ has declined from 56% in 1992 to 19.7% in 2012/2013. Income inequality as measured by the Gini coefficient⁵² reduced from 0.426 in 2009/10 to 0.395 in 2012/2013 and is higher in urban areas (0.41) compared to rural areas (0.34) (Ref. 16-34).

There are significant regional disparities in economic development. Uganda's Central and Western regions have undergone considerable development when compared to the rest of the country. Poverty in the Western and Central regions is estimated to be 9% and 5% respectively, whereas in the Eastern and Northern regions it is much higher, at 25% and 44% respectively (Ref. 16-34). In the Study Area, poverty is still widespread but the percentage of the population living below the poverty line has decreased. In the Primary Study Area, both Buliisa and Nwoya districts have approximately 35% of the population living below the poverty line (Ref. 16-3). In the Secondary Study Area, in Hoima District approximately 24.5% of the population were living below the poverty line in 2015; and in Masindi District 9.8% of the population were below the poverty line in 2013 (recent data on poverty was not available for Nebbi District) (Ref. 16-44 and Ref. 16-25).

The National Development Planning framework is described in **Chapter 2: Policy, Regulatory and Administrative Framework**. The National Development Plan II for the period 2015 to 2020 is the second five year plan aimed at achieving Uganda's Vision 2040. This plan is aimed at moving the country into middle income status by 2020, by strengthening the country's competitiveness, sustainable wealth creation, employment and inclusive growth. The Plan sets four key objectives to be attained during the five year period. These are: (i) increasing sustainable production, productivity and value addition in key growth opportunities; (ii) increasing the stock and quality of strategic infrastructure to accelerate the country's competitiveness⁵³; (iii) enhancing human capital development; and (iv) strengthening mechanisms for quality, effective and efficient service delivery. Five investment areas are prioritised: agriculture, tourism, oil and gas and minerals, infrastructure development, and human capital development. It is anticipated that implementation of the plan will lead to increased growth of 6.3% by 2020 (Ref. 16-34).

At the sub county level in the Study Area Local Government Development Plans (LGDPs) and five year District Development Plans (DDPs) have been developed. These plans discuss the health and education status at the local level as well as the main livelihood activities of crop farming and livestock herding. They establish priorities for the district for local development and outline steps for poverty alleviation at the sub county level. Further information on the aims and priorities for districts in the Study Area for the period 2015-2020 is found in Section 16.6.1.8.

16.6.6.1 Labour Force

The total labour force in Uganda in 2012/2013 was 16.3 million persons and the labour force growth rate is estimated at 4.7% per annum. The majority of the working population are in the informal sector and are self-employed (81.5% in 2013) while the proportion of the labour force in paid employment was 18.5% in 2012/13. In 2013, 15% of the workforce had no formal education. Of the total working population, youth constituted a large proportion (4.4 million) with the majority living in rural areas (3.5

⁵¹ Under the National Development Plan II, the rate of poverty is measured as persons living on less than a dollar per day (Ref. 16-34).

⁵² The Gini coefficient is a commonly-used measure of income inequality in a country, where the higher the score between 0 and 1, the higher the income inequality (i.e. a score of 0 would represent perfect income distribution and a score of 1 would represent total inequality where one person has all the income)

⁵³ Infrastructure spending is forecast at 8.6% of GDP in 2016/2017 to 2017/2018 and 4.8% in 2019/20. (Ref. 16-34)

million) and working in non-wage employment in 2011. There is a projected job gap of 13 million people between the formal labour market size and the total employable labour force (Ref. 16-34).

The unemployment rate in 2013 was approximately 9% (Ref. 16-29). The youth unemployment rate is high, estimated to be 78%, and youth dominate the informal sector. This has contributed to increasing urban poverty with high unemployment levels and lack of stable income (Ref. 16-34).

Information about labour and working conditions including aspects of gender and labour, persons with disability and child labour is provided in Section 16.6.8.

16.6.6.2 Key Economic Sectors

The services sector contributed 50.3% to Uganda's GDP in 2012/13, followed by agriculture with 23.5% and industry with 18.4%. The most significant sub-sector activities that have grown rapidly over the past five years are: Information and Communications, with a GDP share of 9% as at 2013/2014 and a growth rate of 16%; and Construction with a GDP share of 6.5% and a growth rate of 9.6% in 2013/14 (Ref. 16-34).

16.6.6.2.1 Agriculture

The agricultural sector grew considerably slower than the economy as a whole over the period 2010 to 2014. The annual average growth rate was 2.2% compared to the average annual GDP growth rate for the same period of 5.2%. This is below the 5.2% target for the period 2010 to 2015 under the Vision 2040. The contribution of the agricultural sector to GDP declined from 25.4% in 2010 to 23% in 2014. Of the agricultural subsectors GDP, the average contribution for the different sub-sectors was 1.7% of GDP for cash crops, 12.7% for food crops, 4.2% for livestock, 0.03% for Agriculture Support Services, 4.0% for Forestry and 1.2% for fisheries (Ref. 16-59).

The agricultural exports share in total exports has increased from 53.6% in 2010 to 57.2% in 2014. Considering the 2014 agricultural exports, Coffee is the main agricultural export commodity for Uganda that generated USD 410.1m (31.7%) of the agricultural export revenues. The second biggest agricultural export commodity is fish and fish products that generated USD 134.8 (10.4%) of the agricultural export revenue during the period (Ref. 16-59). Table 16-23 summarises Uganda's agricultural exports during the period 2012 to 2016. The table shows that coffee was the largest agricultural export over the period and other main exports were fish and fish products, sugar and sugar confectionary, animal and vegetable fats and oil, and tea. The main agricultural imports are fixed vegetable fats and oils, processed, animal or vegetable waxes; cereals and cereal preparations; sugars, and sugar preparations and honey (Ref. 16-60).

Table 16-23: Uganda's Agricultural Sector Exports (USD, 000)

Commodity	2012	2013	2014	2015	2016 (provisional)	% age value of formal exports 2015
Coffee	372,166	425,407	410,064	402,634	371,674	17.8
Cotton	74,898	31,686	21,918	20,778	31,571	0.9
Tea	73,902	85,589	84,739	70,317	71,488	3.1
Tobacco	69,746	120,201	66,018	72,897	64,061	3.2
Fish and Fish Products	128,322	126,727	134,791	117,597	121,467	5.2
Animal/Veg Fats and Oils	110,427	100,050	102,321	78,959	62,090	3.5
Sugar and Sugar Confectionary	122,672	85,304	68,937	65,724	100,251	2.9
Beer	25,317	23,698	13,305	10,041	10,977	0.4
Maize Grain & Maize Flour	56,916	42,254	43,567	91,055	70,301	4.0
Cocoa Beans	38,434	54,833	59,429	56,684	74,996	2.5
Roses and Cut Flowers	26,802	28,725	28,732	23,209	24,571	1.0

Commodity	2012	2013	2014	2015	2016 (provisional)	% age value of formal exports 2015
Rice	38,886	36,966	28,688	24,186	20,274	1.1
Beans and other Legumes	14,237	20,577	26,191	63,167	50,519	2.8
Sesame seeds	11,714	28,468	55,165	50,677	14,572	2.2
Cattle hides and skins	41,632	64,352	73,758	63,018	51,375	2.8
Vegetables	8,306	11,730	14,655	14,127	16,753	0.6
Vanilla	2,362	2,731	2,651	3,440	3,246	0.2
Live animals	1,748	2,797	2,006	2,020	1,305	0.1
Soya beans	1,230	887	912	2,428	7,086	0.1
Fruits	1,190	1,502	2,077	3,200	4,505	0.1
Pepper	2,053	1,744	573	863	3,594	-
Bananas	466	239	587	860	1,020	-
Ground nuts	2,496	1,750	816	5,181	1,485	0.2
Sorghum	3,793	25,565	35,165	36,234	55,297	1.6

Source: UBOS, Statistical Abstract 2017 (Ref. 16-60)

The Poverty Status Report (PSR) 2014 revealed that unreliable rainfall had large negative effects in rural areas (primarily engaged in agricultural activities) with household consumption reducing by around 14% if the main rainy season begins a month or more later or earlier than usual. This results in lower rural incomes, and increases in rural poverty. This signifies the need to increase access to water for production as dependence on rain fed agriculture by most smallholder farmers increases their vulnerability to poverty (Ref. 16-59).

Agriculture is the largest sector in terms of employment, employing about 72% of the total labour force (formal and informal), 77% of whom are women and 63% youth. Farming is still dominated by smallholder farmers engaged in food and cash crops, horticulture, fishing and livestock farming. Farmers that are categorised as subsistence are estimated to deliver between 75–80% of the total agricultural output and marketed agricultural produce. Smallholder/ enterprises, commercial farmers and estate operators represent about 15%, 3% and 0.5% of farmers respectively.

Within agriculture, the NDPII places emphasis on investment in cotton, coffee, tea, maize, rice, cassava, beans, fish, beef, milk, citrus and bananas (Ref. 16-34). Nationally, farmers mainly grow food crops such as cassava, sweet potatoes, beans, groundnuts, sesame, sorghum and millet. The main cash crops include groundnuts, rice, maize, beans, sesame, and to a lesser extent cassava and millet. Due to decreasing market prices and land access, the farming of cotton and tobacco is becoming less common.

Challenges restricting better performance of the agricultural sector include: slow technological innovations and adoption; poor management of pests and diseases; limited access to land and agricultural finance that disproportionately affects women and youth farmers; a weak agricultural extension system, with access to extension services lowest among women, over dependency on rain-fed agriculture; and poor connectivity and high transportation costs. The sector is also characterized by limited value addition which is attributed to poor post-harvest handling techniques, inadequate bulking and storage facilities, and high electricity costs. In addition, limited market information and capacity of the primary producers to meet the standards required in the export market limits the sector's contribution to the country's export earnings (Ref. 16-34). Government plans to strengthen farmer organisations and increase its partnerships with private actors to promote the integration of smallholder farmers into larger value chains and thereby achieve agricultural transformation (Ref. 16-59).

16.6.6.2.2 Tourism

Institutional and Policy Framework

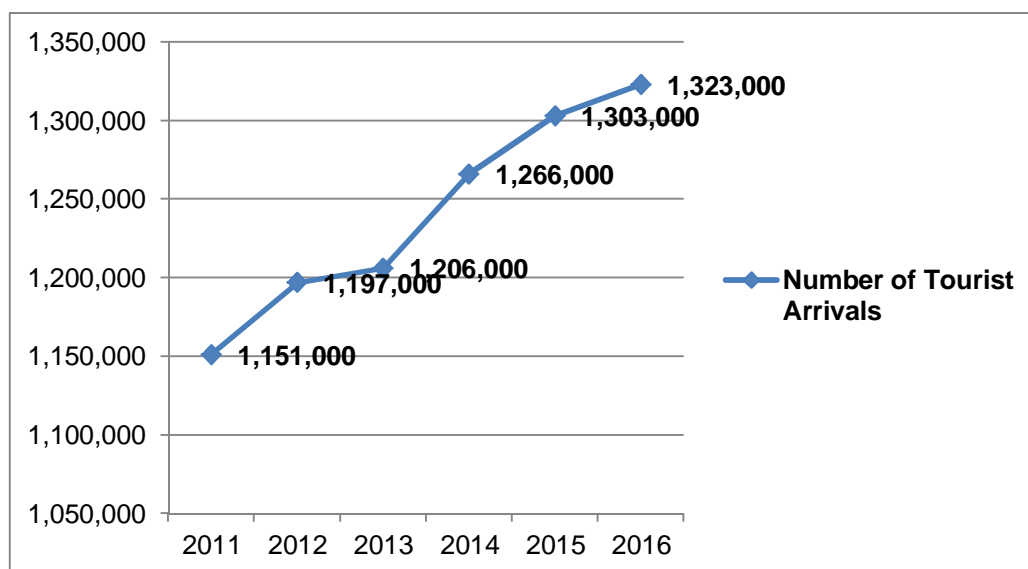
In 2011, the Ministry of Tourism, Wildlife and Antiquities (MWTA) (formerly known as the Ministry of Tourism, Wildlife and Heritage) was created as a stand-alone ministry. Buliisa and Nwoya districts are part of the North-western Tourism Development Areas (TDA) identified in the Tourism Development Master Plan 2014-2024. This TDA, "Safari and River", (with Masindi, Kiryandongo, Nebbi, Oyam, Hoima and Gulu districts) incorporates Murchison Falls National Park, as well as Bagungu and Karuma Wildlife Reserves and the northeast shoreline of Lake Albert. While Murchison Falls National Park and the adjacent wildlife reserves are the core of attractions, other sites of interest include Lake Albert, Ziwa Rhino Sanctuary and a number of cultural and historical sites such as Samuel Baker's Fort at Patiko.

Table 16-1 provides an overview of the main tourism policies and plans at the national (e.g. Tourism Policy and Tourism Development Master Plan) and protection area levels (Murchison Falls National Park General Management Plan), as well as other relevant policies that do not directly focus on tourism but form an important part of the regulatory framework (e.g. Uganda Vision 2040, National Development Plan 2015/16-2019-20, Uganda Wildlife policy 2014). Key aspects of some of these policies are further developed in the following sub-sections.

Tourism Sector

Tourism is another important sector in Uganda, and has seen strong growth since the end of conflict in the country in 2008. Figure 16-37 shows steady growth in tourism arrivals in Uganda between 2011 and 2016 (Ref.16-60). According to the Ministry of Tourism, Wildlife and Antiquities (MTWA), the western region of Uganda is home to 42% of the country's tourist attractions (lakes, hot springs, monuments and national parks) (Ref. 16-61).

Tourism accounted for 9.9% of GDP amounting to USD 1.8 billion in 2014. Tourism is Uganda's single largest export earner and generator of foreign exchange, at USD 1,039 million per annum. (Ref. 16-61). In 2014 the tourism industry contributed 590,000 jobs (direct and indirect) nationwide and directly provided 247,000 jobs⁵⁴, estimated to be 8.8% and 3.6% of total employment respectively (Ref. 16-62).



Source: Ref. 16-60

Figure 16-37: Tourism Arrivals in Uganda (2011-2016)

⁵⁴ This includes employment by hotels, travel agents, airlines and other passenger transportation services, and activities of the restaurant and leisure industry directly supported by tourists.

The tourism sector has been prioritised in the Uganda Vision 2040 and as a primary growth sector in the National Development Plan II (2015 to 2020). Tourism has also been highlighted as an important component of Local Government Development Plans. The Tourism Policy (2013) aims to make the tourism sector a means of poverty reduction. Its specific objectives are: increase revenue by increasing the number of tourists, length of stay, and daily expenditure; more effective distribution of revenue among districts and communities; and the development of eco-tourism, agro-tourism, and community tourism services.

Forecasts for the tourism industry for 2025 show substantial increases from 2014 in absolute numbers for revenues, visitors, employment and investment (Table 16-24, Source: Ref. 16-62). However, with broader economic growth expected to occur, tourism's relative contribution to GDP and jobs is expected to increase only marginally.

Table 16-24: Estimate and Forecast of Tourism Contribution to the Ugandan Economy

	2014		2025	
	USD million	% of total	USD million	% of total
Direct contribution to GDP	2,762.5	4.3	5,548.1	4.3
Total contribution to GDP	6,395.4	9.9	13,093.2	10.2
Direct contribution to employment (number of jobs)	247,000	3.6	377,000	3.7
Total contribution to employment (number of jobs)	592,500	8.6	921,000	8.9
Visitors export ⁵⁵	3,549.3	26.0	7,173.2	23.5
Investment	699.5	4.6	1,501.2	5.0

Source: Ref 16-63

Murchison Falls National Park

Located in the northeastern part of Buliisa District and the southwestern part of Nwoya District, MFNP is the largest national park in Uganda and covers a large percentage of the Study Area: 61% of EA 1A, 65% of CA 1 and 23% of LA 2 North. Since 2012, MFNP has been one of the most visited national parks in Uganda, with more than 75,000 visitors in 2016 (Table 16-25). Tourists visiting MFNP in 2014 accounted for approximately 33% of visitors to national parks in Uganda (Ref. 16-61). Most visitors to MFNP are foreigners, originating from the UK, USA, Germany and the Netherlands. Resident expatriates also visit the park for short stays. Peak tourist season in MFNP is considered to be from mid-June to mid-September and from December to February (Ref. 16-61).

Table 16-25: Visitors to National Parks (Citizens and Foreigners), 2012 - 2016

National Parks	2012	2013	2014	2015	2016
Murchison Falls	60,803	70,798	66,844	72,964	75,360
Queen Elizabeth	58,172	69,193	58,769	65,366	85,905
Lake Mburo	22,927	14,068	26,980	24,979	26,012
Bwindi Impenetrable	18,259	21,695	20,611	16,476	19,522
Kibaale	10,372	10,834	12,097	10,463	11,760
Semliki	3,591	5,752	4,824	10,389	8,214

⁵⁵ Visitors export refers to spending within the country by international tourists for both business and leisure trips, including spending on transport, but excluding international spending on education.

National Parks	2012	2013	2014	2015	2016
Mgahinga Gorilla	2,497	8,952	3,033	2,648	3,840
Kidepo Valley	2,300	2,890	4,091	5,663	7,824
Rwenzori Mountains	1,663	2,724	2758	3,343	3,192
Mount Elgon	1,565	2,096	2314	2,669	3,335
Toro Semliki	0	4,948	564	598	761
Katonga	-	-	-	-	-
Total	182,149	213,950	202,885	215,558	245,725

Source: Ref 16-60

The 2015 SHBS found that tourism activities are concentrated in three main areas in the western part of MFNP (accounting for 90% of tourist visits): the Delta (game drive), top of the Falls, and the Falls (boat cruise). The majority of tourists visiting the park are part of an organised tourist package, which covers transportation, accommodation, food and park entrance fee (Ref. 16-3).

The main tourism facilities and sites in the Primary Study Area are shown in Figure 16-38.

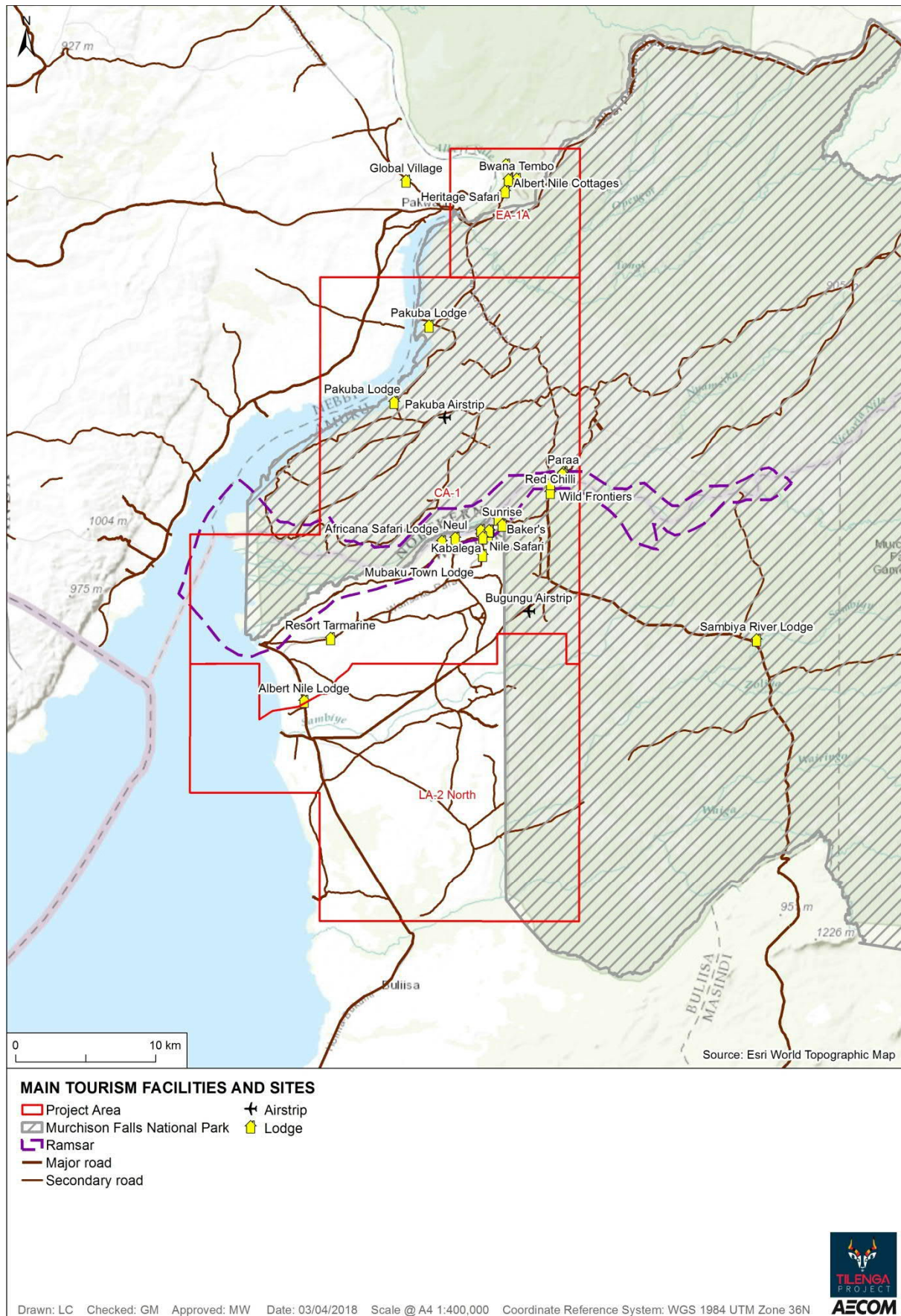


Figure 16-38: Main Tourism Facilities and Sites

Tourism Lodges

Tourist accommodation in MFNP includes lodges, budget camps, and transit hotels in Masindi town. There are 17 lodges in direct proximity to MFNP concentrated in the two tourism spots: close to Paraa on the south shore of the Delta, and close to Tangi Gate along the River Nile. There are five lodges in MFNP: Paraa Safari Lodge, Chobe Safari Lodge, Pakuba Safari Lodge, Sambiye River Lodge and Red Chilli Rest Camp. There are also 12 accommodation facilities located in close proximity to MFNP: 11 on privately owned land and Budongo Eco Lodge which has a concession from the National Forest Authority. The supply of accommodation for tourists has doubled in the past five years (Ref. 16-3).

According to the 2015 SHBS (Ref. 16-3) occupancy level of lodges and hotels varies depending on the provider and differs from 20% up to 80% (see Table 16-26). Higher occupancy is reported as being a result of having access to international markets through international sellers, having an on-line profile, and being mentioned in international travel guide books, such as the Lonely Planet. The average length of stay is from two to three nights.

Table 16-26: Occupancy Rate for Selected Lodges and Hotels

Name	Occupancy rate	Average length of stay	Customers origin
Budongo Eco Lodge	N/A	2 nights	95% international customers
Bwana Tembo Safari Camp	65%	2 to 3 nights	75% international customers, 25% national and expatriate customers
Chobe Safari Lodge	25%	2 nights	50% international, 50% national customers
Fort Murchison	N/A	2 to 3 nights	70% international customers: Holland, Belgium, Germany, 30% of expats/volunteers from Kampala
GeoLodges Nile Safari Lodge	35%	2 to 3 nights	90% international customers: Germany, UK, Holland
Murchison River Lodge	N/A	3 nights	60% international customers incl. expatriates, 40% East Africans
Murchison Safari Camp	15%	1 night	International backpackers
Pakuba Safari Lodge	20%	2 nights	80% international customers
Paraa Safari Lodge	65%	2 nights	80% international customers: USA, Italy, UK, Holland, Germany, 20% business tourists
Red Chili Rest Camp	80%	2 nights	90% international customers, backpackers: Europeans (UK, Germany, Holland), Israel, USA
Sambiye River Lodge	20%	1/2 nights	80% international customers

Source: Ref. 16-3

16.6.6.2.3 Minerals

According to the NDPII, the minerals sector (including the oil and gas sector) contributed 0.3% to GDP in 2013. The government has prioritised attracting private investment in mineral resources exploration and development and recent discoveries have been made of iron ore reserves, marble/limestone, uranium, Nickel-Cobalt-Copper-Chromium, Platinum-Group-Minerals, Gold rich anomaly and rare earth elements.

In the oil sub-sector, more than a 100 exploration wells have been drilled since 2006 with a success rate of 89%. Total oil in place is estimated to be 6.5 billion barrels (with 1.5 billion barrels recoverable) and 100 billion cubic feet of gas in less than 20% of the Albertine Graben. Private sector investment in the oil and gas sector has been increasing and between 2010 and 2012 cumulative investment in the sector amounted to approximately USD 1.8 billion. Key investments for this sector identified in the

NDPII include: development of geological surveys; investment in more survey and exploration; faster acquisition of land; construction of three pipelines (export crude oil pipeline, refined products pipeline to Kampala, Eldoret and Kigali, and Liquefied Petroleum Gas pipeline to Kampala and Gulu), construction of an oil and gas refinery, and increased prospecting and processing of the selected minerals (Ref. 16-34).

16.6.6.2.4 Other Industry Sectors

Other industry sectors have seen positive growth, particularly food processing and saw milling, which saw growth from 2012 to 2013 of 10.5% and 8.4%, respectively. There are over 2,000 enterprises registered in manufacturing and processing, engaged in: agro-processing (63%), metal fabrication, furniture, bricks and tiles (12%), pharmaceuticals and other chemicals (6%), paper, plastics and cosmetics (6%), confectionaries (3%), electricals and electronics (3%) and others (10%). The potential for Uganda to increase wealth generated by exporting processed agricultural and simple manufactured goods to the region, particularly to markets in South Sudan and DRC is identified in the NDPII (Ref. 16-34).

16.6.6.3 Livelihoods in the Study Area

In 2014 close to 80% of all households in the country were involved in agriculture compared to 74% in 2002. Of the households involved in agriculture, nearly 75% were engaged in crop growing while 58% were involved in livestock keeping (Ref. 16-29).

Livelihoods in the Study Area are mainly subsistence based and are primarily centred on agricultural activities, livestock rearing, fishing and natural resource exploitation, with some employment generated by the tourism industry.

Households in the Primary Study Area will often rely on more than one livelihood strategy. For example, some families own cattle, have small plots of land for agriculture, and fishing boats along the lakeshore. Livelihood diversification is a coping mechanism to deal with any shocks and challenges, including, for example, impacts from adverse weather or reduction of fish as a result of over-fishing. Livelihood strategies are influenced by geographic location (e.g. closeness to the lake, or fertile soil conditions), ethnic group (predominantly fishing and crop farming for Alur and livestock keeping for Bagungu), and the season (changes in livelihood strategies depending on the dry or wet season).

Chapter 19: Ecosystem Services looks in more detail at the natural resources upon which the livelihoods in the Study Area depend.

Chapter 5: Stakeholder Engagement provides an overview of NGOs and CBOs focus on livelihood support programmes in the Study Area.

16.6.6.3.1 Institutional and Policy Framework for livestock, crop production and fisheries

The livestock, farming and fisheries sectors are supervised under specific departments within the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). The MAAIF is responsible for setting the regulations and policies that guide these sectors, while specific development strategies are set out within the country's national development planning framework. In the frame of decentralisation, district local governments are responsible for the implementation of national development programmes as well as livestock, agriculture and fishing regulations and policies. The District Production and Marketing Department (DPMD), headed by the Production Officer, is the main institution in charge of supervising these sectors at the district level.

More information on the institutional and policy framework for crop production, livestock and fisheries is provided in Appendix G of this ESIA (Workstream D and Workstream B).

16.6.6.3.2 Livestock

Livestock rearing is an important livelihood activity for rural households throughout Uganda. According to the 2008 National Livestock Census Report (Ref. 16-29), livestock rearing in 2008⁵⁶ was a source of livelihood for 4.5 million households (approximately 71% of the national population). Despite this, livestock rearing only accounted for 4.3% of Uganda's GDP in FY 2015/2016 (Ref. 16-29).

Livestock in the Primary Study Area⁵⁷

In the Primary Study Area, 80% of respondents from the 2015 SHBS (Ref. 16-3) indicated that they own livestock, mostly chicken, goats and cattle. They use livestock for personal consumption (milk and eggs), as a means of security, and as a savings mechanism. Households sell their cattle to pay for important and exceptional expenditures (such as school fees, medical treatments, weddings or funerals) and sometimes as capital to invest in other economic activities (such as opening a shop or in farming). Livestock production practices are traditional with limited access to and use of modern inputs. There are limited processing facilities for cattle products in Buliisa District, with two slaughterhouses and a milk refrigeration unit. The milk refrigeration unit provides facilities for a local dairy cooperative to purchase milk from cattle owners and export it to a large dairy company based in Kampala (Ref.16-8).

The local economy benefits from the sale of livestock and livestock products such as meat, milk, skins and hides. Milk is the main cattle product, but live animals and meat are also sold at local and national markets and as far as Sudan. At the district level revenue generated from livestock (through tax levies) is limited as most livestock products are traded informally (Ref. 16-3).

Livestock and dairy community groups in the villages in the Primary Study Area are usually formed under government livelihood support programmes, which request communities to organise into official associations to benefit from in-kind grants. Within the villages surveyed as part of the 2015 SHBS cattle associations were reported in Kasinyi, Kigwera, Buliisa (district level) and Kijangi. Outside government frameworks livestock owners rarely organise collectively. Although livestock owners and herders share advice among them about productivity improvement techniques, they rarely organise collectively to improve their production practices. Livestock rearing is an activity conducted individually, with some collective initiatives limited to the family and close relatives (Ref 16-3).

Land use within the Primary Study Area and its relation to livestock management is discussed under Section 16.6.7.4.1.

Buliisa District

Animal husbandry in Buliisa District is practiced at the household level with limited commercial purposes. There are two main types of livestock production systems in Buliisa:

- A free range system where animals, under the supervision of a herdsman, roam freely. This system is practiced in communal grazing areas (Kigwera, Buliisa and parts of Ngwedo Sub-Counties) where the major type of livestock raised is cattle and livestock rearing is practiced mainly by the agro-pastoralist Bagungu ethnic group. Other smaller animals are also reared freely without supervision; and
- A tethering system where animals are tied to a tree or stake close to homesteads. This system is mainly practiced in the crop farming eastern part of Buliisa District (Ngwedo and Buliisa Sub-Counties), where animals cannot roam freely as they would destroy crops.

Owning cattle is considered a sign of wealth and elevated social status by the Bagungu. Livestock owners with large herds are generally well respected by community members. Cattle are kept as a capital asset that enable owners to source cash when needed (e.g. school fees or for unexpected expenses such as funerals). Livestock are also used to pay the dowry of daughters.

⁵⁶ More recent data was not available at the time of writing.

⁵⁷ This section is summarised from the 2015 SHBS (Workstream D "Livestock and Grazing") (Ref. 16-4).

Alur are not traditionally involved in cattle keeping but they do keep smaller animals for consumption purposes rather than income generation. They also use smaller livestock for dowries and for ritual sacrifices at sacred sites. Goats and chickens are considered a valuable asset as they can be sold quickly and easily, and are low maintenance. They are used to pay for the costs of additional labour requirements during times of harvest, household expenses, social functions, and as a quick cash source during poor harvest years.

Table 16-27 provides a breakdown of the number of livestock within Buliisa District and the production purpose of livestock rearing. For comparison, Table 16-27 shows the livestock profile for the households affected by land acquisition for RAP1 – Priority Areas (Industrial Area and Access Road N1 only).

Table 16-27: Livestock Numbers within Buliisa District

Type of livestock	Production purpose (in Primary Study Area)	Total number of livestock		
		Buliisa District	Western Region Share of livestock from Buliisa District (%) (Total number for the region)	Uganda Share of livestock from Buliisa District (%) (Total number for the country)
Chicken	Home consumption Sale Savings	99,930	1.39% (7,210,120)	0.27% (37,443,880)
Goats	Home consumption Sale Dowry Savings	43,326	1.26% (3,452,239)	0.35% (12,449,656)
Cattle	Home consumption Sale Dowry Savings	34,800	1.55% (2,248,620)	0.31% (11,408,740)
Sheep	Home consumption Sale Dowry Savings	3,880	0.68% (567,870)	0.11% (3,413,340)
Pigs	Home consumption Sale	850	0.11% (778,350)	0.03% (3,184,300)
Rabbits	Home consumption Sale	90	0.06% (141,870)	0.02% (373,190)
Ducks	Home consumption Sale	Not known	(300,610)	(1,458,250)
Turkeys	Home consumption Sale	Not known	(21,900)	(348,320)

Source: Created by Ref. 16-3 using data from Uganda National Livestock Census 2008 Report (Ref. 16-29)

Table 16-28: Livestock rearing profile for RAP1 Priority Area

Type	Percent of households	Number of Animals		Average Livestock Holdings
		Local	Exotic	
Goats	84.8	5,889	42	11
Chickens	78.8	7,130	47	14
Cattle	55.0	6,123	30	18
Ducks	38.9	2,085	3	9
Sheep	33.4	1,787	3	8
Pigs	10.2	370	0	7
Pigeons	5.6	571	36	16
Rabbits	3.1	130	9	8

Source: RAP1 Priority Areas (Draft Social Baseline Report (2017))

Within the Primary Study Area in Buliisa District, which includes Buliisa Town Council and sub-counties of Buliisa, Kigwera and Ngwedo, there are approximately 27,000 head of cattle, which represents approximately 74% of the total cattle herd within Buliisa District (Ref. 16-3). According to the District Veterinary Officer (interviewed as part of the 2015 SHBS), recent trends show an increase in the number of cattle in Buliisa District, with subsequent overgrazing.

The distribution of cattle is largest in Kigwera sub county (18,401 heads of cattle, mainly in Kisansya and Kirama parishes), followed by Buliisa Town Council (5,000 heads), Buliisa sub county (2,282 heads) and Ngwedo sub county (1,293 heads). The cattle population in Ngwedo is significantly lower, likely due to the characteristics of soil fertility and the large proportion of land dedicated to agriculture.

The 2015 SHBS found that within the Primary Study Area, approximately 28% of households own cattle, with an average herd of 19 animals (households reported between 3 and 130 animals). While not the norm, instances of cattle herds over 1,000 heads per household was reported during the 2015 SHBS (e.g. in Kibambura Village). Herds are mainly composed of East African short horn zebu (70% of the herds in Buliisa District), frequently mixed with Ankole (25%) and cross-breed species (5%). Poultry and goats are the most commonly owned livestock type at the household level. Approximately 68% and 84% of households own goats and chickens, respectively, with an average of 11 free-range chickens and 7 goats per household.

Pigs are not traditionally reared in the district. They have been progressively introduced by government programs (NAADS among others) and NGOs, and represent around 800 animals, which can be found both in grazing and in crop cultivation areas. Approximately 9% of respondents to the 2015 SHBS declared that they own sheep. There are also several chicken and piggery farms in the district, created under the NAADS and NUSAF II programs. They are located in the surroundings of Buliisa Town Council. Other livestock are also kept on a small scale such as rabbits and pigeons.

Figure 16-39 shows pictures of short-horn zebu and ankole cattle grazing in Buliisa District.



Figure 16-39: Cattle Grazing Bulliisa District

Nwoya District

Several contributing factors have resulted in a shift in the livelihood patterns of the population of Got Apwoyo and Purongo Sub-Counties, and Nwoya District at large, from traditional livestock production to crop farming. These factors have included the conflict in the Acholi region, fragmentation of communal grazing lands, depletion of livestock, loss of traditional knowledge of livestock rearing amongst younger generations, and the presence of wild predators from the MFNP (Ref. 16-3). Crop farming is now the main livelihood for the Alur and Acholi in Nwoya District and there are reportedly only a few hundred cattle farmers left in the district. Cattle were observed in Got Apwoyo near Barylec Parish. The cattle are reported to belong to the Banyankole (FGDs, Tegot Village and Got Apwoyo sub county, ESIA SBS December 2016). Some smaller livestock that are kept by subsistence farmers include goats, sheep, chickens and pigs; some households report keeping ducks, rabbits and pigeons, but this is less commonly practiced.

There is a large-scale cattle ranch in Nwoya District (owned by Amida Investment Limited) that aims to develop large-scale ranching operations with the purpose of producing export-quality beef (Ref. 16-3).

Seasonality in Livestock Keeping

The 2015 SHBS reports that during the rainy season (March to May and August to October) when natural resources are abundant, cattle graze close to their kraals and are generally more productive. Increased income from livestock products during the rainy season boosts spending on local commodities such as fish and agricultural products. Balaalo move into the area in increased numbers during the rainy season when employment opportunities and milk production are higher (therefore expectations for higher in-kind payments). During the dry season (November to February), cattle mobility is the key coping mechanism to face resource scarcity, health condition of cattle is generally weaker and cattle value and trade is lower. During the dry season livestock owners also practice other livelihoods such as fishing or exploitation of other natural resources. Conflict between cattle keepers and crop farmers tends to be higher in the dry season as cattle are moved closer to crop farming areas and water points in search of pasture. Specific locations where such conflicts were reported include Ngwedo sub county (Kasinyi, Kibambura, and Uduk II) Bulliisa sub county (Bugana Kataleba, Bugana Kichoke, Kijumbya) and in Kigwera sub county (Katanga, Kisansya West, Kiyere, Ndandamire and Kirama).

Cattle graze on Angolo grass during the wet season, but during the dry season the availability and quality of the grass reduces, such that herdsmen may travel up to 12 km in search of suitable grazing land. Finding water for animals to drink can also involve long journeys up to 5 to 6 km and it can sometimes take up to three days to find water. An increase in cattle grazing has resulted in increased competition for grazing pasture. Inadequate rains have also affected the quality of pasture (FGD with Balaalo, AECMO SBS, November 2016).

Figure 16-40 provides a simplified overview of the movement of cattle during the dry season; however, it should be noted that livestock herders travel longer distances to Murchison or Bagungu for grazing, which are not shown in this figure (Ref. 16-8).

Division of Labour in Livestock Keeping

Gender Roles in Livestock Keeping

Cattle farming is predominately undertaken by men, whereas women and children care for smaller livestock such as sheep, goats and chickens. Women's role in livestock rearing includes providing water for cattle when they are kept at home, consulting with the vet when animals become ill, taking care of young animals, making sure the cattle remain within the fence (kraal) on the household compound, and occasionally taking the animals grazing. Men's role involves grazing cattle, milking and providing health treatments. Women also occasionally take care of their husband's herd if he is away or sick.

Role of Children and Youth

Children assist their mother with the small tasks involved with taking care of small livestock and children also take part in cattle rearing during their holidays and weekends.

Role of Balaalo Herdsmen

Most livestock owners in the Primary Study Area hire Balaalo herdsmen to look after their cattle (see also Section 16.6.3.3 and Section 16.6.8.4.1 for further discussion of the Balaalo and historic tensions between the Balaalo and Bagungu). The tasks given to a Balaalo consist in milking the cattle, conducting them to grazing areas and watering points, looking after lost cattle and providing them with medical care. As well as looking after other peoples' animals, the Balaalo own some cattle themselves and these are often mixed in with the herds they are looking after. The Balaalo's employers usually tell them where to go to graze (FGDs with Balaalo, ESIA SBS, December 2016).

Balaalo are typically paid in-kind by milk (during the wet season) or in cash (during dry season when milk is less plentiful). Cash payments to herdsmen can vary between UGX 60,000 – 100,000 per month. Reports have indicated that since the development of a milk refrigeration unit in Buliisa, in kind payment (milk) to herdsmen has decreased and "they are now struggling to purchase alternative sources of protein as their cash payment has not increased to compensate for removal of their payment in kind of milk" (Ref. 16-3).

Balaalo sell the milk they are paid in-kind and can make cheese, which they also sell. As such, they are sensitive to variations in market prices for milk. Fifty cattle can provide up to ten litres of milk per day but the prices for milk are reported to be low. The low price of milk is a result of poor methods for milk collection and poor quality due to shortages of water for cattle. A ban on selling milk due to an outbreak of foot and mouth disease was reportedly lifted at the end of 2016. There is only one dairy in Buliisa, which also creates a challenge for selling milk (FGD with Balaalo, ESIA SBS, December 2016).

Livestock Acquisition and Sale

Livestock is acquired through traditional cultural mechanisms (such as inheritance and dowry), purchase and production. Inheritance is the main strategy for livestock acquisition (especially cattle, goats to a smaller extent). Men usually own livestock and cattle are transmitted from father to son. Sons rarely inherit cattle while their parents are still alive and purchase of cattle is therefore a common strategy for young men to acquire livestock. They must usually engage in another economic activity first to acquire enough capital to purchase cattle. Grants (livestock donations) or loans from government programs are also a way of acquiring livestock. These programmes distribute livestock (cattle, goat and sheep) to poor rural livestock households gathered into farmers groups (Ref. 16-3).

Women can own livestock and some women in the Study Area reported owning animals. Some buy their own animals, or they inherit them from their parents, or they can be a gift from their husband. Sometimes if women take care of someone else's livestock they may be given a percentage of their offspring if the animal gives birth. Ownership of livestock gives women a degree of financial

independence from their husbands, although control over livestock can also be a source of domestic disputes (FGDs with women in Buliisa District, ESIA SBS November 2016).

Cattle are sold directly at the farm gate or at livestock markets that are held twice monthly in Buliisa (held every Tuesday of the first week of the month in Buliisa Town Council and, a less important market, held every Tuesday of the third week of the month in Kigwera sub county). Markets work on an auction system. When cattle are traded at the farm gate they can sell it to other community members, local middlemen or livestock traders. Owners often prefer to sell their cattle at local auctions as they can get a better price for the animal. Cattle products (milk, meat and hides) are reportedly sold locally first (e.g. to neighbours) then regionally and nationally. Buyers also visit the district to purchase live cattle stock (Ref. 16-3).

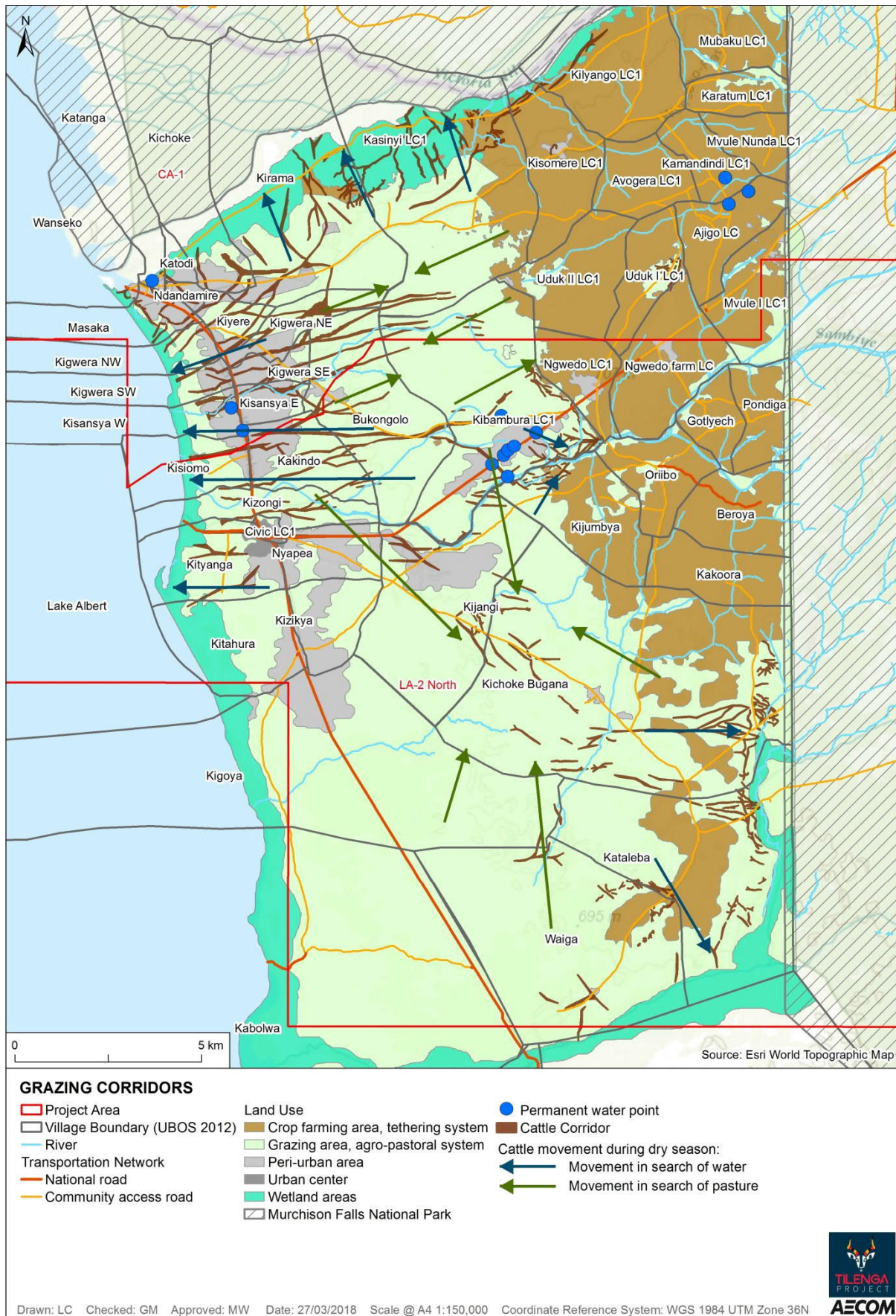


Figure 16-40: Grazing Corridors

Market and Price of Livestock Products

Meat, milk and hides and skins are the primary livestock products that are commercially sold within the Primary Study Area. The price of live animals depends on several factors: animal breed, general features of the animal (size, weight, health and age), seasons and local and regional supply and demand. Table 16-29 presents the average prices of cattle and goats that were collected in FGDs undertaken as part of the 2015 SHBS.

Table 16-29: Average Prices of Cattle and Goats⁵⁸

Type of livestock	Features	Observed prices (UGX)	Market prices (UGX)
Cattle (short-horn zebu)	Small cow	500,000	-
	Medium cow	600,000	650,000
	Large cow	800,000	-
	Bull	800,000	975,000
	Heifer	800,000	575,000
Cattle (Ankole)	Medium cow	1,200,000	-
Cattle (Friesian or Brahman)	Medium cow	2,500,000	-
Goat	Male adult goat	100,000	-
	Female adult goat	100,000	125,000

Source: Ref. 16-3

The price of meat per kilogram fluctuates in local markets in Wanseko, Buliisa and Kigwera and ranged between UGX 6,000 to 8,000. A litre of milk costs approximately UGX 600 and a kilogram of ghee costs approximately UGX 12,000 at the farm gate. Hides average UGX 1,000 per kilogram and skins average UGX 1,500 per kilogram. It is important to note that prices of livestock products fluctuate on a seasonal basis and with various factors, and are not fixed. For example, milk production tends to increase during the rainy season due to abundant pasture and water to feed the animals. A higher supply of milk in the market tends to drive down the prices during the rainy season (Ref. 16-3).

Livestock Health

Veterinary services are provided by the District Veterinary Officer who, in coordination with other entities, is responsible for:

- Monitoring and improving health conditions of livestock;
- Ensuring livestock production respects public health requirements;
- Controlling cattle movement in and out the district, as well as import and export to regional markets, through cattle quarantine stations (one is located in Wanseko on the livestock route gazetted by the government linking Masindi to Nebbi through Buliisa District);
- Improving livestock productivity;
- Inspecting livestock markets and controlling the prices and sales in animals and animal products; and

⁵⁸ These prices are similar to those reported during a FGD with women in Kirama as part of the ESIA SBS, where income earned per head of livestock was reported to be approximately 400,000 to 1 million UGX for cows; 40,000 to 120,000 UGX for goats, and 30,000 to 100,000 UGX for sheep (FGD, Kirama, 24 Nov 16).

- Training farmers on healing practices, productivity improvement techniques, livestock regulations, etc.

The most common livestock diseases in the Primary Study Area, reported in the 2015 SHBS, are:

- Foot and mouth disease: an infectious viral disease that can be fatal (epidemics happened in 1996 and 2009);
- African Animal Trypanosomiasis (also called nagana fever): transmitted by tsetse flies (894 cases of infected cattle were reported during the 2015 SHBS by the District Veterinary Officer over the last semester of 2014);
- East Coast Fever: a disease caused by a protozoan parasite infection (72 cattle cases reported), babesiosis (28 cases), anaplasmosis (44 cases), and heart water (19 cases), transmitted by ticks;
- Mange: a skin disease caused by parasitic mites. 31 cattle cases and 121 goat cases were reported;
- Coccidiosis, a parasitic disease of the intestinal tracts of poultry; and
- Fowl pox and Newcastle diseases, affecting poultry.

Methods used by livestock owners to avoid these diseases include appropriate feeding to boost the livestock immune system; avoidance of disease prone areas; tick removal; and disease prevention using vaccination/ immunisation or deworming treatments.

To treat sick animals, owners can quarantine the animal and self-medicate it with appropriate drugs; request help from the District Veterinary Officer (though fees are high and unaffordable to many local livestock owners); or, bring their animals to a private medical clinic (currently there are two in Buliisa District). Balaalo herdsman also use their own medicinal practices to treat cattle, based on natural caring practices.

Challenges in Livestock Keeping

Livestock-based livelihoods in the Primary Study Area are particularly sensitive to seasonal changes such as drought, and are often affected by stock theft⁵⁹ and disease. Changes to land use and growing pressure from other land users are also contributing to the decrease in natural resources to maintain livestock livelihoods. Livestock herders are becoming increasingly vulnerable as they “do not have individual or collective coping mechanisms, neither infrastructure that would allow them to face resource scarcity” (Ref. 16-3).

Access to water is a challenge⁶⁰. No water troughs or watering points within the Primary Study Area were observed during the 2015 SHBS, however, some were observed during the asset inventory undertaken for RAP 1 (for CPF area). Three man-made dams were identified; however, they had reportedly dried out and had not been replenished (Ref. 16-3). Lake Albert is a key water source for cattle. Other sources include permanent rivers, seasonal streams, dams, swamps and ponds, and shallow wells, shallow wells and existing marshes. Water sources are communally shared resources. During the dry season, livestock herders sometimes bring their cattle to graze and water within the MFNP, which is an illegal practice.

Changes to land use have also been noted as a severe threat to livestock herders, as community members have been reported to sell communal land to private investors, which severely diminishes grazing areas. The increasing rate of urbanisation is also a constant threat to livestock herders and their livelihoods. During the ESIA SBS cattle were seen grazing on or close to land used for government facilities (health centres, schools, sub county offices) and local health centres reported

⁵⁹ Livestock theft is the most common crime reported to police in the Primary Study Area (reported during interviews with police and security officers during 2015 SHBS). Theft is usually of smaller animals such as goats, rather than cattle because cattle are harder to steal and are usually branded.

⁶⁰ During a FGD with a Balaalo representative it was reported that it can take up to three days to find water (FGD, Kibambura, ESIA SBS).

that livestock trespass onto their land is a problem (see Figure 16-41). Some of the infrastructure built for oil activities, such as accommodation camps have also been built within the communal rangeland.



Figure 16-41: Cattle Grazing around Kigwera Health Centre II

The limited availability of grazing areas reportedly often leads to disagreements between livestock owners and crop farmers over land encroachment and the destruction of property by cattle. Tensions between livestock owners and fishermen were also reported during the 2015 SHBS, as livestock are reported to occasionally damage fishing nets when grazing and watering near the shores of Lake Albert. Livestock were also blamed for the potential contamination of water (increased turbidity in the water and chemical pollution from treating the livestock), which fishermen believe could result in the depletion of fish stock (Ref. 16-3).

Livestock keepers have limited coping mechanisms to address pasture and water management. This is attributed to a general lack of collective organisation among livestock owners as well as lack of knowledge. Existence of livestock savings groups was not mentioned during baseline surveys.

Challenges faced in relation to the livestock value chain include lack of access to information on current market prices; lack of a proper market for live cattle regulated by district authorities and where minimum prices would be guaranteed; low milk productivity of local cattle; absence of an abattoir in Buliisa District (greatly limiting the local processing of livestock); and limited milk collection, processing and storage facilities.

16.6.6.3.3 Crop Farming

Nationally, farmers grow food crops such as cassava, sweet potatoes, beans, groundnuts, sesame (known locally as sim sim), sorghum and millet. The main cash crops include groundnuts, rice, maize, beans, sesame, and to a lesser extent cassava and millet. Perennial crops including coffee and green banana are mainly grown in southern parts of Uganda which experience higher annual rainfall and have a less pronounced dry season. Due to decreasing market prices and land access, the farming of cotton and tobacco is becoming less common. The agricultural calendar is made of two cultivation seasons (March to June and July to November) following the bi-modal rainfall pattern and the short maturity cycles (around 4 months) of most of the crops grown.

Crop farming in the Primary Study Area is undertaken in areas where land is the most fertile, especially eastern Ngwedo sub county, known as the “food basket” of Buliisa District. People living in other parts of Buliisa District whose primary livelihoods are fishing or cattle keeping commonly migrate to Ngwedo to undertake crop farming on a seasonal basis⁶¹ on plots that they rent or own. Very small scale cultivation is also undertaken within fenced gardens around homesteads in the rangeland area of Buliisa District.

⁶¹ According to the 2015 SHBS household survey, 85% of Bagungu households living in cattle keeping areas of central Buliisa District practice crop farming and fishing as complimentary activities.

Multiple factors have constrained the development of agricultural livelihoods in the Primary Study Area, such as: changes in the climate, wildlife encroachment on agricultural land, disease, the high cost of labour, inadequate storage facilities for harvested crops, lack of irrigation, low market value of produce, and lack of market access resulting from inadequate transport infrastructure (Ref. 16-3). Human wildlife conflict is an important issue, particularly within Nwoya District – further information is provided below under the section on *Challenges in Crop Farming*.

Crop Farming in the Primary Study Area

Buliisa District

According to the Buliisa District Development Plan, over 45% of the population depends on subsistence farming as their main source of livelihood. Agricultural activity in Buliisa District is primarily located within Ngwedo sub county, away from the main livestock grazing zones. Ngwedo sub county is dominated by the Alur but many Bagungu also own or rent small garden plots there. During the rainy season, Bagungu women from Kigwera sub county and part of Buliisa sub county temporarily move from Buliisa sub county to Ngwedo sub county for two to three months a year to practice farming.

Nwoya District

The major economic activity in Nwoya District is cultivation with mechanised and commercial farming activities being most prominent and employing over 90% of the total active population. Although 90% of the land in Nwoya District is regarded as fertile, only 10% is cultivated (ref. 16-3). This is due to several factors such as limited access to markets, lack of mechanized equipment, storage and transportation facilities, or irrigation systems. Human-wildlife conflict is also a serious constraint (Ref. 16-6). The availability of productive land is reportedly attracting people from other parts of Uganda to come to Nwoya to farm and commercial farming in the district is also growing, which attracts farm casual labourers. (FGD, Purongo sub county and KII Nwoya District Production Officer, ESIA SBS December 2016).

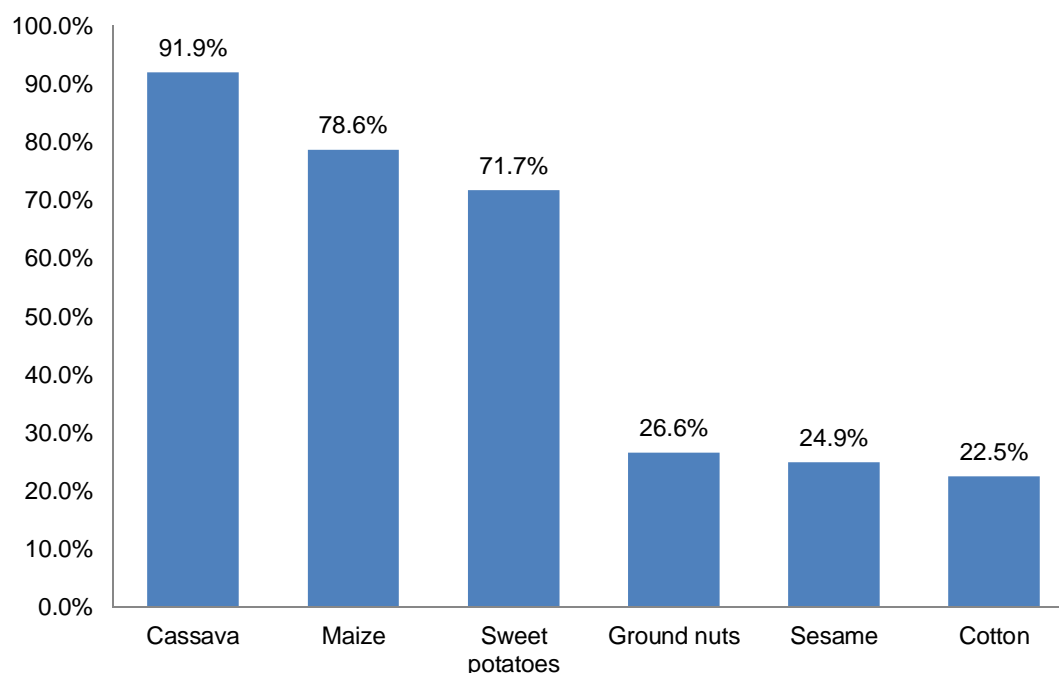
In Nwoya District there is reportedly a trend amongst youths to move away from agricultural areas and activities towards urban areas where they seek waged employment and become involved in small business ventures (e.g. motorcycle or 'boda boda' transportation) instead of agriculture (Ref. 16-3).

Crops Grown

The 2015 SHBS and RAP1 Social Baseline Report indicates that a diversity of crops is grown in the Primary Study Area from staples to vegetables and fruits, including:

- Tubers: cassava, sweet potatoes, Irish potatoes;
- Cereals: maize, millet, sorghum, sesame (known locally as simsim), rice;
- Vegetables: beans (including soya), peas, groundnuts, pumpkins, eggplants, tomatoes, red pepper, onion, okra;
- Fruits: lemon, orange, papaya, banana, matooke mango, jackfruit, pineapple, watermelon, passion fruit, avocado, pineapple;
- Cash crop: cotton, tobacco ;
- Other plants: cashew nuts, sugar cane, palm tree; aloe vera; and
- Trees: acacia and lira tree species are grown mainly for use in construction and to use as firewood. The acacia trees used to grow wild but as the available stocks reduced, communities begun to incorporate the planting of the trees within their farming. Neem is also grown.

Figure 16-42 presents the main crops cultivated within the Primary Study Area based on the 2015 SHBS (Ref. 16-3).



Source: Ref. 16-3

Figure 16-42: Crops Cultivated within the Primary Study Area

Cassava is the most common crop grown (by 92% of respondents to the 2015 SHBS household survey and grown on 81.4% of farm plots surveyed as part of the RAP1 surveys). Varieties include bitter cassava (the most common variety, consumed dry); sweet cassava (consumed boiled); and improved, pest-resistant varieties. Bitter cassava is dried and processed either into flour using manual or mechanical grinding mills⁶² (see Figure 16-43), or into chips. Most households also cultivate maize (79% of respondent to the 2015 SHBS and grown on 42% of claimed plots in the RAP1 surveys). Maize is dried, roasted or processed into flour. It is cooked into posho, ugali or pancakes. Other cereals (sorghum and millet) are also cooked or processed into flour and also used in local brews.

Several types of beans, groundnuts and peas are grown. Fresh vegetables (tomatoes, eggplants, red peppers) are less commonly grown due to water scarcity and lack of irrigation systems. They are usually grown close to rivers and swamps.

Cotton is the main non-edible cash crop grown in the Study Area. It is cultivated under individual schemes and cotton fields are mostly found close to the Nile River, other rivers and seasonal streams, as this crop requires soils that are deep, permeable and rich in minerals. Small coffee plantations were also recorded during the asset inventory for RAP 1 (Central Processing Facility (CPF) area).

Some food crops initially grown for personal consumption (such as cassava or sesame) can also be sold, generating important incomes at the household level. The most common cash crops grown in Nwoya District are groundnuts, rice, maize, beans and sesame. Fruit trees are increasingly cultivated as cash crops, especially citrus. In Got Apwoyo and other villages of Nwoya District, however, the cultivation of fruit trees has been voluntarily abandoned because they attract wild elephants from the MFNP that can harm villagers and destroy their properties (Ref. 16-3).

⁶² Grinding mills within the Primary Study Area can be found in Ndamamire, Uduk II, Kisansya West, Kigwera South West, Kakindo, Kityanga, Kizongi, and Kisimo.



Figure 16-43: Grinding Mill

Production Practices

Plot Cultivation Areas

The average size of cultivated land per household ranges from one to five acres, while a few individuals (generally businessmen or politicians) own larger plots of land that range between 20 to 100 acres. It is common for households to own more than one plot across different villages. “The size of the land cultivated is an essential element to social status and perceived wealth of a household: a household is generally regarded as rich if it owns more than 10 acres of land” (Ref. 16-3).

Tools and Inputs

To cultivate and harvest their land, households use pangas (long iron machetes) and axes to clear the land, and hand hoes to plough. Households that are able to spare some money generally purchase slashers, rakes and gumboots. Tractors are also available for rent; however, the high cost of rental makes it unaffordable for the majority of households. To cultivate their land, farmers generally use recycled seeds from the previous season as they are unable to afford ‘improved’ seeds. The government agricultural support programme (Operation Wealth Creation¹⁸) does provide farming groups with ‘improved’ seeds that are pest resistant. Chemical and natural pesticides and fertilisers are not commonly used in the fields. Local communities usually rely on abundant seasonal rainfalls to provide water inputs to their crops (Ref. 16-3).

Seasonality

The agricultural calendar is made of two cultivation seasons (March to June and July to November) following the bi-modal rainfall pattern and the short maturity cycles (around 4 months) of most of the crops grown (maize, sweet potatoes, peas, etc.).⁶³

Land preparation starts in February and planting begins in March (after the first rainfalls). First harvest for short maturity crops is in June/July. Harvest is followed by a new planting process. Second harvest for short-maturity and perennial crops (cassava) is in November/December.

Crop Management

The 2015 SHBS reports a number of techniques that are used to maintain soil fertility and improve productivity of land parcels including:

- Crop rotation: changing the type of crop grown on one piece of land between two planting seasons;
- Inter-cropping: planting several types of crop on the same parcel at the same time;
- Mulching: leaving crop stems and other residues to rot in the garden after harvest; and
- Fallow: leaving land fallow between different crop production periods.

Division of Labour in Crop Farming

Traditionally women are responsible for producing food crops for the family and undertake the majority of farming work in the Primary Study Area. Women and children generally labour in the plots all year round. Men support the family with ploughing during the months of March and July. Men are also generally responsible for the cultivation and selling of cash crops (cotton, sesame seeds, citrus, other fruit trees, ground nuts).

Approximately 50% of respondents from the SBHS indicated that they employ casual labourers to help with the cultivation and harvesting of crops. Children also provide support to parents during weekends and holidays. The 2015 SBHS indicated that casual labourers generally come from the poorest households in the Primary Study Area. Casual labour on other peoples' farms is also an important source of labour for unmarried youth who do not own their own land (Various FGDs, ESIA SBS). Land owners pay the labourers in cash or in-kind. Prices vary according to the type of crop, size of the land, and the type of task being performed (Ref. 16-3).

During the rainy season temporary migrants from other districts (Nebbi, Hoima etc.) and up to DRC come temporarily to the Primary Study Area to offer their services to crop farmers.

Markets and Prices for Crop Farming Products

Most farm products are sold on the roadside on a daily basis either to neighbours in the village or, for specific products such as simsim, cotton or maize, to middlemen from Buliisa and other districts. Crops are also sold in local markets. In Buliisa District, within the Primary Study Area, there is the Buliisa Town market (monthly auction), Ngwedo Town Centre (daily market but main market days are Wednesday and Saturday) and the Wanseko market - a trading centre that connects the Primary Study Area to Nebbi District and provides access to markets in the DRC and South Sudan. Farmers from Buliisa also transport their produce to the Panyimur market across the River Nile in Nebbi District on a local ferry. Farmers also bring their products to be sold to fishermen at fish landing sites. Some lodges also buy locally grown agricultural produce (especially fruit and vegetables). Local communities (especially Ngwedo sub county) complain that markets are too far from production centres and they must travel long distances on foot to reach them.

⁶³ Some crops such as cassava or cotton are perennial and require longer maturity. They are planted only once a year.

Produce from commercial farms in Nwoya District are mainly bought by intermediaries and taken to markets in Gulu, Kampala, and South Sudan⁶⁴. Products are sold in their raw form (KII, Nwoya District Production Officer, ESIA SBS December 2016).

Cotton trading differs from other agricultural products. Cotton stores organised by government act as collection points where intermediaries come to buy cotton for ginneries located outside the Primary Study Area. Several cotton stores were observed in the Primary Study Area, operating at cotton harvest time usually around November.

Prices for local produce within different markets across the districts were observed in the 2015 SHBS, the 2016 Market Asset Valuation Assessment (MAVA) (Ref 16-7) and 2017 RAP 1 draft valuation report (Ref 16-50) to be very similar. Farmers learn about market prices from various sources such as other farmers and the local radio, which quote market information from national sources and announce them in the local dialects. Prices of produce differ on a seasonal basis as a result of crop seasonality, and also differ based on quality and size (Ref. 16-6). Prices recorded during the 2015 SHBS, the 2016 MAVA and the 2017 draft valuation report for RAP 1 for local produce and their processed counterparts are presented in Table 16-30. Due to regional differences in standard of living and agricultural production, prices may be different in Got Apwoyo and Nwoya District than in Buliisa District (Ref. 16-3).

Table 16-30: Price of Main Crops and their Processed Products (Average across the Primary and Secondary Study Area)

Type of Crop	Price range min (kg)	Price range max (kg)	Average price (kg)	Average price under other weighting system	Regional price ⁶⁵ (kg)
Cassava raw				75,000 per bag 250 - 1 tuber	1,200
Cassava dry				72,000 per bag 16 000 - 18 000 per basin 1,400 per metallic dish 25,000 - 1 basin dried chips	950
Cassava flour			1,000		1,100
Sweet potatoes				96,250 per bag 13,300 per basin 500 - 2,000 per heap	-
Maize (row cob)				200 - 1 cob 1,000 - heap (5 cobs)	
Maize grain	500	1,000	760	800 - 1,000 per cup	850
Maize flour	1,000	1,500	1,333		1,500
Sorghum	800	3,000	1,800	1,000 - 1,500 - 1 cup (250g)	1,650
Millet	800	3,000	1,667	1,500 - 1 cup	1,900
Ground nuts	1,000	15,000	4,773	500 - 1 cup fresh 600 - 1 cup dry	3,900
Beans			3,000	1,000 - 1,500 per cup red beans 750 - 1,700 - 1 cup white beans	-
Red pepper				1,000 per heap (5)	

⁶⁴ Though the market in South Sudan has been significantly affected by the war there.

⁶⁵ Prices in this column were taken from Infotrade (an initiative led by regional donors that provide market prices for the main agricultural commodities in Uganda and in each region of the country) on 29th June 2015.

Type of Crop	Price range min (kg)	Price range max (kg)	Average price (kg)	Average price under other weighting system	Regional price ⁶⁵ (kg)
Field peas				1,000 - 1 cup	
Cowpeas	2,000	2,500	2,250		3,450
Bambara nuts			2,000		
Cotton ⁶⁶	1,000	1,500	1,127	1,000 - 2,500 per nice cup	-
Simsim	2,500	8,000	5,031		5,650
Simsim paste			40,000		-
Bananas				21,600 per bunch	-
Cabbage				800 - 1,000 - 1 small size 2,000 - 1 big size	
Onion				500 - 1 small heap 2,000 - 1 big heap	
Pumpkins				1,500 - 3,500 per unit	-
Okra				50 - 1 fruit 200 - heap (5 fruits)	
Eggplant	1,000	1,500	1,250	50 - 500 - 1 piece	-
Tomatoes				37,500 per basin 1,000 per big heap 500 per small heap 100 - 1 fruit	-
Yams				2,000 - 1 heap (8 pieces)	
Sugarcane				200 - 500 – 1 unit	
Avocado				500 - 4 fruits	
Palm oil (crude)				2,000 - half litre	
Banana				150 - 1 finger 6,000 - 1 small bunch	
Jack fruit				250 - 1 fruit	
Mango				200 - 4 fruits	

Challenges in Crop Farming

Households dependant on crop farming face a number of constraints, including poor soil fertility and quality, prolonged dry spells (households are highly dependent on abundant seasonal rains to water their crops), wild animals attacks (especially in Got Apwoyo in Nwoya District and in villages bordering MFNP in Buliisa District such as Muvule Nunda, Ajigo, Muvule I, Pandiga and Beroya) and crop encroachment by livestock, high cost of seeds, and crop diseases.

Crop selection is used as a coping mechanism to address potential food insecurity. Vulnerable households are known to plant more cassava, as the crop has long growing cycles, does not need as much nutrients (hence can be grown in less fertile soil), and can be harvested up to two years after maturity is reached. Diversifying crops is also used to ensure access to different types of food products and minimise crop failure.

⁶⁶ An indicative price of cotton (1,000 UGX per kg for the next harvest season) was fixed by the Cotton Development Organisation (CDO) in January 2015. This indicative price is a mechanism managed by the CDO that was initially developed to help cotton farmers to have a better idea of the price they can obtain from their production. The price of 1,000 UGX per kg is regarded by farmers as too low to cover their investments but reflects dropping international market prices according to the CDO.

For the last two-three years cultivators in the Study Area have experienced cassava mosaic⁶⁷. Local governments are trying to address the issue. Buliisa District Government, for example, took soil for testing and is trialling planting of a new type of cassava resistant to the disease (FGD, Ngwedo sub county, ESIA SBS). Harvests of other crops (maize, peas, groundnuts) in the last two to three years are also reported to have been poor, “*people were crying after last season’s maize harvest*” (FGD, Kigwera sub county, ESIA SBS). During community consultations several respondents attributed poor harvests to changing climate with reportedly longer dry and hot spells and unpredictable rain patterns (Various FGDs, ESIA SBS). Coping mechanisms in case of poor harvests are to sell small livestock and rely more on purchased foods. Households can also respond by providing casual labour to better-off families, drawing down on stored foods and increasing collection/ consumption (e.g. wild fruits) and sale of natural products (e.g. firewood).

Human – wildlife conflict is a serious issue in the Primary Study Area, especially in Nwoya District. Increasing disturbances by elephants and encroachment into communities was perceived by some to be due to exploration activities, including the migration of the elephants to northern areas of the MFNP and into community farming areas in Got Apwoyo and Purongo sub counties. Respondents to a FGD in Got Apwoyo reported that nowadays only sesame is farmed because other crops are eaten by elephants. Elephants can move in family groups of up to 30 animals, and when moving to find sources of food and water can cause problems when they encroach on gardens and destroy crops. Local residents beat drums and jerry cans, shout and use sticks and catapults to ward off the elephants but often this is not sufficient. Digging trenches to cut off access is another tactic employed by local communities. Respondents said that they would like to farm and if the threat of elephant encroachment was removed they would farm again. Instead, however, they have been forced to depend on charcoal manufacture and grass harvesting (see also **Chapter 19: Ecosystem Services**).

Use of poor farming technology, lack of good marketing skills among farmers and business people, and poor road infrastructure are seen as additional barriers to the development of the agricultural sector in Buliisa District (KII, Buliisa District Commercial and Production Officer, ESIA SBS). The challenge of renting land by land users was also highlighted as a challenge by stakeholders interviewed as part of the surveys for RAP 1 (CPF area).

Similar to other village savings groups, the main challenges reports for farmers’ savings groups are related to fluctuating participation of members and cases of money mismanagement (Ref 16-3).

16.6.6.3.4 Fishing

In 2011, 20% of households in Buliisa District undertook fishing for subsistence and income generation (Ref. 16-29). Fishing in Nwoya District is more restricted due to the MFNP. Fishing is an important aspect of food security⁶⁸ and is a primary source of income for communities living near or on the Lake Albert shoreline (Katanga, Katodio, Wanseko, Masaka and Kisansya West) and as a secondary income source for communities living inland.

Fishing is generally practiced in Lake Albert, the Albert Delta and Victoria Nile River. Fishing within the boundary of the Park is illegal; however, some households reportedly fish in the area (Ref. 16-3). In Nwoya District fishing is practiced along the Nile River. Fishing is not currently an important livelihood activity for communities in Got Apwoyo and Purongo Sub-Counties, however, the District Production Officer reported that the District Government has plans to establish a fish landing site in Obiya and Arana, located along the Nile and they are also promoting fish farming in ponds in Olero and Anaka Sub-Counties though to date there have not been significant results. (KII, Nwoya District Production Officer, ESIA SBS).

Fishing is practiced all year round, with two peak seasons between March to June and August to November. Catches are reported to be more abundant during the rainy season between March and June. Fishing is generally done once a day, except when the catch is very low, in which case fishermen might fish a second time. Fishermen usually leave in the evening (night fishing) or early

⁶⁷ Some people in local communities suspect that the rotting cassava was caused by seismic activities during the exploration phase.

⁶⁸ 30% of the respondents to the 2015 SHBS Household Survey report they eat fish on a daily basis, 11% three times a week and 17% twice a week (Artelia, 2015).

morning to cast their nets and wait for the morning after to collect their catch. They usually sleep on their boat.

Men coming from Ngwedo sub county who supplement their household incomes with fishing temporarily live away from their family at the fishing landing sites along Lake Albert, sending part of the fishing catch home (as a dried product) and selling the rest at local markets. Income generated from fishing activities is typically used to pay any labourers that were hired by the family in the man's absence, and to pay for the basic needs of the family such as children's education and medical supplies.

Landing sites concentrate fishing activities along the lake shore⁶⁹. The 2015 SHBS identified five landing sites in Buliisa District within the Primary Study Area, and another five in direct proximity, which are regularly used by fishermen living in the Primary Study Area. Wanseko, Masaka and Kalolo are the main landing sites within the Primary Study Area; two smaller landing sites are located in Kigwera South West and Kisansya West. Karakaba (also named Songalendu) and Kabolwa are located very close to the Primary Study Area (just outside LA-2). Bugoigo, Walukuba and Butiaba are located south of the Primary Study Area but local fishermen from the Primary Study Area mentioned that they use them. In Got Apwoyo people usually depart from the landing site located in Pakwach where a Beach Management Unit⁷⁰ (BMU) is also settled. Figure 16-44 illustrates the main landing sites within the Primary Study Area.

⁶⁹ Facilities available for each landing site within the Primary Study Area are provided in Appendix 11 to the Artelia SHBS Report (Appendix G).

⁷⁰ Beach Management Units (BMU) were established in 2003 to improve on-the-ground daily control and monitoring of fishing. Several BMUs in the Primary Study Area have been established at major landing sites. BMUs are responsible for the fishery resource management at each landing site, in collaboration with the local and central governments, especially the MAAIF. They are composed of elected community members, usually representatives of several fishery sectors (fishing, fish processing, marketing, boat building, etc.). These members form a committee, presided by a chairperson assisted by a secretary and a treasurer. More information about the role of BMU is provided in Appendix G – SHBS Report, Workstream B “Community Profile” (Ref-16-3).

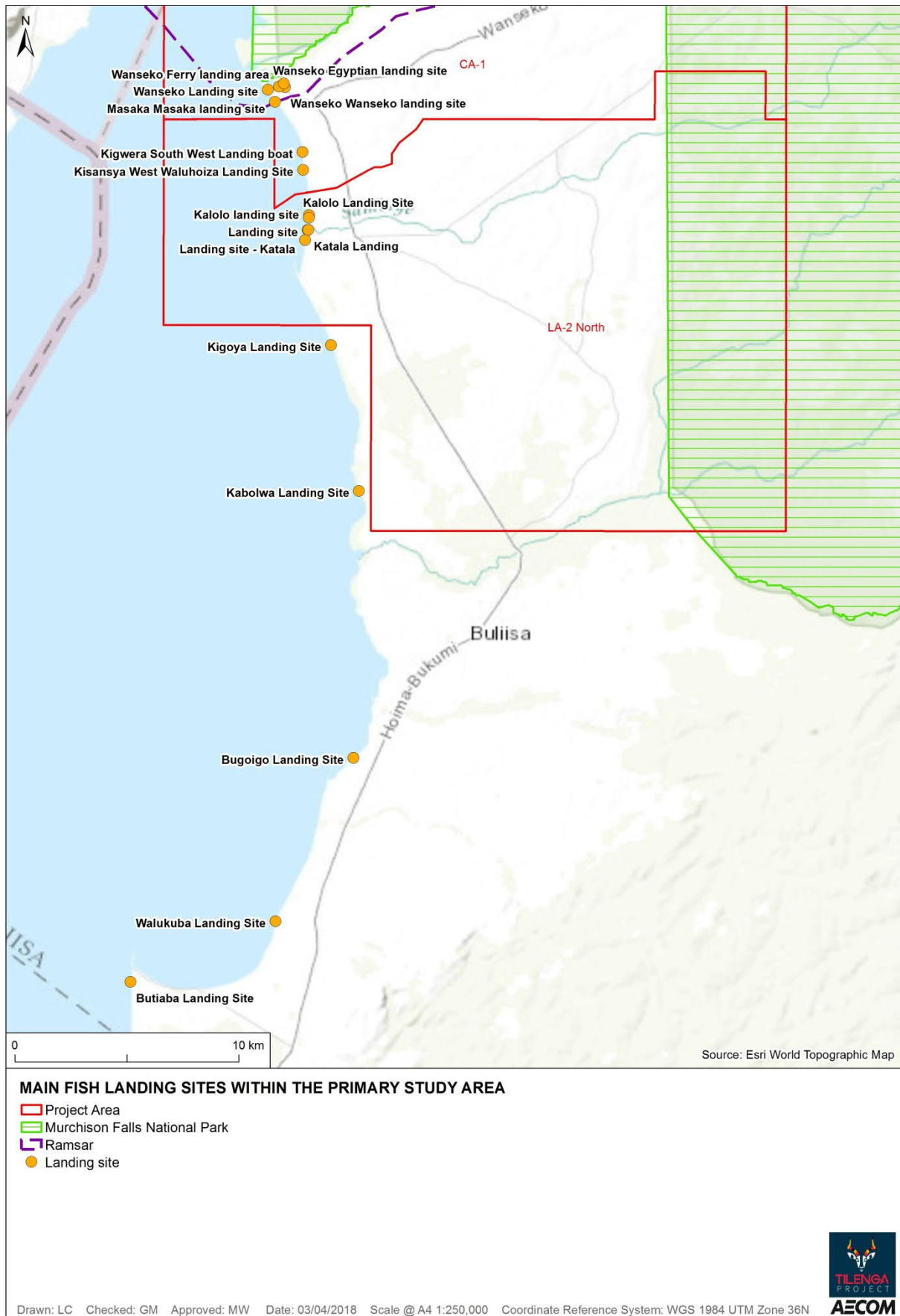


Figure 16-44: Main fish landing sites within the Primary Study Area

Most fishermen rent their equipment either because they cannot afford to buy it or because they are occasional fishermen (coming from inland villages). Equipment is mostly rented on a daily basis from landing sites where boats and nets are stored. The Bagungu own the fishing boats and fishing gear and employ workers (local and migrants) as crew who are paid in-kind through the fish catches. The 2015 SHBS reported that the standard price to rent a boat ranges between UGX 80,000 and UGX 120,000 per month or UGX 2,600 to UGX 4,000 per day. In urbanised areas near the shores of Lake Albert, women indicated they had the financial capacity to invest in buying fishing boats (some employ fishermen to fish on their behalf) and were able to generate revenue as boat owners. Figure 16-45 shows boats in the Primary Study Area.



Figure 16-45: Boats in Wanseko

Most fish catch is sold on different markets and only part is used for household consumption. There is both a local value chain (buyers are local consumers, processors or fishmongers who sell fish to inland markets or directly to local residents in the village) and a regional value chain (buyers are medium/large traders coming with large refrigerated trucks from outside the Primary Study Area. Women engaged as part of the 2015 SHBS indicated they managed to develop a profitable business from buying fish at landing sites and selling them to local communities or to intermediaries.

Different techniques are used to process fish including sun-drying (mainly for small silverfish), salting (for medium to large fish) and smoking (also for medium to large fish). Processing activities are gendered: fish salting is generally a male activity while fish smoking is managed by women who build and run their smoking ovens. Sun drying of silver fish is also a female activity.

Further information about fisheries livelihoods, including details of inputs and methods used, fish resources, and overfishing is provided in **Chapter 19: Ecosystem Services**.

Challenges in Fisheries Sector

Depletion of fish stocks due to overfishing represents a key challenge to fishery based livelihoods in the Primary Study Area. This issue is discussed in more detail in **Chapter 19: Ecosystem Services**. Several respondents during the ESIA SBS suggested that they no longer see fishing as a viable alternative to supplement livestock or crop farming based livelihoods due to declining fish stocks and competition with migrants from DRC. Some fishermen have also reportedly shifted their livelihood to agricultural activities to generate sufficient income. This is contributing to pressure placed on land based natural resources, as well as tensions over access to land.

The 2015 SHBS reports that fishermen also face physical risks from accidents as a result of poor boat maintenance, lack of safety measures (e.g. life jackets), animal attacks (e.g. crocodiles), working at night time, poor visibility, and bad weather conditions. In addition, many fishermen do not know how to swim. There are also conflicts between fishermen and the UWA rangers when fishing boats fish in prohibited areas. There are other health and safety risks in fishing communities and landing sites from water-borne disease, malaria, poor sanitation, high rates of HIV/AIDS, alcohol and drug abuse. This is compounded by a lack of access to adequate health facilities, increasing their vulnerability to diseases.

The boundary between Uganda and DRC is located in the middle of the lake. No visual sign has been installed to mark this boundary. This creates regular and sometimes violent conflicts between fishermen from DRC and Uganda that accuse each other of fishing outside their territorial waters, which can result in injury and sometimes death.

The seasonal aspect of fishing means that if a household does not save enough money during the peak season, it can be difficult during the dry season. In this case, fishermen will diversify their livelihoods and work as casual labour and in agriculture (Ref. 16-3).

16.6.6.3.5 Tourism⁷¹

A small percentage of total revenue in Nwoya and Buliisa districts is derived from tourist activities in the region. Using the revenue derived from the mandatory 20% of park entrance fee paid by visitors, a revenue sharing scheme exists that aims to support poverty reduction and provide an incentive for participating communities to support conservation. The UWA is charged with disbursing the revenue sharing funds between neighbouring communities from parishes that border the MFNP. In Nwoya District, the UWA disbursed UGX 423,500,000 (USD 118,630) during the 2014/2015 financial year, which equates to 3% of the total revenue received by Nwoya District for that financial year. The disbursement of funds has benefited three sub-counties bordering MFNP (Purongo, Anaka and Koch Goma). Similarly, in Buliisa District, the UWA disbursed UGX 635,400,000 (USD 177,990), which benefited two sub-counties (Buliisa and Ngwedo), and represents 5% of the district's total revenue (Ref. 16-3).

The communities that share a boundary with the MFNP in the Primary Study Area are shown in Table 16-31 and number 20 villages.

Table 16-31: Communities Bordering MFNP in the Primary Study Area

District	Sub county	Parish	Village
Buliisa	Kigwera	Ndandamire	Katodio and Kichoke
		Kirama	Kirama
		Wanseko	Katanga and Wanseko Trading Centre
	Ngwedo	Mubako	Mubako and Karatum
		Avogera	Muvule Nunda
		Muvule	Ajigo and Muvule I
		Nile	Kasinyi, Kilyango and Kisomere
	Buliisa	Nyamitete	Pandiga and Gotlyech
		Kakoora	Beroya and Kakoora
Bugana		Bugana-Kichoke and Bugana-Kataleba	
Nwoya	Purongo	Latoro	Pajengo
	Anaka	Anaka Town Council	Anaka Town Council

Source: Ref. 16-3

Some of the Park's lodges also contribute to the local economy by sourcing supplies (20-30% of required supplies, mostly fruit and seasonal products) from local producers; however, most of the lodges reportedly source the majority (over 90%) of their supplies from Kampala and transport them by road to the Park. It was confirmed during the 2015 SHBS that local agricultural producers do not have the capacity (human, technical and financial) to supply the tourism industry with the required quantities of supplies (Ref. 16-3).

The tourism sector is a source of employment for some in Buliisa and Nwoya districts. Reportedly 10-20% of people employed by lodges come from the local community. It is estimated that the tourism sector provides approximately 525 direct employment opportunities for the local community. However, the majority of employees (managers, waiters and cooks) come from Kampala and elsewhere in Uganda. The local workforce usually consists of casual employees, undertaking building work,

⁷¹ See also Chapter 19: Ecosystem Services

janitorial work and general maintenance. Out of the 17 lodges within the MFNP, only three have adopted a voluntary action strategy aimed at positively contributing towards the local economy and benefiting the local communities. The strategy varies from purchasing food locally and providing support to local education facilities to providing financial support to farmers (Ref. 16-3).

Other income-generating activity related to tourism includes the sale of local craft (pottery, baskets). Community involvement in tourism is limited but there are organisations working to promote this. Boomu's Women's Group, for example, is involved in making honey and baskets as well as conducting walking tours and basket weaving demonstrations, doing laundry for the lodges (e.g. Budongo Eco Lodge), and provision of accommodation to tourists. The Albert Nile Conservation and Tourism Association undertake tree planting, village and cultural tours, and cruises to see the Shoebill Stork. A new cultural centre in Purongo sub county has been built, to the north of the Park. The building was financed by UWA but there remains a lack of resources to develop the cultural centre further (Ref. 16-3).

Challenges in the Tourism Sector

The 2015 SHBS reports that local communities face difficulties entering into the tourism sector and benefiting from this market. Local businesses face difficulty in providing competitive alternatives to foreign-run tourist packages within the MFNP and are unable to meet high visitor expectations. Community leaders interviewed as part of the 2015 SHBS indicated that the volume of local produce supplied to lodges was inconsistent, as farming varies seasonally.

Local tourism stakeholders have expressed discontent with the oil and gas exploration activities within the Study Area, as they feel that the disturbances generated by trucks, traffic, and dust affected tourism activities within the area (Ref. 16-3).

MFNP faces challenges from neighbouring communities who wish to encroach onto the national park land for cultivation, collection of firewood, as well as facing threats from poachers coming from nearby communities as well as from other parts of Uganda or neighbouring countries.

16.6.6.3.6 Apiculture

Apiculture (bee-keeping) has recently become a more popular income generating activity due to support from government in the form of provision of hives (from NAADS), as well as training support from NGOs including Masindi D Farmers Association (MADFA) and Loving Heart. Recently the government and UWA supported a group of beekeepers to set up beehives on land bordering MFNP as bees frighten off elephants and stop them from encroaching onto peoples' crops. Both men and women practice apiculture in eastern Buliisa (Ngwedo Town Council, Beroya, Uribo, Muvule 1, Uduk 2). Beekeepers are organised into cooperatives that have a chairperson and secretary.

Apiculture is not labour intensive and does not require large areas of land so it is well suited to farmers with limited land. Honey is harvested twice a year in the dry season. A good harvest can provide 10 litres of honey per harvest, an average harvest can provide 7 litres and a poor harvest provides approximately 5 litres. A litre (2 kg) of honey is valued between UGX 7,000 – 15,000 (also covering packaging costs). A beekeeping group in Uribo reported that they buy honey from other farmers as well and sell it as a group at a constant price. They reported that as a group they harvest 200 litres and earn approximately UGX 3 million. The money earned from beekeeping represents approximately half of their income⁷² and they use the money to pay for school fees, ceremonies (e.g. marriage), healthcare and clothes, amongst other things. Beekeepers also use bee products to make medicine (from bitter honey), candles and soap from wax. They can sell their products to the Buliisa Women's Association. Wax is also used to attract bees (FGD, beekeepers Uribo, ESIA SBS).

The main challenge that beekeepers face is theft and destruction of their hives. Lack of transport to access markets and get to beehives located at the park is also a challenge. Materials for packaging are reported to be costly as they come from Kampala (FGD, Uribo beekeepers, ESIA SBS).

⁷² This other half of the income for this particular group of beekeepers came from making and selling fruit juice from mangoes, pineapple, jackfruits and oranges, and from selling cassava that they grow in a group garden.

16.6.6.3.7 Trade and Services

Trading and service activities are limited within the Primary Study Area, with the exception of Katanga, Wanseko and Katodio where the urban context is more conducive to these activities. In other villages, the main trade and services activities are transportation services (boda boda – see below), production and marketing of local alcohol by women; petty trade in village centres; carpentry, construction, road side fuel businesses, small workshops for bicycles or motorcycle; phone charging shops and mobile money shops.

Obstacles to business development include lack of electricity, poor transport network, lack of capital and access to credit (Stanbic Bank is the only bank operating in Buliisa District) and a lack of business skills.

Local businesses in Buliisa District used to rely on farmers and fishermen as their main customers but this has reportedly become challenging due to declining productivity of the fishing and farming sectors (attributed to changing weather patterns and crop diseases affecting agricultural harvests, and overfishing and restrictions on fishing activities reducing fish catch). Local businesses across the wider Study Area also report that they have been impacted by unfavourable exchange rates and rising commodity prices, and increases in taxes and license fees. Local businesses anticipate there will be an improvement in the business environment due to oil activities in the region and associated investments in infrastructure and facilities. While most local businesses acknowledge they will struggle to meet the standards required to supply directly to oil and gas companies, they nevertheless hope to benefit indirectly from a general increase in population and spending power (FGDs with local businesses in the Study Area, ESIA SBS).

Boda Boda

Working as a boda boda driver is seen as a highly profitable and 'easy' business, especially for young men. There is high demand for the service and limited barriers to entry⁷³. Within the Primary Study Area boda boda drivers are concentrated in more urban areas such as Buliisa Town Council, Ngwedo Town Centre and Wanseko.

The average income level for a boda boda operator ranges between UGX 100,000 (USD 27) for a "bad month" and UGX 300,000 (USD 80) for a "good month" (Ref. 16-3). The income earned is used to pay for basic needs such as school fees, food, clothing, health care. Focus group discussions with boda boda drivers revealed that this income is also spent on sex workers. Boda boda drivers reported facing a number of challenges, including motorcycle theft; bad road conditions causing injury and death; high costs for renting motorcycles (between 60,000 to 70,000 UGX per week); police harassment and fines⁷⁴ if they are caught without a driving permit or reflectors; physical violence from 'thugs' on the road; and disagreements between boda boda drivers regarding customers (FGD boda boda drivers, Wanseko, ESIA SBS).

Currently, boda boda cyclists do not pay any revenue to government because the industry is unregulated and neither do they have gazetted stages. However, the boda boda cyclists have associations that govern them in their local areas of operation, and to which they make annual payments. In Wanseko there is an association called the Boda Boda Association Stage 2, which is headed by a chairman and has an executive committee in place (FGD, boda boda drivers, Wanseko, ESIA SBS). In Pakwach, the boda boda association (which covers the whole of Jonam County) was started in 2008 and has a constitution, bank account, and 200 registered members. The association meets on a monthly basis and they engage other stakeholders such as staff from the town council and traffic policemen to discuss issues related to their work. There is a registration fee (UGX 30,000) and a monthly contribution (UGX 2,000). The earnings are used to provide assistance to members who face problems such as road accidents or death, assistance to families of deceased colleagues, and transportation to health services following an accident (FGD, boda boda drivers, Pakwach, ESIA SBS).

⁷³The only requirement is to buy or rent a bike and pay a yearly insurance subscription. Youth report that you do not need a permit to drive a boda boda (FGD with boda boda operators in Ngwedo Town Centre as part of 2015 SHBS).

⁷⁴Boda boda drivers report that they frequently bribe the police to prevent being sent to court or prison.

Small Businesses

Businesses within Buliisa District relate to dealing in agricultural, livestock and fishing produce, leisure industry (bars, lodging and restaurants), sale of general merchandise in retail and wholesale shops (food items, household utensils, stationary), groceries, drug shops, hair salons and video halls. Businesses are most concentrated along the lake shores where populations are more concentrated.

According to respondents in a FGD with representatives of the business community in Buliisa Town Council, there are between 180-200 business units in the town council, each with an average of one employee, except bars and lodges that employ close to five staff. The biggest businesses were reported to be the Adonia Hotel and the Albert Nile Hotel. Business costs include business license fees, taxes, rent, transport costs, utilities and airtime.

Most businesses struggle to access credit facilities from banks as the conditions for a loan (such as collateral in the form of a land title, audited books of accounts) are prohibitive⁷⁵. There are local Savings and Credit Cooperative Societies (SACCOs) but the maximum they offer (UGX 100,000) is reportedly seen as negligible to most businesses (FGD, Buliisa TC local businesses, ESIA SBS).

16.6.6.3.8 Other Livelihood Practices in the Study Area

Income generation and household subsistence are supported by a number of complementary livelihood practices in the Primary Study Area, most of which are natural resources based. Significant complementary activities include sand mining and sea shell collection along the shores of Lake Albert, charcoal burning, papyrus harvesting and grass harvesting. These are discussed in more detail below. Other alternative sources of livelihoods mentioned during FGDs (not listed in order of priority) include⁷⁶:

- *Firewood collection*: done by women in most villages, surplus is sold for extra income (though this is banned in Buliisa District). Firewood is usually made from stems of dead and dry wood, sometimes from fresh trees (acacia and lira trees for instance) or cassava stems;
- *Harvesting mushrooms*: mushrooms are found around ant hills and used for household consumption or sold;
- *Casual labour for house construction*: mainly done by men this includes making and selling bricks and plastering/ mudding houses;
- *Harvesting ants*: for consumption and sale;
- *Harvesting and selling fruits and fruit products*: various fruits are collected from different trees across the Study Area and sold raw or processed (e.g. juices);
- *Collection of local herbs*: Various herbs are collected and used for medicinal purposes. These are occasionally sold within villages;
- *Brewing*: done by women using sorghum, millet, or cassava and yeast. Local brew is called Nguri or Bungul;
- *Lake stone harvesting*: Stones collected from the lake are sold and used in construction – this activity used to be more common but stones are reportedly now becoming scarce;
- *Hunting*: Wild game is still hunted within MFNP and there is reportedly a large market for bush meat both within and outside the Study Area;
- *Illegal fishing*: Done in the Ramsar area;
- *Sisal*: sisal is used to make construction material such as ropes and poles, which can be sold; and

⁷⁵Civil servants can reportedly access credit more easily because they can get endorsement from the Chief Administrative Officer of the local district government.

⁷⁶ See also Chapter 19: Ecosystem Services

- *Timber:* Acacia and lira trees are cultivated by households for various purposes including poles for construction and firewood, especially in villages close to the Lake Albert such as in Ndandamire. The acacia trees used to grow wild but as the available stocks reduced, communities begun to incorporate the planting of the trees within their farming. Stems from other tree species are used for building housing furniture such as shower cabins, drying racks for fish, kitchen utensils or chicken cages. Wood stems are also used to build fences for kraals, boreholes or other properties. This wood is more available in the rangeland and forest areas.

Sand Mining

The following section is summarised from information given in a FGD with sand miners in Wanseko (ESIA SBS).

Sand mining is primarily carried out by men who mine sand from Lake Albert and the lake shores. Sand mining is practiced as a complementary income generating activity by all ethnic groups (Bagungu, Alur and Acholi) and people come to the lake from other places within and outside Buliisa District to practice it. In Wanseko, sand loaders are organised into a group headed by an executive committee and chairman. There are no government programmes or NGOs focused on supporting sand mining as a livelihood activity.

Sand, which is used for building, is loaded onto trucks and sold to construction companies and builders. Sand is costed depending on quantity: a pickup truck was reported to cost UGX 10,000; a tipper lorry UGX 15,000; and the largest (referred to as magulli kumi) UGX 25,000. Income earned from sand mining is used to access health services and other daily basic necessities like food and clothing.

Discussions with sand miners in Wanseko revealed that sand reserves are reducing as the lake shore is receding into the lake. Sand miners therefore have to go further into the lake, which is very physically demanding and creates drowning hazards, chest pains, bruised hands, and discomfort from being in cold water for long periods of time. Being in the lake also poses health risks such as exposure to bilharzia, malaria, leaches, and other water borne diseases.

Sea Shell Collection

The following section is summarised from information collected during a FGD with sea shell collectors in Wanseko (ESIA SBS).

Sea shell collecting is an important income generating activity with shells sold to the animal food industry (e.g. chicken feed), or used to make crafts, jewellery and spoons. Sea shells are collected from Lake Albert and the shores of the lake - the area of highest concentration of this activity is the lake banks near Kizongi. The shells are sold to customers from Kampala, Congo, and other districts in Uganda, who come in weekly to buy shells. Shells are collected using basins – a large basin of shells sells for UGX 3,000, and a smaller sells for UGX 1,000. On a good day, one can collect on average three big basins of shells earning a total of UGX 9,000. Income generated from sea shell collection is used to pay for health services and for basic necessities.

Sea shell collectors are economically very vulnerable – discussions with sea shell collectors revealed that they would prefer to be practicing a different livelihood but they lack capital to engage in other economic activities. The majority of sea shell collectors are women, although a few men also engage in this livelihood. There is competition from collectors from other villages but fewer people are engaging in this activity as the lake shore is receding and they have to go further into the lake, which creates health and safety hazards. Women reported poor health conditions and problems with bilharzia, leaches, skin problems, scabies, stomach pains, and cuts from shells as a result of standing in the water for long periods of time.

Images of sea shell collection are provided in Figure 16-46.



Figure 16-46: Sea Shell Collection

Charcoal Burning

Charcoal burning is common in the Study Area, especially in Got Apwoyo (Barylec and Obira parishes) and Purongo Sub-Countries in Nwoya District and in villages bordering MFNP in eastern Buliisa District (Ref. 16-3). People also travel from other districts in Uganda to burn charcoal in Buliisa and Nwoya. Charcoal is made from trees and charcoal burning in the Study Area is placing pressure on forests (see *Chapter 19: Ecosystem Services*). In Got Apwoyo sub county, people involved in charcoal manufacture reported that they pay for the rights to clean an area and use the trees for charcoal. Charcoal manufacture is done all year round but is reportedly easier in the wet season because covering the kilns needs wet soil, and this is easier during the wet season. Within Buliisa District, charcoal manufacture is a 'last resort' and it is reported that 'poverty drives people to sell charcoal.' In Got Apwoyo sub county people said they make charcoal for 'quick money'. They have concerns about the health risks that the activity entails and so report that they only like to do it in small quantities, "the work is very tiresome and you can fall sick from it" (FGDs, Charcoal Manufacturers in Buliisa and Nwoya Districts, ESIA SBS).

In Buliisa District charcoal manufacture and sale is banned in an effort to control loss of trees. In Nwoya sale of large quantities of charcoal (defined as a lorry load) is banned but sale of smaller amounts is permitted (FGDs, Charcoal Manufacturers in Buliisa and Nwoya Districts, ESIA SBS).

A bag of charcoal (approximately 50 kg) sells for approximately UGX 22,000. UGX 1,000 is paid to loaders and the bag costs UGX 1,500 meaning one remains with approximately UGX 18,000 or UGX 19,500. Sale of six to seven bags provides enough income for one month. Men say they can make ten bags of charcoal from one heap of trees but women say they can only make two to three bags (FGDs, Charcoal Manufacturers in Buliisa and Nwoya Districts, ESIA SBS).

Images of charcoal being sold along the road and collected in trucks are shown in Figure 16-47.



Figure 16-47: Charcoal, Got Apwoyo

Papyrus Harvesting

Papyrus harvesting is undertaken within the Nile Delta, along the Victoria Nile, Lake Albert shores and other rivers such as Sambiye, Zolya and Waida. It is mainly undertaken by women. Papyrus is either sold as it is or made into mats. It is sold as 120 reed bundles which cost UGX 1,000/bundle. Mats that require 150 reeds are also made and sold at UGX 1,500/mat on the south side of the river and UGX 2,500/mat at Panyimur market on the north side of the river. Bundles of Reeds and mats are loaded onto the Wanseko-Panyimur boat which charges UGX 5,000 per person and UGX 200 per mat (i.e. as luggage weight expenses) and in Panyimur, UGX 300 is required as market duty to enable the mats to sell at the market.

Harvesting takes place all year round but is easier in the dry season due to flooding during the wet season. Harvesters work together in groups of about 15 people to harvest plots of approximately 10 acres. There are no official associations and there have been no government or NGO programmes to support papyrus harvesters in economic diversification. Papyrus harvesting is undertaken by economically vulnerable people who lack capital to engage in other livelihood activities (e.g. fishing). Challenges they face include being driven from the delta (a Ramsar site) by UWA and health risks associated with consuming water from the delta (e.g. bilharzia) (FGD, papyrus harvesters Wanseko, ESIA SBS).

Grass Harvesting

Grass harvesting is an important livelihood activity in Got Apwoyo and Purongo. In Got Apwoyo grass collection has supplanted crop farming activities and is a major source of income for households in the village. There are two seasons for grass harvesting: In July 'spear' grass is cut and in November/December 'abi' grass is cut. It grows widely in the rangeland where local communities usually collect it.

Grass cutting is done by everyone in the village (old, young, man, woman) as an extra source of income. Some people from outside Nwoya District (e.g. from West Nile) come to Nwoya during grass harvesting seasons to cut grass. Buyers come from outside the district e.g. Kampala and Jinja to buy grass sold along the road in truck loads. Villages neighbouring MFNP are allowed to go into the park to cut grass on request (FGD, Tegot Village, ESIA SBS).

In Tegot Village grass cutters reported that they earn UGX 3,000 – 4,000 per bundle (verified by a buyer passed along the road) and they sell an average of 50 bundles per season. The price of a bundle is not fixed, however, and sometime they sell it cheaper if they need money urgently. In two seasons it was estimated that one household earns an average of UGX 150,000 from grass cutting. Grass cutting is increasing due to increased demand. There is no NGO involvement in this activity (FGD, Tegot Village, ESIA SBS).

Images of grass drying and selling are shown in Figure 16-48.



Figure 16-48: Grass Harvesting in Got Apwoyo

16.6.6.4 Livelihoods in the Secondary Study Area

16.6.6.4.1 Livelihoods in Hoima

Farming is the main livelihood activity for the majority of households in Hoima District. The number of people in formal employment is higher than in neighbouring Buliisa District. In 2012 (more recent data was not available at the time of writing), professionals and administrators constituted 6% of the total working population, while the sales and service workers were almost 12% of those in formal employment (Ref. 16-5).

The main economic activity in Hoima Municipality is commerce (wholesale, retail, street vending and hawking, transport services, banking and microfinance services, insurance services, security services etc.). Over half of the population in Hoima Town is employed in business (55.5%), 15.8% are employed as civil servants, and 14% are occupied as farmers. Retail trade is the largest business activity in the municipality followed by services and hotels, restaurants and lodges in that order. The informal sector is also significant, represented by market vending and petty street vending and mobile hawking as well as quasi markets in the evening selling foodstuffs and other merchandise (Ref. 16-23).

The main categories of services offered in Hoima include transport services (including boda boda), clinics and laboratory services, veterinary services, motor vehicle, motorcycle and bicycle services, electronic repairs, tailoring services, hairdressing salon and bridal services, secretarial services, catering services, public pay phones, internet cafes, architects, artists and photo studio, entertainment services and car washing, etc. There are also well developed professional services in Hoima municipality such as lawyers, surveyors, auditors, accountants, teachers, medical workers (Ref. 16-23).

Demand for hospitality and leisure has reportedly increased due to an increase in the presence of NGO workers and contractors to oil and gas companies, as well as increased demand from local residents and tourists. Hotels within Hoima Town employ between 12 and 40 staff. The management staff of hotels is generally qualified but the majority of hotel workers are trained on the job. Most hotels own rather than rent their premises. There is no association for hoteliers in Hoima municipality and respondents complained that this led to a lack of uniform rates for rooms for hotels within the same category (FGD with hoteliers in Hoima Town, ESIA SBS).

Agriculture within the municipality is undertaken primarily as a coping mechanism to supplement food and cash incomes. The main crops grown are maize, coffee, cassava and fruits. Agriculture is minimal within Kahoora division, which is largely a central business area. There is no plantation agriculture in the municipality but there is some commercial livestock dairy farming. Other livestock enterprises include poultry keeping (practiced on both subsistence and commercial scale), pig farming, and goat rearing (amongst others). Some agricultural processing takes place within the municipality (maize, rice and cassava milling and a local brewing industry located in Bwendero). Fish farming is done on a small scale with the most popular type of fish being tilapia (Ref. 16-23).

There is a large market for agricultural produce in Hoima Town. Farm and fishing produce from nearby villages is brought there, as well as other products coming from outside the district. Challenges faced by those working in the market include high transportation costs to bring products to the market, low prices due to low demand for products, and lack of capital (FGD with female traders, Hoima Town, ESIA SBS).

16.6.6.4.2 Livelihoods in Nebbi

In Nebbi District, 85% of households depend on subsistence farming (including fishing and livestock keeping). In Pakwach TC the number is slightly lower at 70%, (Ref. 16-29). The district has land that can be divided into 3 distinct agro ecological zones namely; the highland Arabica coffee and banana production zone; the mid plateau cotton and maize production zone and the lowland fishing and sesame production zone (Ref. 16-45). Pakwach TC is located in the lowland fishing and sesame production zone.

Major crops grown in Pakwach TC are maize, groundnuts, sesame, cassava, and to a lesser extent, beans. As in other parts of the Study Area, cassava is the main crop for food security but is also grown as a cash crop. Crop production is constrained by poor on-farm yields, prevalence of pests and

diseases, poor soil and water conservation practices, unpredictable and unreliable rainfall pattern, limited access to extension services, limited use of improved seeds and stocking materials, and low level of farm mechanization (traditional methods of using hand hoes for land opening are used) (Ref. 16-45).

At least 42% of households in Nebbi District are involved in one form of livestock keeping. In Pakwach TC the main type of livestock owned is chicken (33.5%), followed by goats (28.1%), cattle (6.1%), and a small number own pigs (0.1%). Approximately one third of households in Pakwach TC do not own any livestock (Ref. 16-45). There is no functioning livestock market in Nebbi District.

Fishing (from the Nile) is one of the main economic activities in Pakwach TC. The main fish types include tilapia, lung fish, Nile perch, Angarra, electric fish and mud fish. There are 17 landing sites within the town council and a fish market at Panyimur. Fish landing sites are important trading areas. Challenges include decline in fish catch due to overfishing through use of destructive fishing gear and methods and increased number of people working in the sector, and destruction of fish breeding grounds due to use of prohibited gears. Fish landing sites lack fish handling and marketing infrastructure and have poor transport connections. The fish value chain is similar to that in Buliisa District and supports different activities from fishing, processing marketing, transportation, sale and making of gears and boats, and rental of boats and equipment. Generally the men do the fishing and women buy catch from men and then process it (by smoking, salting or drying) and sell it for a profit. Some men also give catch directly to their wives to process and sell (Ref. 16-45).

Small business and trade is an important source of livelihoods in Pakwach TC. Pakwach TC is along the main transport route connecting Kampala with Arua and also has good transport links to markets in Eastern DRC and South Sudan, and traders benefit from drivers passing along these routes. There are many traders selling snacks (sesame snacks, dried fish, peanuts, bread) and handicrafts along the main road. There are over 20 leisure and hospitality establishments in Pakwach TC. During the exploration phase a lot of oil sector contractor workers were based in Pakwach TC, which provided a significant boost to the leisure industry. Since the end of the exploration and appraisal phase, however, many hotels and restaurants have reportedly struggled to maintain 'pre-boom' levels of activity and this was perceived to be because their original customers were displaced by oil contractor workers⁷⁷. Clientele for the local leisure industry includes tourists, corporate staff going to Arua, NGO staff, government officials and truck drivers (FGD with hoteliers, Pakwach TC, November 2016).

16.6.6.4.3 Livelihoods in Masindi

The major sources of household livelihood in Masindi are; subsistence farming (64%), salaried employment income (13.1%), trading (11.2%), family support (7.7%), and commercial farming (2.4%). The main crops grown include sugarcane, cassava, maize, beans, and rice. Main livestock kept are goats, sheep, poultry, pigs, beekeeping and cattle. Other activities contributing to livelihoods in Masindi include charcoal burning, sand mining, bread making, and tourism. Trading in agricultural produce and manufactured goods in both rural centres and Masindi Municipality is another source of livelihood (Ref. 16-25).

Rural divisions of Masindi Municipality are mainly engaged in sugarcane growing as a livelihood activity while in the central division the main activity is commerce (trading and merchandise). Masindi hosts a major sugarcane plantation called Kinyara, which is the second-largest manufacturer of sugar in Uganda.

Agricultural production in the municipality is reportedly beginning to change from subsistence to growing crops for sale. The main cash crops grown are maize and sugarcane. Other crops are fruits, potatoes, cassava, and vegetables. Value addition, especially for maize produce, is conducted in the municipality with a number of millers and packing facilities. Other value addition facilities in the municipality include fruit processing plants (mango juice), milk cooling plants and maize mills.

⁷⁷ One reason suggested for this is that prices were raised to pay for renovations needed to meet oil company standards.

Poultry⁷⁸ and piggery are the main livestock activities and are also an important source of income within the municipality. Agricultural produce from Masindi Municipality is sold locally as well as through intermediaries to Southern Sudan, Kenya, Rwanda and Kampala (FGD, Masindi Municipality, Field Survey 2016).

Hotel and hospitality services are an important and growing part of the commercial sector in Masindi Municipality. Tourists (national and international) visiting MFNP frequently stop-over in the town, and it is also frequently used as a venue for workshops run by government departments and NGOs. Masindi is also used as a stop-over for oil company contractors as well as for truck drivers buying sugarcane from out growers in the area. Some of the challenges reportedly faced by hoteliers include seasonal shortage of food items and unreliable supply of food items from local suppliers (from whom most perishable food items are sourced); high taxes pushing rates up and therefore discouraging clients; high competition for clientele as the number of hotels in the municipality has increased; and intermittent power supply (though this is improving). Only management staff at hotels are formally trained while other staff receive on the job training. Most hotels reportedly have business bank accounts and can access credit easily. Uganda Hotels Association (UHA) and the Uganda Tourism Board have provided training for hotel staff in the past (FGD with Masindi Municipality and hoteliers, Masindi Municipality, ESIA SBS).

16.6.6.5 Household Economies

16.6.6.5.1 Household Income and Expenditure

Nationally, household incomes have increased over the period 2008 to 2014 from USD 607 to USD 788 per year, but there are regional variations within Uganda (Ref. 16-34).

The 2015 SHBS notes that household level, income and expenditure data was particularly difficult to obtain. During the SHBS household survey, sample households were asked to answer detailed questions on their spending habits and sources of income for each of the income earning family member, but respondents found it very difficult to estimate their household incomes and it proved difficult to get meaningful information (Ref. 16-3).

Sources of Income

Sources of income from key livelihoods in the Study Area are provided above in Section 16.6.6.3.

The following tables provide data from the 2014 national census on sources of livelihood and for dependence on remittances from abroad for households by sub county in the Primary and Secondary Study Area. The majority of households (66%) in Buliisa District are engaged in subsistence farming (Table 16-32). Only 6.3% of households receive remittances from abroad. In Nwoya District 97.3% of households are dependent on subsistence farming (Table 16-33). Slightly more households (7.5%) receive remittances from abroad in Nwoya District.

⁷⁸ According to the Municipality Commercial and Production Officer there are over 10,000 poultry in the Hoima Municipality (FGD, Hoima Municipality, ESIA SBS).

Table 16-32: Main Sources of Livelihood, Buliisa District

Sub County	Total households	Main source of livelihood			Households that received remittances	
		Subsistence farming	Other sources	Percent depending on subsistence farming	Number	Percent
Biiso	3,269	2,766	503	84.6	323	9.9
Buliisa	3,217	2,757	460	85.7	77	2.4
Buliisa Town Council	1,488	921	567	61.9	80	5.4
Butiaba	5,630	1,459	4,171	25.9	378	6.7
Kigwera	2,636	1,588	1,048	60.2	92	3.5
Kihungya	2,189	2,006	183	91.6	340	15.5
Ngwedo	3,223	2,946	277	91.4	65	2
District	21,652	14,443	7,209	66.7	1,355	6.3

Source: Ref. 16-29

Table 16-33: Main Source of Livelihoods, Nwoya District

Sub County	Total households	Main source of livelihood			Households that received remittances	
		Subsistence farming	Other sources	Percent depending on subsistence farming	Number	Percent
Alero	7,604	7,514	471	98.8	626	8.2
Anaka Payira	2,175	2,107	155	96.9	188	8.6
Koch-Goma	6,592	6,359	611	96.5	355	5.4
Anaka Town Council	2,313	2,321	466	100	289	12.5
Purongo	5,887	5,600	627	95.1	373	6.3
District	24,571	23,901	2,330	97.3	1,831	7.5

Ref. 16-29

In Hoima District, 67.9% of households are dependent on subsistence farming, while 6.5% of households receive support from remittances abroad. In Masindi District, 66.8% of households are dependent on subsistence farming and a higher number of households receive remittances from abroad than other districts in the Secondary Study Area (23.6%). In Nebbi District, 85% of households are dependent on subsistence farming while 11.9% of households receive remittances from abroad. (see Table 16-34).

Table 16-34: Main Source of Livelihoods, Secondary Study Area

District and Sub-county	Total Household	Main Source of Livelihood			Households that Receive Remittances	
		Subsistence farming	Other	% depending on subsistence farming	Number	Percent
Hoima District	125,576	85,300	40,276	67.9	8,104	6.5
Hoima Municipality						
Bujumbura Division	5,104	2,207	2,897	43.2	577	11.3
Busiisi Division	4,434	2,409	2,025	54.3	340	7.7
Kahoorra Division	9,840	699	9,141	7.1	1,290	13.1
Mparo Division	5,579	2,596	2,983	46.5	433	7.8
Masindi District	64,929	43,418	21,511	66.8	15,355	23.6
Masindi Municipality						
Kigulya Division	2,746	2,238	508	81.5	321	11.7
Karujubu Division	5,428	3,574	1,854	65.8	1,430	26.3
Nyangahya Division	3,010	2,270	740	75.4	619	20.6
Central Division	10,289	2,377	7,912	30.0	2,835	27.6
Nebbi District	77,503	65,880	11,623	85.0	9,185	11.9
Pakwach Town Council	4,609	3,228	1,381	70.0	691	15.0

Source: Ref. 16-29

Cost of Living

While Uganda has achieved the Millennium Development Goal (MDG) target of reducing by half the proportion of people whose income is less than 1.25 dollar per day, Buliisa and Nwoya districts still face serious challenges: they both have about 35% of the population that still lives below the poverty line, with low levels of well-being (Ref.16-3).

A study by the NGO Self-Help Africa undertaken in Nwoya District in 2003⁷⁹ established a “standard of living threshold”, meaning the cost of a basket of goods and services sufficient to achieve a minimum acceptable standard of living. The results are shown in Table 16-35 (The standard of living threshold is similar in Buliisa District).

Table 16-35: Standard of Living Threshold (minimum basket of goods and services)

Expense Type	Unit of Measurements	Quantity	Frequency	Cost per Unit (UGX)	Cost per Year (UGX)
Household Items					
Soap	Item	1	52	2,500	130,000
Salt	Packet (500g)	1	52	500	26,000
Paraffin	Litres	1.071	12	2,700	34,700
Vaseline	Number of tins	1	12	3,500	42,000
Lighters	Item	2	12	361	8,675
Clothes (adult female)	Item	1	Once	67,000	67,000
Clothes (adult male)	Item	1	Once	45,000	45,000
Clothes (child female)	Item	1	Once	25,000	25,000
Clothes (child male)	Item	1	Once	25,000	25,000

⁷⁹ Data is from the 2003 study, more recent data is not available.

Expense Type	Unit of Measurements	Quantity	Frequency	Cost per Unit (UGX)	Cost per Year (UGX)
Social services					
School fees	Per child	1	Once	123,200	123,200
Health care	Per visit	1	Twice	40,000	40,000
Total (UGX)					566,575
Total (USD)					157

Source: Ref. 16-64

In addition to the above, transport costs are indicated by the typical costs of a boda boda ride. Boda bodas are the most common form of public transport in the Primary Study Area, and are used by local residents that can afford them. The price is negotiated with the driver but Table 16-36 gives approximate prices for travel from Ngwedo Town Centre.

Table 16-36: Costs of Boda Boda from Ngwedo Town Centre

Destination	Distance (Km)	Price (UGX)	Price (USD)
Buliisa Town Council	13	6,000	1.6
Wanseko	21	10,000	2.7
Butiaba	55	35,000	9.5
Pakwach	45	60,000	16
Hoima	100	80,000	22

Source: Ref. 16-3

During community consultations several respondents suggested that goods in Buliisa District were priced relatively higher than in other parts of Uganda due to its remoteness and poor connectivity (meaning higher transport costs for goods imported from outside the district), however, this has not been verified (Various FGDs, ESIA SBS).

Household Assets

This sections details the typical household assets for households by sub county in the Primary and Secondary Study Area. The tables below record whether a household owns four assets that are used as indicators of wealth: a motorbike, bicycle, radio, mosquito net.

Primary Study Area

Approximately half of all households in Buliisa and Nwoya districts have a radio. A greater proportion of households own a bike or a motorbike in Nwoya District compared to Buliisa District. The ownership of a mosquito net is high in Buliisa District (94.9%) but much lower in Nwoya District, with only 12.2% (See Table 16-37).

Table 16-37: Household Assets, Buliisa and Nwoya District

District / Sub county	Total households	Selected assets			Households with at least a mosquito net	
		Radio	Bicycle	Motorcycle	Number	Percent
Buliisa District						
Biiso	3,269	1,867	1,046	205	3,090	94.5
Buliisa	3,217	1,703	1,720	211	3,100	96.4
Buliisa Town Council	1,488	1,013	858	148	1,418	95.3
Butiaba	5,630	2,817	995	335	5,183	92.1
Kigwera	2,636	1,471	1,198	182	2,510	95.2

District / Sub county	Total households	Selected assets			Households with at least a mosquito net	
		Radio	Bicycle	Motorcycle	Number	Percent
Kihungya	2,189	1,200	778	160	2,095	95.7
Ngwedo	3,223	1,897	1,722	379	3,147	97.6
District	21,652	11,968	8,317	1,620	20,543	94.9
Nwoya District						
Alero	7,604	3,570	3,474	644	1,157	15.2
Anaka Payira	2,175	1,023	986	125	168	7.7
Koch-Goma	6,592	3,708	3,505	752	1,046	15.9
Anaka Town Council	2,313	1,474	1,197	262	134	5.8
Purongo	5,887	3,005	2,481	493	496	8.4
District	24,571	12,780	11,643	2,276	3,001	12.2

Source: Ref. 16-29

Secondary Study Area

Over half of all households in Hoima and Masindi districts have a radio (Table 16-38). A greater proportion of households own a bike or a motorbike in Hoima District compared to Hoima Municipality and Masindi districts. In the Secondary Study Area there is a high prevalence of households using mosquito nets. Nebbi District has a high coverage of mosquito nets with 97% of households having a mosquito net; while for Masindi and Hoima districts it is 91.9% and 90.7% respectively.

Table 16-38: Household Assets, Secondary Study Area

Sub county	Total households	Selected assets			Households with at least a mosquito net	
		Radio	Bicycle	Motorcycle	Number	Percentage
Hoima District	125,576	83,836	47,464	16,982	113,864	90.7
Hoima Municipality						
Bujumbura Division	5,104	4,035	2,296	1,151	4,847	95
Busiisi Division	4,434	3,663	2,525	1,085	4,326	97.6
Kahoorra Division	9,840	7,188	2,384	1,818	9,132	92.8
Mparo Division	5,579	4,358	2,579	1,177	5,345	95.8
Masindi District	64,929	35,293	20,347	6,535	59,687	91.9
Masindi Municipality						
Kigulya Division	2746	1,975	1,407	455	2,594	94.5
Karujubu Division	5,428	2,724	1,572	522	5,063	93.3
Nyangahya Division	3010	2,107	1,092	356	2,861	95.0
Central Division	10,289	5,587	2,006	1,190	9,270	90.1
Nebbi District	77,503	32,431	23,342	6,627	75,196	97.0
Pakwach Town Council	4,609	1,902	1,330	358	4,420	95.9

Source: Ref. 16-29

16.6.7 Land Tenure and Land Use

16.6.7.1 Land Legal and Institutional Framework

Laws and policies relevant to land ownership and management are described under **Chapter 2: Policy, Regulatory and Administrative Framework** of this ESIA.

The Ministry of Lands, Housing and Urban Development (MLHUD) is responsible for policy formulation and the oversight of the land sector at the national level. The Uganda Land Commission (ULC) and the National Physical Planning Board work in direct coordination with the ministry. The ULC is responsible for the management of land acquired or vested in the Government (handling transactions and land titling). The National Physical Planning Board advises the government and local physical planning committees on physical planning policies, guidelines and standards. The board is also responsible for approving district physical development plans and supporting their implementation, and for advising the minister on the identification of special planning areas (Ref. 16-3). The institutional framework for land administration follows the decentralised structure. Further information about the local institutions involved in land administration is provided in Section 16.6.1.4.

The existing land legal and institutional framework has been recognised by government and civil society organisations as being ineffective in handling or preventing land disputes, which have been increasing in the context of rapid economic growth and demographic changes. The main defects observed by land experts and civil society organisations consulted during the 2015 SHBS were:

- The unequal value between certificates of customary ownership and other land titles such as freehold, which weakens the formal recognition of customary ownership;
- Lack of resources and capacity within the decentralised land administration system meaning some of these institutions are not fully functional;
- Lack of a proper land conflict resolution mechanism; and
- Absence of clear definition of government land and of proper inventory of government land assets.

The government launched a reform process to address some of the issues inherent in the land sector. The Land Sector Strategic Plan (LSSP) I (2002-2010) and II (2013-2017) set out objectives to improve land administration and management. The 2005 National Land Policy aimed at correcting the defects of the Constitution and the Land Act. The National Land Policy was issued in 2013. More information about these policies is provided under **Chapter 2: Policy, Regulatory and Administrative Framework** of this ESIA. Sustainable land uses have also been promoted nationwide through the use of land use planning.

16.6.7.2 Land Conflict

Land-related sensitivities are high in the Study Area and have been increasing, with land (as property and as a resource) being one of the most important assets in the area. Most of the local communities in the Primary Study Area in Buliisa and Nwoya Districts depend on land for subsistence farming and grazing of animals. The issue of land conflict within the Primary Study Area is discussed further in Section 16.6.3.3.4.

16.6.7.3 Land Tenure

Details of land tenure systems are described in detail within the 2015 SHBS report (Workstream C "Land and Natural Resource Use") (Ref. 16-3) as well as within the Resettlement Impact Scoping Report and RAP 1 Report (Ref. 16-6 and Ref 16-13). This section provides a summary of the information provided in those reports.

There are four types of tenure recognised in Uganda under the Constitution (Article 246) and the Land Act (Cap 227) (Republic of Uganda, 1998): customary tenure, freehold, mailo (a customary form of freehold tenure not thought to occur in the Study Area), and leasehold. Over 70% of land in Uganda falls under customary tenure.

Individual and communal customary tenures are recognised by the law. Customary land holders can formalise their land rights through the acquisition of certificates of customary ownership (CCO) or of freehold titles. CCO can be transformed into freehold titles. Most of the community members in the Primary Study Area holding customary land under individual or communal tenure do not hold certificates of customary ownership (neither do they hold freehold titles).

The majority of the population surveyed during the 2015 SHBS reportedly had a low level of understanding about land rights. Some local NGOs such as BIRUDO have implemented sensitisation programs about land rights, raising awareness among community members about the importance of land demarcation, land registration and the risks of land grabbing. International Alert has also facilitated workshops in Buliisa District and supported Buliisa District Local Government in the drafting of its first District Land Ordinance.

16.6.7.3.1 Customary Tenure

Land in Buliisa and Nwoya district is predominantly held under customary tenure managed by different ethnic groups (Bagungu, Alur, Acholi). The Bagungu, Alur and Acholi have different systems of customary ownership. Most of the Bagungu, who are mainly livestock owners, own land (primarily grazing land) communally on a clan basis; while the Alur, who are mainly cultivators, recognise individual land ownership and have/ use more clear demarcations of land parcels (Figure 16-49 provides an example of land demarcation using Sisal plants). Land inheritance follows the male lineage and under customary law a son does not have access to land from his parents until he marries. Under the Bagungu communal tenure system, land can be reclaimed by the clan if the head of household passes away without having a male heir. A widow can, however, claim her husband's land if she takes care of all her husband's children. Under the Alur and Acholi systems of individual customary tenure, if a household does not have heirs and the husband passes away, his close male relatives inherit the land (land is not returned to the clan). Dispute resolution for land matters is based on mediation by local leaders.



Figure 16-49: Land Demarcation Using Sisal Plants

The Bagungu ethnic group and its various clans claim ancestral ownership of land within the rangeland situated across most of Kigwera sub-county as well as the lower parts of Buliisa sub county. Land is directly managed by the clans and is seen as clan property over which the community has user rights, tacitly agreed by different families of the clan in a communal land management scheme, for grazing livestock and collecting natural resources. Clans from the Alur ethnic groups manage land in the crop farming areas of Ngwedo sub-county and parts of Buliisa sub county, which

they consider as their property based on the right of primary occupant⁸⁰. Acholi ethnic groups consider the land in Got Apwoyo and Purongo as their ancestral land.

16.6.7.3.2 Formal Land Ownership

Although customary land tenure is still predominant in the Study Area, there is a move towards converting or trying to convert customary land into freehold or leasehold tenure.

Freehold and leasehold tenures are found in Buliisa District in areas of public buildings and business infrastructure; as well as for private businesses, such as the safari lodges along the banks of the Victoria Nile River which are built on land leased by the Buliisa District Land Board (Ref. 16-65). Religious institutions are also key landowners in the Study Area, especially the Catholic Church and Church of Uganda, and are mostly held under freehold (mostly granted during the colonial era).

In Nwoya District most of the safari lodges are built on formerly customary land that was bought by investors from local communities and is registered under freehold. Large acres of land under leasehold tenure in Nwoya are also managed by private and foreign investors developing large-scale farming products.

Land Registration

Data on land tenure is limited at the district level, but land registration is reported to be low in Buliisa District. The list of applications for land titles to the Buliisa District Land Board is legally required to be displayed at the Buliisa Town Council District Headquarters. For 2015, of the total 177 applications displayed, 92% were for freehold titles, with the remainder split between leasehold, lease offers and customary ownership (Ref. 16-65 based on data provided by Buliisa DLG). In February 2017, following a fact finding site visit in Buliisa District, the MLHUD made the decision to rescind all land applications that were made in Buliisa from 2010 until 2017, declaring all transactions and approvals that had taken place within that timeframe as having been processed illegally (see Section 16.6.1.9.4).

In Nwoya district most of the applications for land registration received are for leasehold titles (reported by Nwoya District Land Office during the 2015 SHBS). Investors that seek large pieces of land opt for leasehold titles obtained from both government institutions and private individuals.

The process for obtaining a freehold land title is long and expensive for local communities due to administrative and surveyor fees, and is therefore restricted to individuals or clans that have the financial resources to complete the procedure.

In order to improve land administration, in 2013, the MLHUD with the support of the World Bank through the International Development Agency, introduced the Systematic Land Adjudication and Certification (SLAAC) Program part of the wider objective of introducing Land Administration Reforms process and scaling up. SLAAC provides a technical approach for demarcating all land rights within a selected administrative area in order to undertake the systematic registration of communal and individually owned land. Its objectives are primarily to:

- Establish communal land associations (CLAs) in priority areas;
- Demarcate and register communal lands in said priority areas and issue titles; and
- Demarcate and register individual lands in rural and peri-urban areas (including issuance of titles to said individuals).

The introduction of SLAAC will help to reduce land disputes and uncertainties in land rights, protect the land rights of local communities, and empower local communities because land rights, rights holders and interested parties are ascertained in a methodical and systematic manner, parcel by parcel for a large area

⁸⁰The Alur settled in Buliisa District in the 1980s and started to cultivate the land which was not used by the Bagungu ethnic group.

One of the key activities implemented under LSSP 1 (Land sector strategic plan 2001-2011) was the piloting of Systematic Demarcation (SD) of land. The overall aim of Systematic Demarcation was to enhance security of tenure, ownership and management of land with the ultimate goal of uplifting the livelihoods of the poor and vulnerable groups in Uganda. The pilot was carried out in phases; phase one covered 2 parishes Ntungamo District and Soroti District while the second phase covered the 3 parishes Iganga District; Mbale District and Kibaale District. While piloting systematic demarcation, the issues of cost and affordability by the rural poor, integration with existing scattered parcels of registered land, data quality, technology requirements and gender were among the major consideration.

To date, Systematic Demarcation has not been extended to Buliisa District though the MLHUD stated its implementation will be extended to Eastern, Western and Southern Uganda.

Land Access and Acquisition

Inheritance

Inheritance is one of the main ways through which the community members in the Primary Study Area acquire, maintain and pass on family assets through family or clans. Inheritance generally discriminates against women and girls, and women's access to land rights is therefore limited.

Gift and Donation

Gift or donation of land to individuals without any ties with the household also occurs on a small scale. Donations are usually made to economic migrants who want to settle in the area to cultivate (such as migrants from Nebbi District or from DRC). This practice is reportedly becoming less common in the Primary Study Area, however, and in some cases land that was previously gifted is being claimed back.

Purchase

As most of the land in the Primary Study Area is unregistered customary tenure, purchases of land are mainly done on unregistered land assets. Sales agreements from this type of transaction are usually not properly documented or formalised. This means that the purchase can be contested by other people claiming they have a claim over the land. The buyer can also be more exposed to the risks of fraud or illegal land sales, which can often result in conflict between the different parties involved.

In order to limit the risks associated with purchasing customary land, participatory approaches with the local communities are being used by some private investors. For example, Heritage Lodge in Nwoya District used this approach and, before purchasing the land, identified individuals who might have an interest or claim on the land. The participatory approach resulted in all interested parties being involved in the land transaction process and agreeing unanimously to sell the land (Ref. 16-66).

Land is more expensive in Buliisa than in Nwoya District and the price of land has been affected by oil and gas activities. In Buliisa District, the price per acre ranges from approximately UGX 600,000 to 1,000,000 (USD 162 to 271); with the most expensive land in Ngwedo and Buliisa sub-counties where demand is higher. In Nwoya District, the price per acre ranges from approximately UGX 350,000 to 600,000 (USD 95 to 162) (Ref. 16-66).

Rental and Lease

Leases are a commonly used method for gaining access to land. Leaseholds are common in Nwoya District and informal oral agreements between land owners and land users are common in Buliisa District. Informal land rental is common in Ngwedo sub county as households rent fertile land parcels of 0.5 to 2 acres for agriculture. In Nwoya District, many households rent their land to individuals from the Pakwach area. The main factor affecting rental prices is land fertility and the duration of the lease.

All of the land required during the exploration and appraisal phases of the Project was only accessed through tenancy agreements, and most of the exploration well pads and access roads have since been restored and handed-over to the landowners where possible (where the land is free from disputes).

Marriage

Men can obtain property rights from their parents upon marriage when they are often granted a piece of land from their parents as a means for the new family to support itself. Women can also obtain access to land from their husbands upon marriage although these rights are often limited and reversible.

16.6.7.4 Land Use

Information about natural resources use by local communities is provided in **Chapter 19: Ecosystem Services** and under Section 16.6.6.3.

In anticipation of future land use changes due to oil and gas operations, MLHUD has developed physical development plans for the Albertine Graben area, published as the Albertine Graben Physical Development Plan. At the centre of the development of Uganda's oil industry this area, which includes the Study Area, has been classified as a special planning area by the government. The plan aims to sustain broader socio economic development in the area, and has seven strategies focused on: developing institutions, infrastructure, economic growth, urbanisation and resettlement, natural resource development, environment, and industrialisation. The plan divides the Albertine Graben into three areas and the Primary Study Area is within the central segment. The key priorities for this central segment are developing: oil and gas industry, agriculture, tourism, and industrialisation (Ref. 16-66).

It is important to note, however, that to date no District Physical Development Plans have been developed for any districts in the Albertine Graben, although this was a key recommendation from the regional plan.

The infrastructure development strategy proposes the following types of infrastructure development for the Study Area: an ICT centre in Buliisa, a new port close to Pakwach, and hydropower installations on the Nile River in the MFNP (Ref. 16-66).

16.6.7.4.1 Land Use in the Primary Study Area

The main land uses identified in the Primary Study Area are:

- Crop farming (hills of Ngwedo sub county and Biiso sub county and Nwoya);
- Livestock grazing (flatlands close to Lake Albert);
- Commercial infrastructure (including trading centres, landing sites);
- Public infrastructure including schools, health centres and administrative units;
- Residential including private residences; and
- Protected areas (MFNP and Bugungu Wildlife Reserve), used for nature conservation and tourism activities (e.g. lodges, game drives, river cruises).

Land Use in Buliisa District

A map showing land use in Buliisa District is shown in Figure 16-54.

Land in the eastern part of Buliisa District is predominantly used for crop farming (around 100 km²) and land in the central part as rangeland (around 180 km²). The western part has a mixed land use pattern (covering the lake shore area) with around 20 km² of semi-rural/urban areas and 35 km² of rangeland and 40 km² of wetland.

Rangelands for cattle grazing are managed by the traditional system where grazers have open access to resources, such as grassland and water; however, changes in this traditional system are

being observed and livestock grazing resources have been reduced as a result of changes in land ownership systems (from communal to individual ownership resulting in increased fragmentation of communal grazing land), population pressure (particularly along the shore of Lake Albert), expansion of cultivated lands into areas of natural vegetation cover (grassland, bushland, wetland, forest) and population movements. Many households from central Buliisa district own or rent plots of land in Ngwedo sub county to grow crops. Farmers who have enough land (more than 5-7 acres dedicated to food crops for a household of 8-10 members) for their own needs usually rent small plots to other farmers.

Eastern Buliisa District

The eastern part of Buliisa District (Ngwedo sub county and the eastern part of Buliisa sub county) is primarily crop farming. Agricultural land is fragmented with households owning on average between two to ten acres, which are divided into several plots that are spread throughout the village and adjoining villages. Figure 16-50 shows crop areas in eastern Buliisa District.

Other land uses in the eastern part of Buliisa sub county include: residential (with houses mostly clustered around main roads), commercial (tourism lodges by the River Nile), industrial (several oil pads, waste disposal units, and Bugungu camp), and natural resource exploitation (from River Nile, seasonal streams and forest).



Figure 16-50: Crop Areas in Eastern Buliisa Sub County

Central Buliisa District

Central Buliisa District covers Kigwera, Ngwedo and Buliisa sub-counties, and the dominant land use is cattle grazing. Livestock is reared using the traditional free-range system. Grazing is prohibited in Buliisa Town Council so some residents have had to look for alternative grazing areas. Other land uses in the central part of Buliisa District include: crop farming (crops and fruit trees grown on a very small scale in fenced gardens around homesteads to prevent cattle damaging crops – see Figure 16-51 residential (scattered residential areas such as Kichoke, Kirama, Kasinyi, Kibambura or Kijangi villages), industrial (several oil exploration well pads), and natural resource exploitation (wood and grass is collected and is an important activity in this area).



Figure 16-51: Crops Fenced to Prevent Cattle Damaging Crops (Kigwera Sub county)

Western Buliisa District

Western Buliisa District covers the lakeshores from Wanseko to Kigoya and the dominant land use is residential. This area is the most densely populated in the district and there is a high concentration of settlements along the road from Buliisa Town Centre to Wanseko Town Centre. Other land uses in the area include: commercial (trade and service centres and numerous shops - see Figure 16-52); industrial (several well pads and oil contractor camps), infrastructure (local government offices, NGO offices, company offices, Tullow Hospital and a high concentration of settlements), natural resource exploitation (Lake Albert shores are used for grazing and watering cattle, fishing and landing sites, exploitation of wetlands and soils for papyrus, sand mining, and sea shell collection).



Figure 16-52: Commercial and Physical Infrastructure in Western Buliisa District

Land Use in Nwoya District

A significant proportion of land within the Primary Study Area in Nwoya District is part of the MFNP. MFNP covers 65% (387 km²) of CA-1 and 61% (52 km²) of EA-1A. In the Primary Study Area (Got Apwoyo, Purongo sub county) the dominant land use is agricultural, both for large-scale agricultural projects and smaller scale subsistence farming. Grass harvesting and use of trees to make charcoal are also important land uses within the area. Other land uses include: residential (a few settlements concentrated along the main road and by the railway), commercial (three lodges close to the River Nile - Heritage, Bwana Tembo and Fort Murchison), industrial (oil and gas companies operational bases), natural resource exploitation (exploit resources at River Nile and seasonal streams, nearby grazing areas), and public infrastructure (Uganda railway, from Pakwach to Tororo).

The main land use change that is currently occurring in the area is the use of unexploited agricultural land for industrial purposes. This is occurring as a result of government policies, private investors, and population growth. District authorities interviewed as part of the 2015 SHBS stated that the district government plans to transform Nwoya District into an agro-processing hub, with the main project being the development of a 300 acre industrial park, which will be located close to Got Apwoyo station. It was reported that surveys and demarcation of the industrial park are currently being carried out. The government also plans to revamp the railway to connect Northern Uganda with the rest of the country and for transportation of agricultural products (Ref. 16-3).

During discussions with sub county and district government as part of the ESIA SBS it was reported that land around the River Nile is reportedly attracting a lot of attention from private investors interested in building more tourism lodges there, while there is also land speculation in the wider area from investors interested in developing commercial agriculture and industrial projects on the land (FGDs, Nwoya District, ESIA SBS).

Land use in Nwoya District is shown in Figure 16-53.

16.6.7.4.2 Land Use within the Project Footprint

Building on the land use context described in the preceding sections, this section provides a site-specific description of land uses in areas that could be affected by land clearance within the Project footprint. The following characterisation of land use within the Project footprint is based on land cover classification conducted for survey areas of at least 500 m by 500 m around the proposed well pad locations.

Table 16-39 provides a summary of recorded land cover and land use within well pad areas and the water abstraction point

Land uses within the footprint vary across the Primary Study Area, with the Project infrastructure falling broadly into the following zones:

- Nwoya open and wooded grasslands and seasonal wetlands (JBR-01 to JBR-10) – within MFNP: the land within these areas is based on a mix of open and wooded grasslands, and wetlands, with no active cultivation or settlements;
- Northern Buliisa (Victoria Nile Ferry Crossing and Victoria Nile River Crossing) – Ramsar site: the land along the southern banks of the Nile river is a mix of bushland with scattered trees and thicket and riverine woodland. Existing infrastructure includes the Paraa ferry crossing and, immediately west of the existing ferry crossing, structures for tourism businesses;
- Eastern Buliisa Cultivation and Settlements (GNA-01 to -04; NSO-02, -06; KGG-01, -03, -05, -08) – extensive cultivation of lands with settlements or scattered housing. Trees of socio-economic values and some grazing land;
- Central Buliisa Mixed Cultivation and Grazing (NGR-01; NSO-01, -03, -04, -05; KGG-02, -04, -06, -07) – bushed grassland with thickets, used for a mix of cultivation, gardens and grazing; and
- Western Buliisa Grazing Land (NGR-02 to -07, KW-01 and -02) – Grazing land with trees of socio-economic value, and cattle corridors, settlements and scattered housing in places.

Table 16-39: Summary of recorded land cover and land use within well pad areas and water abstraction point

Well Pad Area	Vegetation Types [1]	Vegetation types (micro-habitats) and, if recorded, social features [2]
Eastern Buliisa Cultivation and Settlements		
GNA-01	Mainly cultivated land; Settlement; Some grazing land	Environment: Gardens; Hyparrhenia grassland; Settlement; Acacia-Harissonia-Combretum thicket. Social: Presence of <i>Tamarindus indica</i> trees whose fruits are traditionally used as food and shade trees, hence of socio-economic value. This species is also on National Forestry Authority (NFA) list of 'Reserved Species'; There was also a woodlot of pine trees planted for income; Houses (some new).
GNA-02	Mainly cultivated land; Settlement	Environment: Gardens; Hyparrhenia-Pennisetum old fallow; Settlement. Social: Trees of socio-economic value; Houses (some new).
GNA-03	Mainly cultivated land; Settlement	Environment: Gardens; Hyparrhenia grassland pockets; Harissonia bushed grassland and thicket; Settlement. Social: <i>Mangifera indica</i> , <i>Persea americana</i> , <i>Anacardium occidentale</i> and <i>Tamarindus indica</i> are fruit trees while <i>Moringa oleifera</i> is a species of medicinal value; Houses.
GNA-04	Mainly cultivated land; Settlement	Environment: Gardens; Hyparrhenia grassland pockets; Isolated Harissonia thicket; Settlement. Social: <i>Mangifera indica</i> , <i>Persea americana</i> , <i>Anacardium occidentale</i> and <i>Tamarindus indica</i> are fruit trees while <i>Moringa oleifera</i> is a species of medicinal value; Houses.
NSO-02	Cultivation; Grazing land	Manihot garden; bushed grassland - fallow mosaic; Manihot gardens; Manihot gardens-fallow-thicket mosaic Pennisetum polystachion fallow; Manihot garden; scattered thicket; Seasonally flooded bushed grassland with scattered trees.
NSO-06	Cultivation; Settlements	Environment: Bushed grassland-fallow-Manihot garden mosaic; Fallow-Open grassland with scattered trees-gardens mosaic; Gossypium-Zea gardens-bushed grassland-fallow mosaic; Manihot garden; Manihot garden; bushed fallow. Social: <i>Artocarpus heterophyllus</i> , <i>Citrus sinensis</i> , <i>Mangifera indica</i> , <i>Sclerocarya birrea</i> , <i>Tamarindus indica</i> are all fruit trees.
KGG-01	Cultivation; Grazing land around settlement	Environment: Bushed grassland with scattered trees in settlement; Bushed grassland with thicket in fallow; Manihot garden; Open grassland in settlement; wooded grassland in settlement; small Musa gardens.
KGG-03	Mainly cultivation; Some grazing land	Manihot garden; post cultivated open bushland dominated by <i>Albizia Grandibracteata</i> ; Manihot garden with thicket; Manihot garden; old bushed grassland fallow; Manihot-Zea garden; old Manihot fallow; number of houses within the buffer zone.
KGG-08	Cultivation	Bushed grassland (fallow); Manihot gardens; Bushed grassland; Manihot bushed fallow; Bushed grassland with scattered thicket and trees; Manihot gardens; Bushed grassland with scattered trees; Manihot garden; Bushed grassland; bushed grassland with scattered trees.
Central Buliisa Mixed Cultivation and Grazing		
NGR-01	Cultivation; Some grazing land	Gossypium garden; bushed grassland; Gossypium garden; Zea garden; Open bushland with small patch of <i>Moringa oleifera</i> woodlot and Gossypium garden; Seasonally flooded bushed grassland; Gossypium garden; Young Eucalyptus -pine woodlot.

Well Pad Area	Vegetation Types [1]	Vegetation types (micro-habitats) and, if recorded, social features [2]
NSO-01	Cultivation; Grazing land	Manihot garden- bushed grassland with thicket mosaic; Manihot garden with thicket; Manihot garden; fallows; Manihot garden-bushed grassland -fallow mosaic; Manihot garden-Pennisetum polystarchion fallow-thicket mosaic.
NSO-03	Grazing land	Located in a large expanse of grazing land with no cultivation or housing nearby; Bushed grassland with thicket; Grassland with thicket; Bushed grassland; Bushed grassland with thicket and scattered trees.
NSO-04	Grazing land; Cultivation	Bushed grassland with thicket; Bushed grassland; seasonally flooded woodland; Bushed wooded grassland; Grassland with thicket; bushed grassland.
NSO-05	Grazing land; Cultivation	Environment: Bushed grassland with scattered thicket Combretum-Hyperthelia woodland patch; Manihot garden-fallow-bushed grassland mosaic. Social: <i>Anacardium occidentale</i> , <i>Artocarpus heterophyllus</i> , <i>Citrus sinensis</i> , <i>Mangifera indica</i> and <i>Sclerocarya birrea</i> are all fruit trees.
KGG-04	Grazing land; Cultivation	Bushed grassland with scattered thicket; Bushed grassland-Manihot gardens mosaic; Manihot garden; bushed grassland; Open bushland; bushed grassland; thicket.
KGG-06	Grazing land	Environment: Bushed grassland with scattered thicket; Bushed grassland with thicket; Bushed wooded grassland with thicket; Grassland with thicket; Grassland with thicket; bushed wooded grassland with thicket. Social: Kraal; Seasonally flooded area used by grazing animals; no houses within the survey buffer.
KGG-09	Grazing land; Cultivation	Environment: Wooded grassland; Thickets and bush; Bushed grassland; Grassland; Seasonal flooding.
Western Buliisa Grazing Land		
NGR-02	Grazing land; Scattered houses	Environment: Bushed grassland; Grassland with thicket; Thicket; Open grassland with thicket; Seasonally flooded grassland area. Social: Trees of socio-economic value: <i>Balanites aegyptiaca</i> , <i>Sclerocarya birrea</i> and <i>Tamarindus indica</i> (edible fruits), <i>Cassia siamea</i> (wood fuel); Houses (some new); Kraal.
NGR-03A	Grazing land; Cattle corridors; Scattered houses	Environment: Bushed grassland with thicket; Wooded grassland; Grassland with thicket. Social: Trees of socio-economic value: <i>Balanites aegyptiaca</i> , <i>Citrus limoni</i> , <i>Mangifera indica</i> , <i>Sclerocarya birrea</i> and <i>Tamarindus indica</i> (edible fruits), <i>Cassia siamea</i> (wood fuel); Vocational training school; Houses (some new); Kraals.
NGR-05A	Grazing land	Environment: Wooded grassland with thicket; Grassland with thicket; Bushed grassland; Open grassland; Thicket; Wooded grassland. Social: Trees of socio-economic value: <i>Balanites aegyptiaca</i> , <i>Sclerocarya birrea</i> and <i>Tamarindus indica</i> , <i>Ximenia americana</i> (fruit trees); <i>Antiaris oxycaria</i> , <i>Trichilia emetica</i> (timber species); Kraals.
NGR-06	Grazing land with cattle corridors	Environment: Grassland with thicket; Bushed grassland with thicket; Bushed grassland. Social: Trees of socio-economic value (<i>Balanites aegyptiaca</i> and <i>Sclerocarya birrea</i> for food; <i>Cassia siamea</i> for firewood; <i>Kigelia africana</i> for medicinal purposes).
KW-01	Grazing land; Cattle corridors	Environment: Grassland with thicket; Bushed grassland; Seasonally flooded grassland. Social: Kraals; some scattered houses in the area.

Well Pad Area	Vegetation Types [1]	Vegetation types (micro-habitats) and, if recorded, social features [2]
KW-02A	Grazing land; Cattle corridors	Environment: Seasonally flooded Grassland with Thicket and Bushed Grassland, Grassland with scattered Thickets and Trees, Bushed Grassland, Open wooded grassland in settlement, Open grassland. Social: Houses, Cattle corridor, Trees of socio-economic value: <i>Balanites aegyptiaca</i> , <i>Citrus sinensis</i> , <i>Moringa oleifera</i> , <i>Azadirachta indica</i> .
KW-02B	Grazing land; Cattle corridors	Environment: Seasonally flooded Grassland with Thicket and Bushed Grassland, Grassland with scattered Thickets and Trees, Wooded grassland with Thicket and scattered Senna woodlots. Social: Few settlements, Cattle corridor, Trees of socio-economic value: <i>Tamarindus Indica</i> , <i>Azadirachta indica</i> , <i>Cassia siamea woodlot</i> , <i>Annona mucricata</i> .
Water Abstraction System	Grazing land	Environment: Seasonal flooding, Seasonally flooded grassland, Permanent Wetland, Wallow. Social: Grazing areas, Animal activity and signs.

Sources:

[1] As identified in mapping produced by WSC, as reported in EA-1/EA-1A & EA-2 North Project ESIA - FEED Ecological Avoidance Report(2017) (Ref. 16-67).

[2] Based on 2016/2017 ecological mapping, as reported in EA-1/EA-1A & EA-2 North Project ESIA - FEED Ecological Avoidance Report (2017) (Ref. 16-67). Features are those recorded within a survey area of at least 500 m x 500 m around the provisional centre location as per initial designs at end of 2016. Each survey site was subject to preliminary survey in order to identify important features, map habitat variations (micro-habitats) and/or habitat mosaics, their condition and other notable features (or species) within the site.

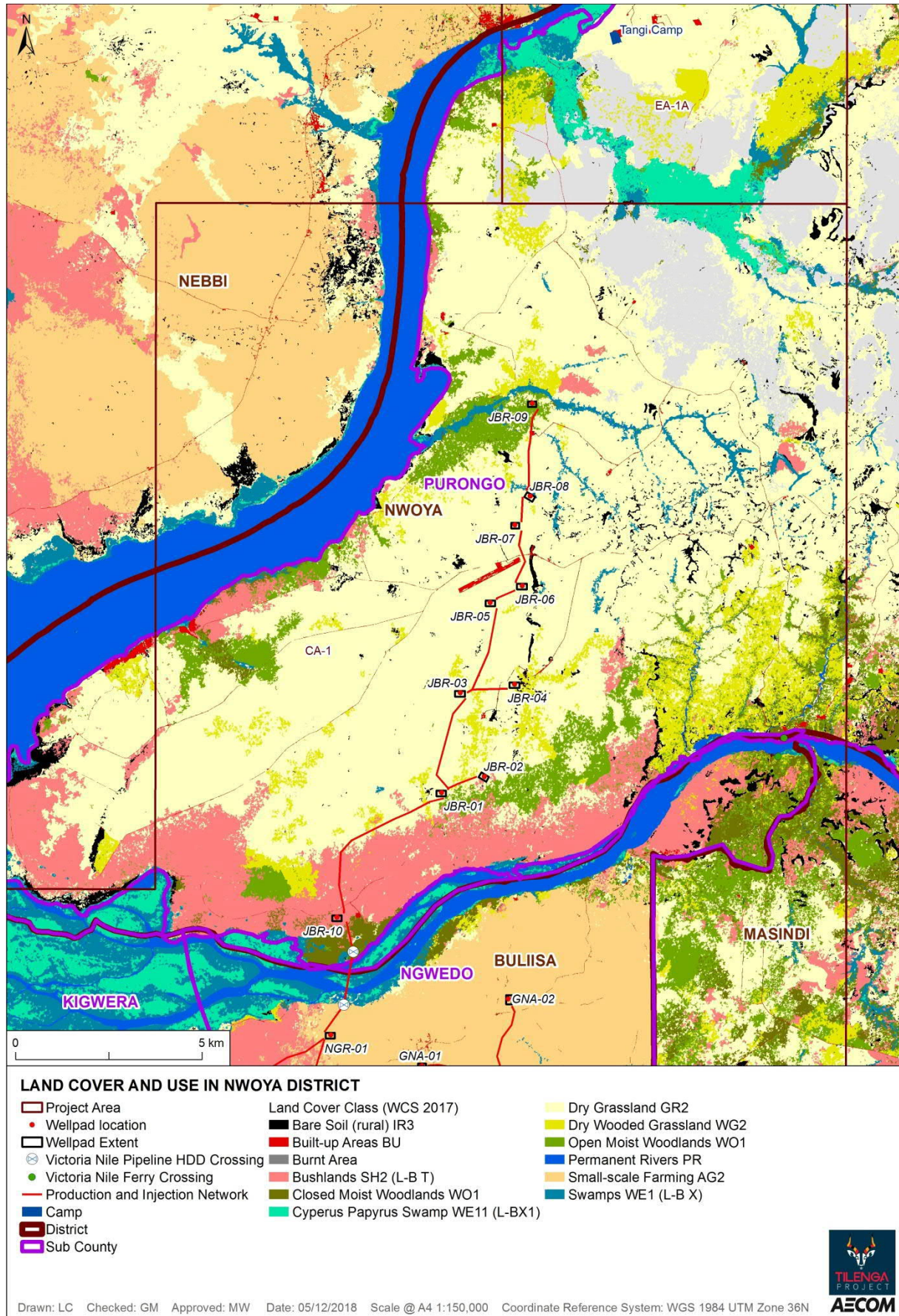


Figure 16-53: Land Cover and Use in Nwoya District

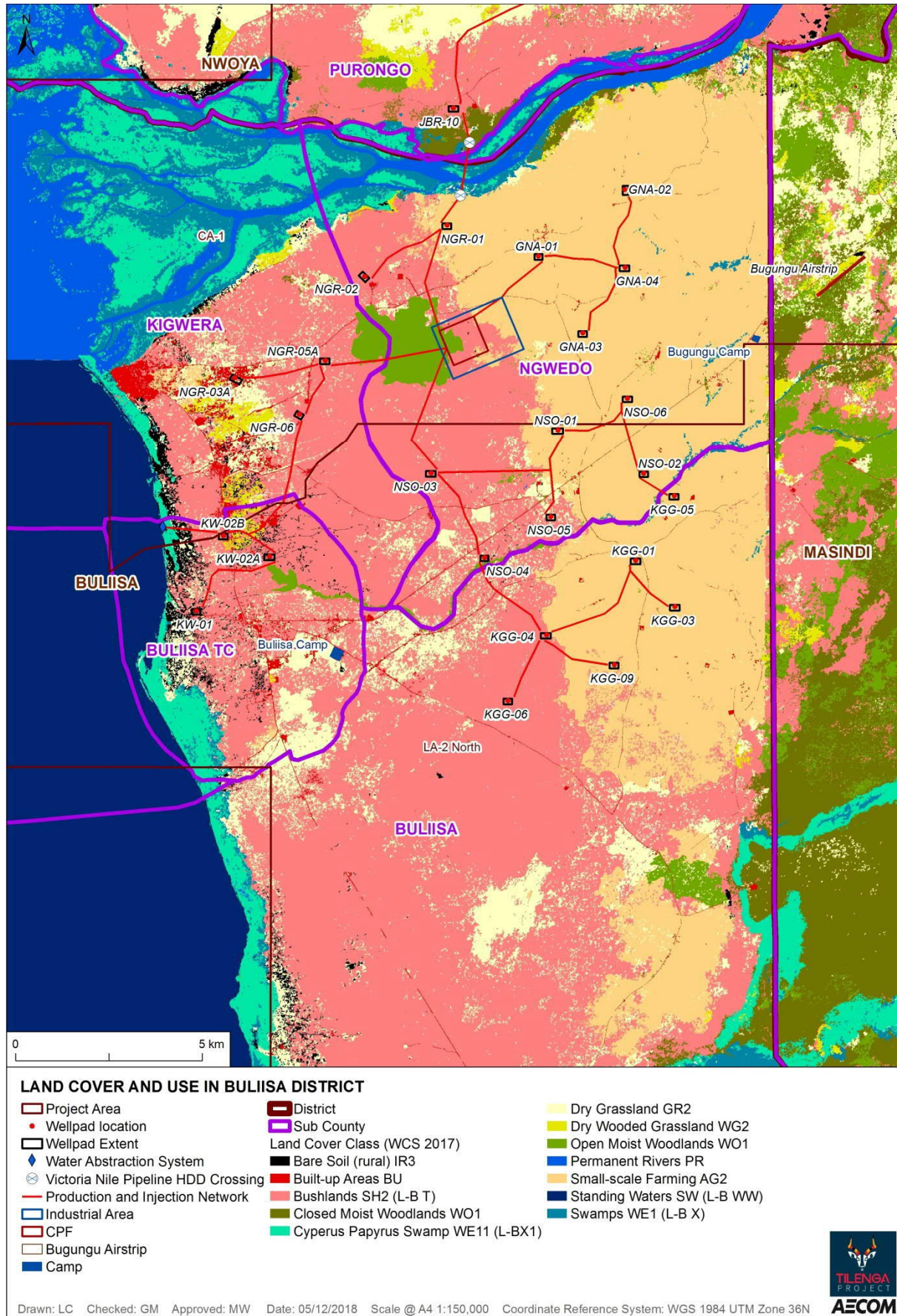


Figure 16-54: Land Cover and Use in Buliisa District

16.6.8 Human Rights

When considering the human rights context for Uganda several issues should be taken into account including the country's governance structures, socioeconomic development context, environmental considerations, and demographic profile. These issues are covered within other baseline sections of this ESIA as well as within the **Chapter 5: Stakeholder Engagement**. This section aims to provide an overview of the legal and institutional framework for human rights in Uganda and then looks at some of the key human rights issues of concern in Uganda and the Study Area, including consideration of labour and working conditions and identification of vulnerable groups.

16.6.8.1 Legal and Institutional Framework for Human Rights

Information about formal and informal justice systems in the Study Area and barriers to formal redress mechanisms is provided in Section 16.6.1.12.

Uganda is a state party to several core international human rights instruments⁸¹ including: The Universal Declaration of Human Rights (UDHR), International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), the Convention on the Elimination of All forms of Discrimination against Women (CEDAW), the Convention on the Rights of Children (CRC) and its Optional Protocols, the Convention on the Elimination of Racial Discrimination (CERD) and the Convention on the Rights of Persons with Disabilities (CRPD). Uganda is also a party to the core International Labour Organization (ILO) conventions. These instruments confer on Uganda, as a state, party obligations to respect, protect and fulfil the rights provided for (Ref. 16-68).

At the regional level Uganda has ratified the African Charter on Human and People's Rights and its Protocol on the rights of women in Africa; the African Charter on the Rights and Welfare of the Child; and the Kampala Convention on Internally Displaced Persons (IDPs). Chapter 4 of the Constitution provides for the protection and promotion of fundamental and other human rights and freedoms and these rights are enacted under various Acts (Ref. 16-68).

The UHRC was established under the 1995 Constitution of Uganda. It is mandated to promote and protect human rights and investigate complaints of human rights violations. The UHRC provides training to government and non-government actors to help raise awareness of business and human rights and also provides human rights training to security providers (covering aspects including liberty, torture and rule of law). (KII, UHRC, November 2016). The UHRC, under article 54 of the Constitution, can independently investigate any human rights violations and, where confirmed, recommend that the Director of Public Prosecution take appropriate action. The Equal Opportunities Commission (EOC) can also investigate cases of discrimination or inequalities against marginalised persons or groups on its own initiative or through complaints received (Ref. 16-32).

Uganda has finalised a draft national action plan⁸² that will provide a broad policy framework for the promotion and protection of human rights and for the implementation of commitments under various regional and international human rights instruments. Reports (with recommendations) prepared by the UHRC and the EOC are submitted annually to parliament for review. Institutionally there is a Parliamentary Committee on Human Rights that is mandated to provide an oversight role, and a Cabinet sub-committee on Human Rights that provides policy guidance (Ref. 16-69).

In connection with the justice system and law enforcement and public order, the Uganda Police Force, the Uganda People's Defence Force and the Uganda Prisons Service have each established a human rights directorate to handle human rights issues, including complaints from the public about any of their respective serving officers. Those directorates are also responsible for building in-house human rights capacity and ensuring strict adherence to the country's regional and international human rights obligations and standards (Ref. 16-69). Human rights training is provided for police and security personnel and the police also works with private security providers to raise awareness about human rights. Both UHRC and International Alert reported that they had also provided training to government

⁸¹ Further information about Uganda's accession and ratification status of international and regional human rights instruments is available in the Human Rights and Business Country Guide for Uganda (Ref. 16-32).

⁸² Not yet publically available at time of writing.

security agencies including Uganda People's Defence Force, marine forces, immigration security agents, district internal security and oil company security staff (KIIIs with District Police, Uganda Oil and Gas Police, UHRC and International Alert November 2016 to February 2017, ESIA SBS).

16.6.8.2 Human Rights Concerns in Uganda

The UN Office of the High Commissioner for Human Rights reports that although Uganda has adopted a number of legal instruments for the protection of vulnerable groups, implementation has been slow. Discrimination as well as sexual and gender-based violence is a matter of major concern. Women, persons with disabilities, people living with HIV/AIDS, lesbian, gay, bisexual, transgender and intersex (LGBTIs) and especially vulnerable individuals among the remaining IDPs and returnee population are still facing challenges in enjoying human rights on an equal basis (Ref. 16-70).

Some key indicators for civil and political rights are presented in Table 16-40.

Table 16-40: Indicators for Civil and Political Rights in Uganda

Indicator	2007	2010	2014
Reporters Without Borders: Press Freedom Index (Ranking of 180 countries where 1 indicated the highest degree of freedom)	96	96	104
Freedom House: Map of Freedom – Political Rights (on a scale of 1 through 7 where 1 indicates the highest level of freedom)	5	5	6
Freedom House: Map of Freedom – Civil Liberties (on a scale of 1 through 7, where 1 indicates the highest level of freedom)	4	4	4

Source: Ref. 16-32

In 2015, the highest number of allegations of human rights abuses registered by the UHRC was on violation from freedom of torture and cruel, inhuman or degrading treatment or punishment, which constituted 40% of the total complaints registered. This was followed by detention beyond 48 hours (27%), denial of child maintenance (14%), deprivation of property (7%) and deprivation of life (4%) (Ref. 16-32).

According to the United States Department of State's annual Human Rights Report for Uganda⁸³ in 2016, the three most serious human rights problems in the country included lack of respect for individual integrity (unlawful killings, torture, arbitrary detention, and other abuse of suspects and detainees); restrictions on civil liberties (freedoms of press, expression, assembly, association, and political participation); and violence and discrimination against marginalized groups, such as women, children, persons with disabilities, and the LGBTI community. Other human rights problems included harsh prison conditions, lengthy pre-trial detention, official corruption, biased application of the law, societal violence, trafficking in persons, and child labour. The government was reluctant to investigate, prosecute, or punish officials who committed human rights violations, whether in the security services or elsewhere in government, and impunity was reported to be a problem. (Ref. 16-71).

The Human Rights Watch (HRW) World Report 2016 highlighted the following human rights issues for Uganda in 2016 (Ref. 16-72):

- *Violations of freedom of association, expression, assembly, and the use of excessive force by security officials during the 2016 presidential elections and into the post-election period.* During this period it was reported that the police used unnecessary and disproportionate force to disperse peaceful assemblies and demonstrations, sometimes resulting in the death of protesters and bystanders. Opposition candidates and supporters were arrested and detained. Journalists were also arrested during the campaign and the government placed a five day ban on social

⁸³ These reports aim to provide policymakers with a holistic and accurate accounting of human rights conditions in nearly 200 countries and territories worldwide, including all member states of the United Nations and any country receiving U.S. foreign assistance. The reports cover internationally recognized individual civil, political, and worker rights, as set forth in the Universal Declaration of Human Rights and other international instruments (Ref. 16-60).

media networks over the election period. Media were also temporarily banned from reporting on any opposition party campaign activities;

- *Unlawful killings and absence of accountability:* Security forces reportedly continue to use excessive force while policing demonstrations and conducting other law enforcement operations. Between February and April 2016, inter-communal fighting prompted in part by local elections in Rwenzori region, western Uganda, led to the deaths of at least 30 people. Human Rights Watch investigations into subsequent law enforcement operations concluded that the police and army killed at least 13 people during alleged arrest attempts. Multiple witnesses said victims were unarmed when killed. As of December 2016 the cases had not been investigated. In November 2016, police reported that at least 100 people were killed and 139 others arrested in clashes between security agencies and palace guards in the western town of Kasese. In some cases, security forces reportedly shot unarmed civilians and dumped their bodies. The clashes followed attacks by the local king's guards on several police stations on 26 November, during which at least 14 police officers were killed. Charles Wesley Mumbere, King of the Rwenzururu kingdom, was arrested and transferred to the capital, Kampala, where he was charged with murder. (Ref. 16-73);
- *Freedom of Association:* A new Non-Governmental Organisations bill was signed into law in February 2016, which human rights organisations are concerned could be used to clamp down on civil society activities. For example, the law includes vague "special obligations" of NGOs, including a requirement that groups should "not engage in any act which is prejudicial to the interests of Uganda or the dignity of the people of Uganda." Another provision criminalizes activities by organizations that have not been issued with a permit by the government regulator, fundamentally undermining free association rights. A separate provision provides that violations of the act can lead to jail sentences of up to three years. There have reportedly been more than two dozen break-ins at the offices of NGOs known for working on sensitive subjects and criticizing government, which have not been investigated; and
- *Sexual orientation and gender identity:* Same-sex relations is a crime under Ugandan law and LGBTI people still face heavy discrimination in Ugandan society and by police and security officers.

16.6.8.3 Labour and Working Conditions

The Ministry of Gender, Labour and Social Development (MoGLSD) is the lead ministry responsible for administration of labour in Uganda. The Directorate of Labour, Employment and Occupational Safety and Health (OSH) performs most of the labour administration functions. Labour administration is decentralised so there are district, sub county and municipality level labour offices. There are currently no district level OSH officers (KII, Directorate Labour, ESIA SBS).

Labour officers are responsible for administering worker-employer relationships and are required to register and inspect workplaces in both the formal and informal sectors. Workplace inspections are not carried out in a systematic way, however, and records are not completed making it difficult to monitor compliance with labour laws. Challenges for labour officers in carrying out their work are reported to include lack of funding, ignorance of employers in relation to labour laws (e.g. impeding labour officers access to a worksite), non-registration of many workplaces, poor record management, lack of coordination between stakeholders on labour issues, underreporting of accidents, and inadequate financial penalties (meaning some companies prefer to pay fines for non-compliance as it is cheaper than making necessary investments to achieve compliance) (KII, Nebbi District Labour Officer and Directorate Labour ESIA SBS).

Labour-related complaints can be filed with union leaders or the district labour office. District Labour Officers forward employer-employee disputes to the Industrial Court. Although the Industrial Court is operational after many years without operating, it has a five-year case backlog, poor structure and location and inadequate staffing and funding. As of 2016 it had over 400 cases of employer-employee disputes to be settled on issues of non-payment of wages, unfair termination, sexual harassment and discrimination, among others (Ref. 16-32).

In 2011, Uganda was reported to have the highest rate of construction accidents in the world, with 4,200 major injuries occurring per year. High accident rates were reportedly due to poor construction materials and the high density of workers on site. According to the International Labour Organisation,

however, there was a lack of reporting of accidents and diseases and data on workplace incidents is scarce (Ref. 16-32). Low awareness of workers on hazards they face means they often do not demand proper protection of their OSH rights, for example through use of proper personal, protective equipment (KII, Directorate Labour, ESIA SBS).

The Employment Act establishes the minimum age of work at 14 years. Children under 12 years are prohibited from working, and children from 12 to 14 years may only engage in light work that does not interfere with their education. According to the UBOS National Labour Force and Child Activities Survey 2011/2012 released in 2013, approximately two million children were engaged in child labour, including approximately 507,000 exposed to hazardous work. The report indicated that the majority of the working children (93%) work in the agricultural, forest and fishing industries. Children in rural areas were engaged in child labour more than in urban areas. Child labour is particularly common in the informal sector. The Ministry of Gender, Labour and Social Development has also stated that other sectors where children were vulnerable included domestic service, hotels and bars, commercial sexual exploitation, construction and stone quarrying (Ref. 16-32).

From the various FGD's and KIIs held in the 2015 Field Survey, child labour was reported in the Study Area, and was noted to be of particular concern in Nebbi District and Pakwach TC. The main reasons for child labour were reported to be poverty (school fees being unaffordable and children being forced to work to support their family economically), and sick or deceased parents, often due to HIV/AIDS (meaning the eldest child is often forced to work to support younger siblings). Within the Study Area, sectors in which children were most likely to work were reported to be agriculture, trade (working in the markets or as street vendors), and fishing. There were also several reports that during the exploration phase children dropped out of school to seek work as casual labourers (Various FGDs and KII, 2015 Field Survey).

According to the 2015 Trafficking in Persons Report for Uganda, Uganda is a source, transit and destination country for men, women and children subjected to forced labour and sex trafficking. Within Uganda, the report notes that children are exploited in forced labour in a number of sectors and girls and boys are exploited in prostitution. Children from the DRC, Rwanda, Burundi, Kenya, Tanzania, and South Sudan are also reported to be subjected to forced agricultural labour and prostitution in Uganda. South Sudanese children in refugee settlements in northern Uganda are noted to be vulnerable to trafficking, and the United Nations High Commissioner for Refugees suspects instances of trafficking involving this population (Ref. 16-74).

Key issues facing women in the workplace are reported to include safety and sanitation issues; discrimination against hiring women of reproductive age; unequal pay and discrimination against women in consideration for promotion; and high incidence of sexual harassment. Sexual harassment is often not reported due to a lack of awareness of rights, fear of loss of job, and cultural norms (KII, Directorate Gender, ESIA SBS).

There were 53 trade unions registered in Uganda in 2016 with a membership of about 550,000, equivalent of 3.2% of the labour force or 20% of workers in the formal sector (Ref. 16-75). Unions are reported to be stronger in some sections than others, with the manufacturing sector and plantations having the most active unions and construction having the weakest. This is attributed in part to the temporary nature of work in the construction sector (KII, Directorate Labour, ESIA SBS).

Knowledge of labour rights amongst workers is dependent on the sector. Public sector workers generally have a good knowledge of their rights, whereas those working in the agricultural sector have a low awareness. Despite awareness of their rights, workers will reportedly often accept working under inadequate conditions and without a contract due to job scarcity (KII, Directorate Labour, ESIA SBS).

16.6.8.4 Human Rights Issues in the Study Area

16.6.8.4.1 Vulnerable Groups

The general population within the Primary Study Area can be considered vulnerable due to their precarious livelihoods, high levels of poverty, low levels of education, poor access to basic social infrastructure and services, and low prevalence of formal land rights. Those living far from health centres and poorer households (in relation to others) are considered particularly vulnerable. Certain

groups within the population are considered relatively more vulnerable due to factors that place them more at risk of discrimination, poverty or abuse (such as age, gender, ethnicity, disability). Groups that were identified as vulnerable⁸⁴ and the nature of their vulnerability are described below. Within the groups described below there may be overlapping vulnerabilities (e.g. women from ethnic minority groups, elderly and disabled).

Women

Women can be considered vulnerable due to traditional general roles, which place a high burden of household labour on them and exclude them from participating in decision making; lack of land ownership and denial of property and inheritance rights; lower levels of education and lack of awareness about their rights; and vulnerability to sexual and gender-based violence. Women are generally more engaged in agriculture and are therefore more sensitive to land issues. Women are discriminated against in traditional decision making around customary land, which is dominated by male clan elders. Women within the Study Area are considered to be at high risk of exposure to sexual and domestic violence. Particular factors that make certain women vulnerable, or that can make women vulnerable in certain contexts (such as the workplace), are described below:

Widows

Widows are especially vulnerable as they don't have ownership of resources such as land and are vulnerable to land grabbing from male relatives. Widows who do not have children are especially vulnerable as they will not have any rights over land when the husband dies clan members can take the land back.

Female Headed Households

Female headed households are also especially vulnerable due to lack of access to land and vulnerability to land grabbing from male relatives. In some respects, however, female headed households can be considered better off than other women as they have more control over household decision making and are not at risk of domestic violence. Some female-headed households may not be regarded as vulnerable if they have one or more adult males (aged above 18 year) that may support the female head. In such cases, the household may be defined as matriarchal with a female-head in place where the male head has passed away. The female-head is however being supported by, usually, her adult sons.

Women in the Workplace

The UHRC stated in its 16th annual report that women are often denied full length of maternity leave and at times denied full pay. Violence against women and sexual harassment remain serious challenges in the workplace in Uganda and the UHRC's 2013 Oil in Uganda Report (Ref. 16-68) highlighted one of the negative impacts of oil and gas activities was the sexual abuse and exploitation of female workers in camps by local and foreign male construction workers. The vast majority of women workers in the oil industry were in low paying jobs such as cooks, cleaners, and washers (Ref. 16-32).

Children

Children are dependent on others for provision of food and other basic necessities. Children under 5 in particular have lower immune systems and therefore more vulnerable to poor health.

Child headed households are especially vulnerable as they are economically very poor and therefore face difficulties accessing daily necessities, education and healthcare.

Young girls face risks of defilement, child marriage, and early pregnancy. Early pregnancy and marriage often results in women leaving education, which limits their capacity to meaningfully participate in decision making.

⁸⁴ Vulnerable groups were identified based on information received during widespread consultations with communities, civil society and government representatives.

Children, such as orphans, children living in poor households, and children of migrants (e.g. fishermen, cattle keepers) have increased vulnerability as they often do not attend school and are more likely to engage in child labour. There are over 400 orphans in Buliisa District, 62 of which are HIV positive. Orphans do not receive any government support. Most orphans live within the community and are dependent on others for support. Kakindo Orphans Care in Buliisa District offers some support to orphans through a network of female volunteers based in the villages.

Unmarried Youth

Under customary norms, unmarried youth are excluded from owning land and therefore from decision making on communal land. There are high levels of unemployment amongst youth, especially during the dry season. Youths are also vulnerable to risky sexual behaviour.

Elderly

The elderly (over 65) are identified as being vulnerable due to their dependence on others for support in cultivating their fields and getting food and water. They are also vulnerable due to their relatively greater difficulty in accessing healthcare, especially for those living far from health centres. These may be frail and dependent on extended family and/or government for support.

Some elderly are head of households. Elderly heads may comprise of large families where the head is the elderly patriarch or in some cases matriarch, whom has considerable support from adults, older children and grandchildren and may not be defined as vulnerable. However, if circumstances of their household change (such as being impacted by resettlement), they may be left without support and become vulnerable.

Elderly dominated households are defined as households comprised mostly of the elderly (the average age of the household is higher than 65 years in age). Here, one or two adults may be supporting elderly people, placing significant pressure on the adult and therefore deemed to be vulnerable.

According to the Buliisa District Development Plan II, 4.6% of the district population is over the age of 65 (5,313 people) (Ref. 16-17).

Persons with Disabilities or Chronically Ill

Some household in the Study Area include one or more person(s) defined as physically or mentally disabled: the disabilities may range from physical disability, mental disability, or long-term illness. These are vulnerable due to the reduced labour/income producing potential, and require additional resources and support in the care of the disabled person. According to the Uganda Social Development Programme (Ref. 16-76), households where at least one member has severe or partial disability have a poverty rate of 30 percent, compared to the national average of 22 percent. Some households have members with multiple disabilities and/or multiple members with a disability. Although disabled individuals within society and their households occupy a potentially vulnerable and marginalised position, their presence does not by definition render the household itself vulnerable.

According to the Buliisa District Development Plan II, 1.9% of the district population (2,195 people) are living with disabilities (Ref. 16-17).

Migrants and Refugees

Migrants, particularly the Congolese and the Bakiga face discrimination from the local Bagungu and Bunyoro majority and do not have secure land rights, and therefore no secure source of income and food security. Migrant and refugee women and children are considered at higher risk of being trafficked for commercial sex work and migrant children are considered more likely to be engaged in child labour (KII, IOM, ESIA SBS).

Ethnic Groups

At the national level, Minority Rights Group International reported that ethnic minorities had higher rates of poverty than other groups, were excluded from various forms of economic activity and participation in civil affairs, and had high rates of unemployment. They reportedly faced discrimination

from larger neighbouring tribes, lacked access to political representation and public services, and had limited participation in local and national levels to discuss their concerns and interests (Ref. 16-32).

The Bagungu, who are the original inhabitants of Buliisa District, constitute only 0.25% of the population at the national level, however, within the Study Area they can be considered a dominant group who have more control over productive assets and have a greater role in leadership and decision making in the community than other ethnic groups present in the area. Data on the exact percentage of different ethnic groups within Buliisa District is not available; however, within the RAP1 Social Baseline study area 69.9% of household heads and 59.2% of spouses of the household head are Bagungu.

Fishing Communities

Those dependent on fishing as a livelihood are becoming more vulnerable as fishing is becoming more challenging due to depleting fish stocks in Lake Albert. Villages dependent on fishing include Kisimo, Kityanga, Kizongi, and Kihahula. Health and sanitation status within fishing communities is generally very poor and lake based activities (including fishing, sea shell collection, sand mining) pose inherent health and safety risks.

Sex Workers

Sex workers are stigmatised by local communities and excluded from decision making. Sex workers are also vulnerable due to the inherent health and safety risks of their work, including risk of physical violence. They report that they face discrimination if they try to report crimes to the police and also when seeking health care. Within the Study Area, hotspots for sex workers include Hoima town, Biiso TC, Wanseko, Pakwach TC, and Masindi Town. Transport corridors are also considered hotspots for commercial sex work.

Cattle Herders (Balaalo)

Some of the Balaalo⁸⁵ face discrimination in the Study Area and can be considered a vulnerable group due to their marginalised status lack of representation in community decision making; and lack of access to information (Balaalo interviewed as part of the ESIA SBS reported that they knew nothing about oil and gas activities happening in the region, for example). The Balaalo that do not own their own cattle and work for the Bagungu generally live in poor dwelling places and do not have access to land making them highly dependent on income earned in cash or in-kind from cattle keeping and selling milk.

People Living with HIV/AIDS

People living with HIV/AIDS still face stigma. Global Rights Alert reported in 2013 that HIV/AIDS rates were particularly high in communities near oil and mining operations, as well as the families of workers who lived far from home. Fishermen are considered to be a high risk of contracting HIV, with prevalence rates as high as 40% in 2014 in fishing communities. The reason for the high prevalence rates were low literacy, lack of information and the migratory nature of fishing communities (Ref. 16-32). Within the Study Area, the populations identified to be most at risk of HIV/AIDS were sex workers, boda boda drivers, truck drivers, fishermen, and casual labourers working on commercial farms (specifically in Nwoya District).

16.6.8.4.2 Land rights

Individuals living in the Project Area have a limited understanding of their land rights due to the complexity of land tenure in the area, leaving local residents vulnerable to speculation and land grabbing.

⁸⁵ It should be noted that Balaalo is a general term referring to cattle keepers and during discussions with stakeholders, two groups of Balaalo were identified: those who work for the Bagungu and rarely own their own cattle, many of whom have been in the Study Area for a long time, and those who own their own cattle and are therefore considered better-off. The latter group recently tried to move into the Study Area. Both groups may be considered vulnerable due to the discrimination they face and marginalisation from decision making, however, the former group are economically more vulnerable.

Although land in the Project Area is predominantly held under customary tenure, each clan has different systems of customary ownership: for example, the Bagungu generally own land communally or collectively (family land and clan land) as well as individually, Bagungu, while Alur and Acholi recognise individual land ownership and use demarcation.

The Bagungu manage a multi-layered system of user rights, with primary right holders able to distribute land rights to community members, and secondary right holders who have control over land administration, and tertiary right holders who are allocated a plot of land to cultivate or rent. For residential land, clan elders are responsible for allocating user rights on dedicated land parcels to the different families of the clan (Ref. 16-3).

Traditionally, to prevent outsiders acquiring land there are no land transactions over communal land. Individuals that are not part of the Bagungu ethnic group (such as the Balaalo) are denied access to the land but they can get limited user rights upon approval from the clan. Bagungu land users cannot take any unilateral decisions about the use and any other matters relating to communal land that would curtail the rest of the community from freely accessing it (i.e. build up their houses or install their crops). When they want to do so, they need an approbation of clan leaders beforehand. Land demarcation of residential or grazing land is not common in communal land systems. Clan land demarcation is indicated by natural features (trees, rivers, cattle corridors).

Land managed by the Alur ethnic groups is under ownership at the individual, family or household level. The role clans play in land management includes holding information on land boundaries and solving land-related conflicts. Land transactions (selling/buying/renting) are common in this area and occur between community members and outsiders, such as Bagungu pastoralists and fishermen who come and cultivate in this area. Land demarcation is usually done using natural markers such as cactus, bushes and thickets and sisal plants.

The Acholi ethnic groups follow an individual customary tenure system similar to that of the Alur. Transactions over land are forbidden by the traditional leadership, however, the selling and renting of land are increasingly observed.

The following groups may be considered vulnerable due to their position regarding land rights in the Project Area.

Women

Women's land rights are promoted under the 1995 Constitution and under Article 27 of the 1998 Land Act, which states that land under customary tenure should be managed under traditional norms and customs, except when such norms "denies women or children or persons with a disability access to ownership, occupation or use of any land". According to numerous studies on the current status of women's land rights in the country, and observations made in the Study Area, the Land Act has so far failed to correct inequalities of women's land rights because of the continuing prevalence of customary practices discriminating women (Ref. 16-3).

Although women and girls do not generally participate in taking land-related decisions and are excluded from land matters, some women have been identified as landowners. Under the customary norms of most patrilineal ethnic groups (e.g. Bagungu, sons always inherit their father's land and if the father does not have male children, the next in line for inheritance are the deceased's brothers, uncles and other extended male family members. The Alur ethnic group practices matrilineal land inheritance and cases of women having inherited land from their fathers and mothers were encountered during the 2015 SHBS (e.g. in Mubako, Got Apwoyo, Ajigo) (Ref. 16-3).

Customary marriages do not protect women's land rights and leave them vulnerable to losing access to land. When they marry women are given access to a parcel of land where they can cultivate crops for the household. If the husband marries again, however, he can redistribute access to land between his wives. If a couple separates, the wife has to leave the land to her husband. Upon the death of the head of household in polygamous marriages, wives often compete to keep access to their land. If upon his death a husband or husband's family deny land rights to a woman, there are few means available for her to defend her interests and rights. Women with children are less vulnerable to land grabbing as they are generally perceived as looking after the land on behalf of their husband's heirs to whom it will be distributed later.

Women can access land through purchase but this is not yet common. To date, only 8% of land applications registered at Buliisa District have been carried out by women. Women can also rent land and this option is generally seen as more affordable and less prone to land grabbing by male relatives (Ref. 16-3).

Balaalo

Balaalo herdsmen are allowed some users-rights to grazing land but they are prevented full ownership, making them highly dependent on income earned in cash or in-kind from cattle keeping and selling milk.

Unmarried males

Male heirs receive their inheritance once they are married and until such time, they are regarded as land users and have limited say on their rights over their land.

Other tenants

Any tenants to whom plots of land has been allocated have no decision-making powers on how the land is allocated or administered.

16.6.8.4.3 Access to information

In Uganda, the right to access information is enshrined in Article 41 of the Constitution (1995) which provides that, “Every citizen has a right of access to information in the possession of the state or any other organ of the state except where the release of the information is likely to interfere with the security of the state or the right to the privacy of any other person”.

The Access to Information Act (ATIA) of 2005 and the Access to Information Regulations of 2011 are the main legislations ensuring citizens’ rights to information (RTI). ATIA was enacted to promote the right to access to information, promote an efficient, effective, transparent and accountable Government and to enable the public to effectively access and participate in decisions that affect them as citizens. Furthermore, the Government of Uganda has adopted various initiatives and programmes to promote the right of access to information, including:

- The establishment of the Ministry of ICT and National Guidance (MoICT&NG);
- Development of the Government Communication Strategy;
- Creation of Public Education Airtime on radio stations in every district across the country to sensitize the public on service delivery and development issues; and
- The establishment of the Government Citizens Interaction Centre (GCIC) to enhance the monitoring of service delivery and provide a channel for feedback and suggestions from citizens.

Despite the enactment of the 2005 Act, citizens have limited access to information due to non-compliance with the law at Ministerial level, bureaucracy, and wide exceptions to the application of the law which restrict access to public records. Moreover, citizens, including public officials, have a limited awareness of the law and their rights.

A World Bank 2011 report states: “The Ugandan case, especially when cast in comparison with Right To Information (RTI) regimes in other country contexts, shows that the relative capacity and influence of civil society is a necessary condition to make RTI laws effective accountability instruments”. In Uganda, the enactment of the law was state-sponsored, and civil society groups had relatively little influence on its final passage, even though they were influential in bringing a bill to Parliament on the right of information. Most CSOs, except the larger and more prominent ones based in Kampala, have capacity constraints that hamper their ability to meaningfully participate and understand technical issues and key policies. Activism on this issue seems to be largely restricted to more prominent NGOs operating in Kampala. However, CSO based in Kampala, many of whom are also active at the district level, revealed that information problems are even more challenging at this level (Ref. 16-77).

In the Project Area, access to information is further hindered by several factors, including (*inter alia*):

- low levels of literacy and education of local residents:

- deliberate withholding of information by unaccountable public officers,
- limited interaction between local leaders and the local residents due to resource constraints; and
- interference of partisan politics.

16.6.8.4.4 Legacy Human Rights Issues in the Study Area

The UHRC review of human rights in the Albertine Graben area reported a number of human rights allegations in the study area and in particular in regards to the Government Refinery Project in Hoima District. The points below summarise the main issues identified in the UHRC report, which mainly related to the environment, compensation, gender and displacement (Ref. 16-68):

- Allegations in Hoima District of low compensation rates and delayed payment of compensation for land, crops and transfer of burial sites, which affected project affected people's right to an effective remedy (e.g. inability to acquire decent replacement accommodation);
- Inadequate consultation during determination of compensation rates (which is done by the District Land board and the Chief Government Valuer (CGV));
- Lack of access to information on what was happening in relation to oil activities and minimal efforts to help affected people understand the legal requirements, procedures, processes and management framework for the oil and gas industry in the region. This includes lack of information on valuation processes used to determine compensation payments, and lack of information about the timing and location of potential displacement. Failure to ensure adequate access to information and informed participation was partly attributed to inability of local governments and technical officials to fulfil this duty. The information gap was noted to exist mainly between government and local communities. Total E&P and Tullow are commended in the UHRC report for establishing Community Liaison Officers (CLOs) to ease communication and access to information between oil companies and community members;
- Complaints regarding environmental issues including pollution of the environment from dust, noise and vibration, odours, and waste dumping;
- Complaints over unclear terms of employment and lack of understanding about recruitment processes, as well as challenges faced by District Labour Officers (DLOs) in carrying out effective monitoring of workers' welfare at oil facilities presenting difficulties ensuring protection of workers' rights;
- Complaints relating to land rights and land use issues including accusations of people selling communal land without following proper procedures as provided by law; fraud in acquisition of land titles; forced signing of compensation disclosure agreements by some residents; and failure to pay compensation for restrictions on land use;
- Threats to rights of some vulnerable people, particularly women and girls including: increased sexual exploitation or abuse against local women and children due to influx of male construction workers; increased family disputes and domestic violence due to disagreements over handling of compensation payments and in some cases exclusion of women from the compensation process;
- Reports of increased dropout rates from schools in Hoima District due to impending relocation of primary schools, early marriage, and entry into casual labour. This threatens children's rights to education and entails possible child labour related issues;
- Influx into the oil region raising concerns about potential xenophobic tendencies towards foreigners and people from other parts of the country; and
- Allegations that noise and vibrations caused by exploration activities caused animals to flee from MFNP into villages surrounding the park, destroying crops.

Many of the above issues were raised during consultations with community, civil society and government representatives between November 2016 and February 2017. Issues most frequently raised related to land rights and land conflict, vulnerability of women and gender based violence, children's rights to education, protection of the environment, and risks to community health and safety including increased vulnerability to communicable disease such as HIV/AIDS due to influx of workers and increase in commercial sex workers.

Several initiatives have been undertaken to mediate legacy grievances about compensation and resettlement; improve access to information about oil activities; and to raise awareness about land rights and gender issues, amongst other things. Thanks in part to these initiatives, it was reported that significant progress has been made in addressing many of the legacy issues noted above⁸⁶. Nevertheless, several stakeholders expressed concerns that the type of human rights issues that arose in the past in the study area would recur in the next phase of oil activities.

16.7 Benefits of the Tilenga Project for Uganda

In 2006, Uganda confirmed discovery of crude oil reserves of about 1 billion barrels in the Lake Albert basin, which include the Tilenga area. In 2016, the Government of Uganda auctioned out several exploration licenses which could lead to discovery of additional reserves. With commercial production in full swing, the country could earn during the production plateau in the range of US\$2.5 billion in revenue per year, depending on the level of the oil price in the international market. The discovery, development, production and commercialization of these oil resources for at least 25 years, offers a unique opportunity to Uganda to leverage these resources for the development of the socio-economic factors. Indeed, oil revenues can be used to finance priority domestic investments crucial for diversified growth, but also as a mean to achieve sustainable and shared growth and attain the objective of the Ugandan government to make Uganda a middle income country by 2040.

16.7.1 Macroeconomic impact (World Bank / Government of Uganda assessment)

Prepared by the World Bank and the Government of Uganda, the Uganda economic memorandum presents a vision of how the country can leverage its oil and mineral resources to accelerate economic growth, reduce poverty and attain the goals of the country's National Development Plan (NDP II). *"Oil is not a pipe dream; it is an opportunity to fuel our economic growth, create employment, foster technology transfer and generate revenues for investments in development of other sectors,"* said Keith Muhakanizi, Permanent Secretary and Secretary to the Treasury, Ministry of Finance, Planning and Economic Development in Uganda.

According to the Country Economic Memorandum, oil production is expected to boost Uganda's economy, which was previously growing at 7% annually for a decade, but slowed down to 3.3% in 2013/14 and 4.6% in 2015/16. The economy is expected to receive new lease of life with growth rates of 7-10% once oil production starts.

The oil-related government revenues, and therefore its growth impact, will largely depend on the future price for crude oil. Revenue projections are very sensitive to the anticipated oil price. Before oil prices started declining heavily in mid-2014, the price for one barrel of oil had hovered around the US\$100 mark for several years. At this level and during the production plateau, oil revenue for the government would be in the range of US\$2.5 billion per year.

Oil production is the main factor that will influence short- and medium-term economic performance. Real GDP growth would average 8.8% until 2025 (2.2 points higher than without oil). The development of the oil industry, and increased public investment would enable Uganda to reach its US\$1,000 GDP per capita goal by the end of this decade. On the basis of production sharing agreements negotiated with oil companies, about 70% of the net present value of oil production would accrue to the government, and the largest contribution of the oil sector would be in the form of increased public investment, notably in three key sectors (infrastructure, health, and education).

The first impact is related to the sequential trade balance effects of oil. In fact, as foreign direct investment (FDI) increases when firms are focusing on the construction phase in the petroleum sector as well as other oil-related imports, growth in total imports is expected to accelerate from 4.5% in 2014/15 to an average of 12.5% over the period 2017/18 to 2020/21. The Tilenga estimated cost is in the range of US\$4.5 billion. This investment will be made during the development that comprises the

⁸⁶ During a meeting with the Hoima branch of the UHRC in November 2016, it was noted that there are no outstanding registered complaints of human rights violations related to oil activities in the Albertine region, however there are concerns that more issues will arise with the next phase of activities.

construction of the oil production facilities and drilling phase. Therefore, during this phase, which will last for about 36 months, the Uganda FDI could be increased by about 40% during 3 years. This investment in the economy will generate increased demand for infrastructure investment, trade development and / or the development of supporting industries. In other words, the Tilenga Project is expected to enhance Uganda's attractiveness as business destination. According to economic studies, the increase in the FDI will also have a positive impact on the economic growth of Uganda: it will bring physical capital, technology and expertise and it will benefit the balance of payments by improving the capital account due to the capital inflows into the country. In addition, taxes from national and multinational companies will contribute to the national budget. Increased FDI will also enhance income, revenue and employment opportunities, resulting in an accelerating economic growth, welfare and living while reducing poverty.

Secondly, based on past experience in successful oil-producing countries, and taking into account Uganda's situation, the revenue from oil production should be dedicated to finance the existing needs in infrastructure and human capital. Access to electricity and internet connectivity are serious challenges for private businesses but infrastructure investments would help Uganda to join the middle-income countries. Concurrently, improvements in education will be particularly critical to boost the stock of human capital in the middle-term, notably when oil and mineral resources are depleted. In brief, an assets diversification strategy which transforms natural capital (including oil) into tangible and intangible capital is essential for the sustainability of the country's wealth.

16.7.2 Infrastructure development

The Country Economic Memorandum between the World Bank and the Government of Uganda develops that investments in infrastructure and human capital are both critical for Uganda's medium and long-term prosperity. Economy-wide simulations suggest that using initial oil revenue to address the most urgent infrastructure needs, notably in energy and transport, will have a stronger growth impact. Focusing efforts on infrastructure also yields better outcomes for the Millennium Development Goals.

New infrastructures or upgrading of existing infrastructures are required before the Tilenga Project construction, among others transportation means such as roads or railroads, telecommunications. The Project will require a large number of trucks (25-50 deliveries/day on site) to bring internationally supplied equipment on site (local bulk materials excluded). It is estimated that over 800,000 tons of equipment will be imported to build the oil producing facilities. Required roads have been identified in the area of operation and a program of upgrading and construction is being set out, led by the Uganda National Roads Authority to ensure that the required critical roads are in place as the Project commences.

As emphasized by the IFC / World Bank, upgrading or construction of infrastructures is an efficient way to unlock trade and business potential, remove diseconomies of scale and network effect, and facilitate employment creation. It makes a significant effect in terms of connecting the markets and has a direct impact on the country growth. The current infrastructure development or upgrading are expected to generate infrastructure that will directly benefits local communities; opening up the region for further development and opportunities by facilitating installation of companies in the Lake Albert area.

16.7.3 Employment and skilling opportunities

The first impact of oil on the local economy will be created through the creation of about 13,000 direct jobs (all oil and gas projects included) during the initial phase of construction. The number of permanent jobs in and around the oil industry will decline to about 3,000 when production begins, but the development of local capacity through training and linkages, notably in sectors like transportation and logistics, has the potential to boost further economic growth and employment.

The majority of the competencies required for the Tilenga Project will be related to construction first and then to operations and maintenance. Craftsmen, mechanical technicians and electrical technicians will represent the vast majority of the staff on site (60%). People without any educational background required ('unskilled') will represent 25% of the manpower, while engineers and managers will account for only small proportion of the overall needs (15%).

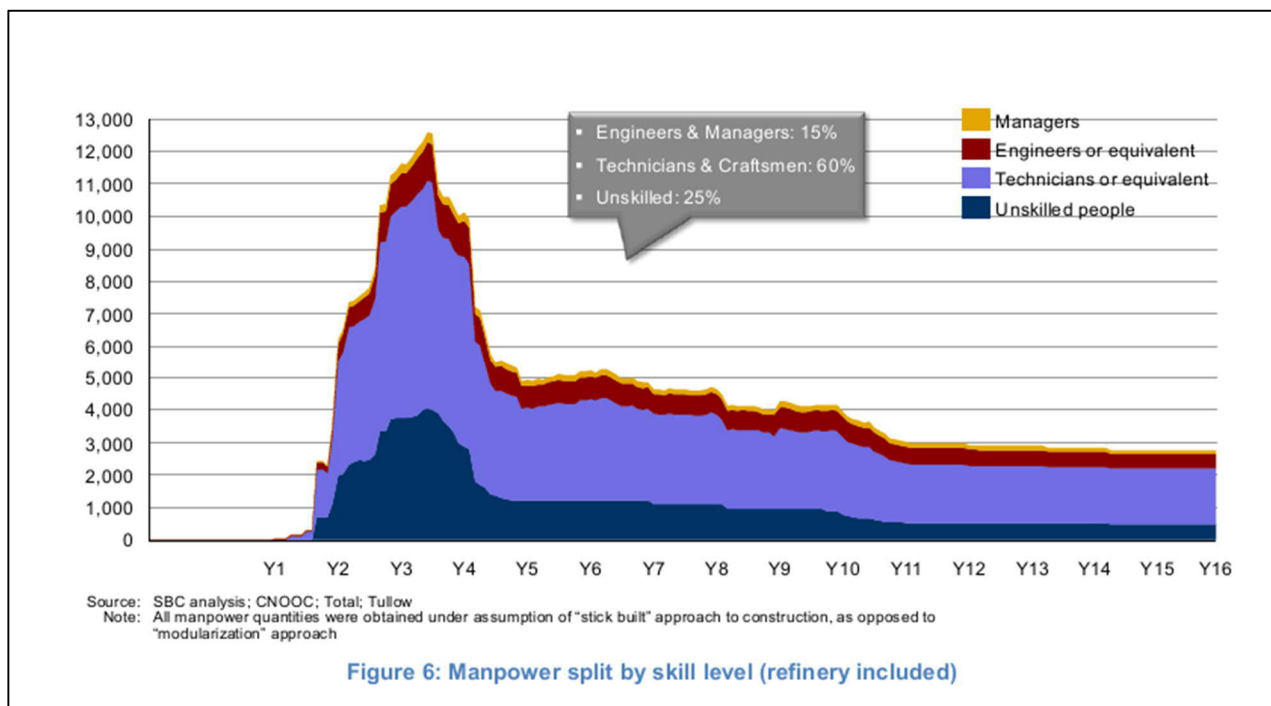


Figure 16-55: Manpower Split by skill level (refinery included)

Consequently, the educational background of the workers and engineers on site will be mainly around the disciplines of civil and mechanical engineering rather than petroleum engineers or geosciences. HSE skills will also be part of the necessary background of the workers as HSE is a mandatory requirement in the oil and gas industry.

Oil and gas operators strongly control the competencies of the staffs on site in order to avoid failure that can turn into damage to people or environment or heavy financial loss. Workers and engineers need to be certified in several disciplines, i.e. they need to receive an accreditation allowing them to work on site. Therefore, a substantial peak of certified workers (at Oil & Gas international standards for companies and staff) will be required at the beginning of the construction phase.

The Project is expected to therefore generate training programs to skill, enhance or certify workers to the oil and gas standards. These trainings are expected to be led by Government institutions, development agencies, oil companies or international companies who will be contracted to undertake Project activities. Already, Total has launched a training of 200 welders which includes certification. The training will develop a domestic pool of internationally certified welders based on the American Welding Society Standard. The training will be held over the course of at least 24 weeks and will initially benefit 200 welders from Nwoya, Masindi, Nebbi, Buliisa and Hoima, as well as the districts along the pipeline route, to include Kakumiro, Kyankwanzi, Mubende, Gomba, Sembabule, Lwengo and Kyotera.

After construction peak, Uganda will have an available national talent pool (trained, qualified and experienced skilled and semi- skilled resources) that can be leveraged in other industries (Hydro-electric power generation projects like dams construction, roads, plants, buildings, etc. will require civil craftsmen, welders, technicians or drivers).

Similarly, it is expected that export of competent workers with oil and gas facilities construction experience to neighboring countries like Kenya or Tanzania or broader where similar projects are also being developed, will also be generated. Beyond the direct jobs generated by the construction and operations phases Tilenga Project, oil and gas activities will create demand for other activities outside the strict boundaries of petroleum activities.

Although indirect activities are derived from the oil and gas projects, they are not exclusively dedicated to oil and gas projects. In the case of Uganda, an important number of industries will be boosted by oil and gas projects offsite, like logistics, environmental services, manpower agencies, construction materials, etc. Jobs generated by these activities qualify as indirect jobs.

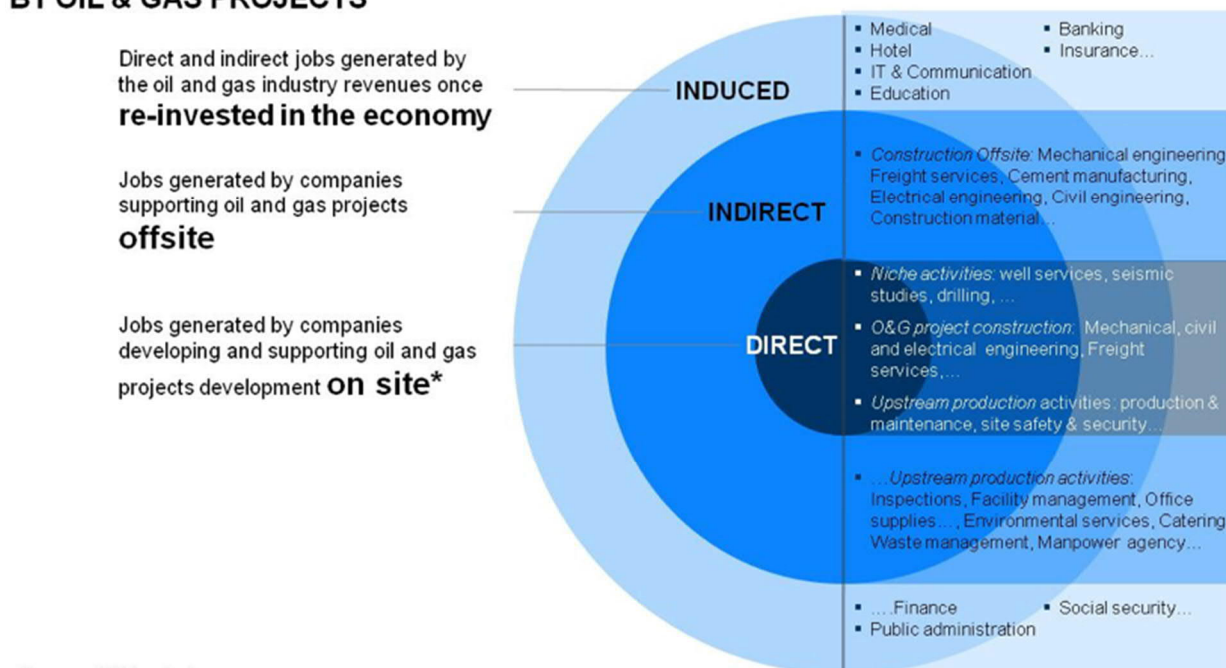
Beyond direct and indirect jobs, many jobs will be 'induced' by oil and gas activities. By 'induced', we refer to wealth generated through the re-distribution of oil revenues in the local economy. This distribution happens either naturally through individuals spending the money earned through oil and gas projects or deliberately with governments distributing oil revenues in other industrial projects like infrastructures. This re-investment of oil and gas revenues in the economy will induce jobs in sectors like hotels, banks, insurance companies, or new schools.

The international benchmark of similar developments in the petroleum industry (like Macaé (Brazil), Trinidad & Tobago, Aberdeen (UK) or Stavanger (Norway)) locally revealed a range of coefficients that can be applied to the number of direct jobs created. The range varies from 2.3 to 3.8 when moving from direct to indirect.

Finally and as per World Bank, IMF and SBC studies, the overall benefit for Uganda in terms of jobs generated from oil and gas project in the Lake Albert could reach tens of thousands, resulting from the direct, indirect and induced jobs created by all coming activities oil and gas including refinery, roads/railways/airport development.

The following graph presents a clear picture of the various employment impacts of the Tilenga Project.

CONCEPTS OF DIRECT, INDIRECT AND INDUCED JOBS GENERATED BY OIL & GAS PROJECTS



Source: SBC analysis
 Note: On Site means on the field and in the oil & gas companies' offices

Source: SBC research on "stand alone" oil and gas cities (Stavanger - Norway, Aberdeen - UK, Macaé - Brazil, Trinidad & Tobago)
 Note: *Number of jobs created was computed as peak of manpower (13,000) for LA projects. ±15% was added to account for uncertainty
 **Ratio direct to indirect varies in the range of 2.3 - 3.8 depending on geography
 ***Ratio direct to induced varies in the range of 6.6 - 8.4 depending on geography

Figure 16-56: Concepts of Direct, Indirect and Induced jobs generated by oil and gas Projects

16.7.4 Enhancing capacity of local companies

According to the World Bank report on National Content development in Uganda, the final success of local content policies will largely depend on the capacity of local suppliers to deliver products and services at oil and gas international standards level on time and at a competitive cost. The role of the government and private enterprises should, therefore, be to select sectors and sub-sectors in which

local capacity is available or can be developed through appropriate training and financial support. A high priority should first be given to the construction phase. International investors are expected to spend approximately US\$15 billion (to be compared with Uganda yearly GDP of about US\$25 billion in 2016) in the next 4-5 years. This is a unique opportunity that should not be missed by Uganda.

Even before oil production commences and oil revenues start coming in, local private sector can participate in supplying the oil industry and start growing their business and national economy in general. In order to achieve maximum impact for the economy, policymakers in Uganda need to encourage FDI in the oil and gas industry, provide support to improve competitiveness of domestic O&G suppliers, and ensure sustainability of National Content development programs.

As already mentioned above, Uganda's economy can significantly benefit from FDI in the oil and gas industry. This industry is very new for Uganda and local capacity in many sectors is not ready to support the IOCs in terms of standards and volumes. While it might be possible to develop local capacity in some sectors to reach the level of quantity and quality required by the IOCs, it might not be feasible in others. For sectors which are too complex to develop locally in a short period of time, multinational corporations (MNCs) need to be encouraged to set up subsidiaries in Uganda. They would provide such benefits for Uganda's economy as employment, technology transfer, and sourcing of local goods and services to carry out production. For those sectors which already exist in Uganda or capacity can be easily developed, there would be more feasibility to make investments locally and/or establish joint ventures. Each individual activity would be structured depending on unique circumstances and requiring a specified percentage of local ownership is not recommended.

Considerable benefits for Uganda's economy are expected if competitive domestic firms are able to supply goods and services demanded by the oil and gas industry. Given that the construction phase is expected to commence soon, support to the private sector is important to give enough time for enterprises to build capacity. Indeed, in this endeavor, the Government of Uganda (GoU), the IOCs, the local private sector and the development partners all have a role to play in addressing these constraints.

Multiple National Content support initiatives are already underway. These include, inter alia, the establishment of the Industry Enhancement Center (IEC), documentation of oil and gas quality standards, communication of IOC demand, and simplification of processes of business registration and licensing. Most of the constraints facing private sector are currently being addressed to some extent, others need additional support (e.g., assistance with access to finance for suppliers, alleviation of infrastructure bottlenecks).

After Final Investment Decision (FID), it will take time to develop the oil fields and start oil production. But in the meantime, there are immediate opportunities opening up for Uganda's businesses to supply the oil industry with goods and services. In most cases, Uganda's suppliers, especially micro, small and medium enterprises (MSMEs), even if not expected to become first tier contractors to the International Oil Company (IOCs) will act as key subcontractors of the main contractors. It is therefore important to leverage on the oil discoveries for the development of the national economy in order to transform the oil resources into sustained growth. Several studies have been undertaken both by international institutions and by the oil companies to analyze the gap between the Project requirements and the existing industry products. The oil companies have commissioned Schlumberger (SBC) to conduct this study.

From an industrial standpoint, SBC has studied 25 sectors that will be impacted by oil and gas activity. The survey reveals that few industries will be able to absorb the peak of demand, like cement or structural steel. Most industries will need to ramp up seriously to be able to benefit from the future growth, like reinforcement steel or flat steel. Finally, some sectors will need a complete transformation to be able to cope with future needs in terms of qualities, cost and volumes since the gap between future demand and current supply is at the range of the multiplier (e.g. hazardous waste management or road construction).

These 25 sectors have been retained on the basis of feasibility/benefits impact, i.e. as sectors where development of standards, know how through capacity building will have the higher impact in terms of economic benefits and access to business opportunities.

Green and Yellow areas are the scope of the supply survey

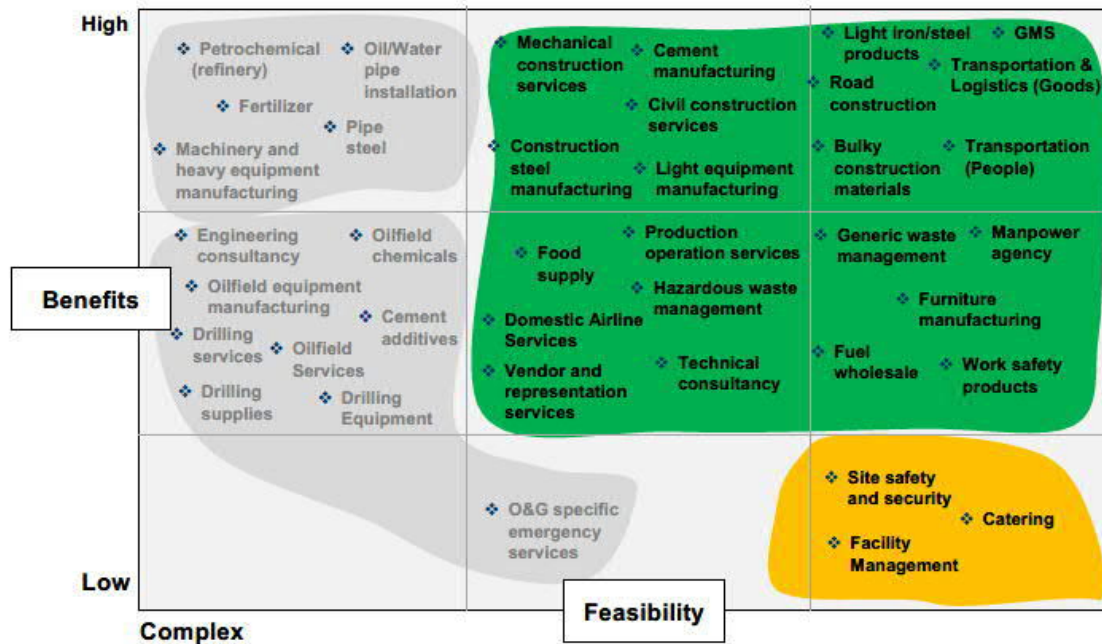


Figure 16-57: Mapping of industries on benefits-feasibility matrix

The industries retained in the scope of the survey were:

1. Bulk material
2. Catering
3. Cement
4. Civil construction
5. Domestic airline services
6. Facility management
7. Food supply
8. Fuel wholesale
9. Furniture manufacturing
10. Generic waste management
11. General maintenance
12. Hazardous waste management
13. Light equipment
14. Manpower consultancy
15. Mechanical construction
16. Production operations
17. Reinforcement steel manufacturing
18. Road construction
19. Site safety and security
20. Structural/flat steel
21. Technical consulting
22. Transport & Logistics (Goods)
23. Transportation (People)
24. Vendors
25. Work safety products

It is therefore important to support and develop the local industry. Future local suppliers have to anticipate the forthcoming demand both in terms of production capacity and in terms of quality to match oil and gas standards. Indeed, oil and gas operators have a key role to play in this preparation phase before the construction starts.

Following these findings, in Uganda, a strategy has been developed by the Project to strengthen the ability of local service providers to provide local goods and services that are suitable for the Project. The reason for this is because there is potential for high National Content (quality/volume/cost) especially in areas like transportation and civil works. The strategy encompasses strengthening the National Content potential and the ability for local companies to compete favorably in areas such as logistics, steel and civil material. It also covers the development of the required standards and capacities of local companies in areas such as Personal Protective Equipment (PPE), Scaffolding, logistics etc. The strategy includes the need for formation of Joint Venture partnerships between local and foreign companies to allow for the transfer of knowledge and technology in order to enable the development of the necessary capabilities for the local companies. It also encompasses the need for international companies to establish local branches and promote technology transfer while managing associated risks. Finally, the strategy covers the need for enhancement of local manpower through training and knowledge transfer. This strategy is in-line with the National Content regulations of Uganda.

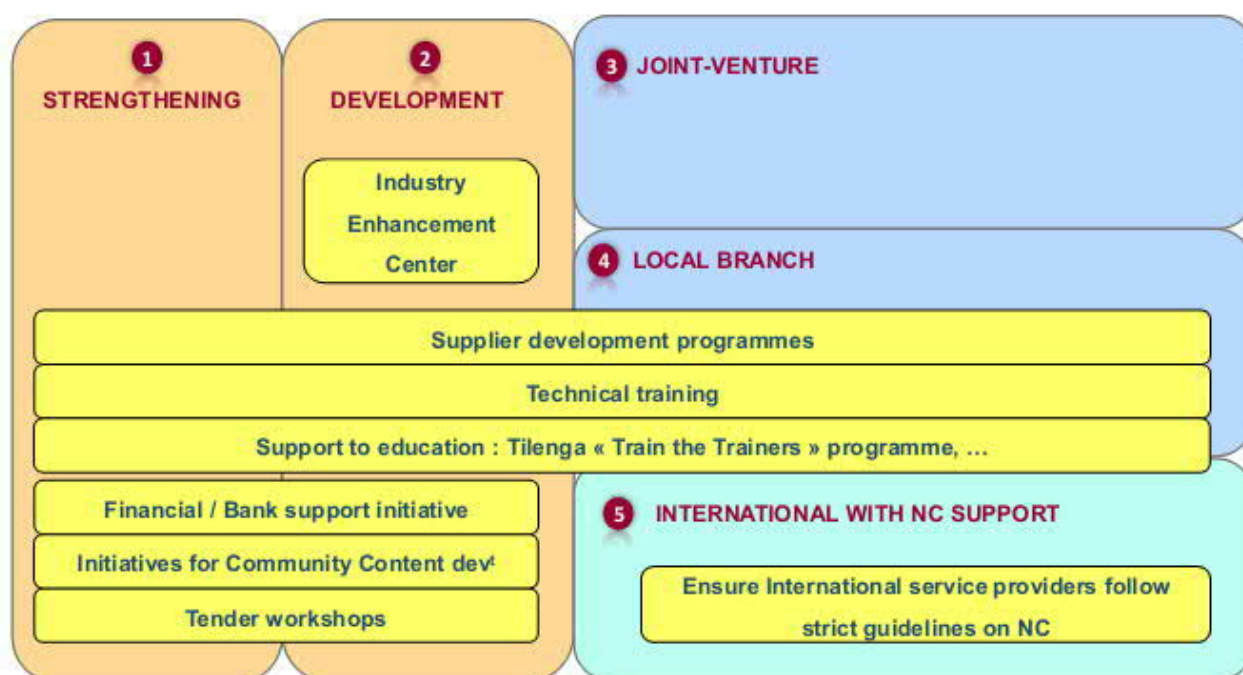


Figure 16-58: The 5 Pillars to maximise National Content on the Tilenga Project

16.7.5 Conclusion

Discovery of oil resources offers a unique opportunity to Uganda to leverage these resources for the development and the diversification of the economy. The largest contribution of Uganda's oil production revenues is expected to be in the form of additional public investment in such key sectors as infrastructure, health, education and agriculture. Uganda's economy can significantly benefit from FDI in the oil and gas industry but considerable benefits for Uganda's economy are expected if competitive and robust domestic firms are able to supply goods and services demanded by the oil and gas industry at the standards and quality required by the industry. In addition, the Project is expected to have a major impact on regional logistics services with about 1 million tons of internationally supplied equipment to be transported from the East African coast to the area of operation. Hence, it will contribute to the regional trade and integration. The future crude export pipeline, which is fully part of this oil integrated Project, has also the potential to unlock Uganda and regional hydrocarbon exploration attractiveness.

It is also to be noted that to date, the precise impact of the Tilenga Project on the economy will depend on a range of uncertain / unpredictable factors such as the volumes effectively recoverable, the evolution of the international price of oil, etc. and it is therefore important to carefully consider these hypothesis.

As the Project moves towards development and First Oil, all parties endeavor to achieve its delivery in the most successful manner by being solution oriented in order to overcome technical constraints, to care for the environmental and social aspects, to ensure a smooth execution schedule and to guarantee the economic viability of the Project. It is only by the combination of these factors that the Project will materialize and ultimately trigger the economic and social benefits expected by Uganda and the benefits sought by all stakeholders.

16.8 Impact Assessment and Mitigation

This section presents the methodology for assessing social and socio-economic impacts, and is based on the approach outlined in **Chapter 3: ESIA Methodology**. It also describes in Section 16.8.2 the in-built design measures and Good International Industry Practice (GIIP) that will be adhered to and which form the basis of the impact assessment (in Sections 16.8.4, 16.8.5 and 16.8.6). Any additional mitigation required to reduce the significance of the impacts are also presented.

16.8.1 Impact Assessment Methodology

The assessment of potential social impacts has taken into consideration applicable international standards, Ugandan national standards and recognised GIIP regarding the safeguarding of local communities. Human rights are considered in the assessment of social impacts in an integrated manner, meaning that relevant human rights that have the potential to be affected by an impact are highlighted and discussed in the explanation of the impact. Figure 16-59 provides a summary of some of the key human rights potentially affected by the Project. The implications of impacts on the rights of vulnerable groups have also been considered in the assessment process.

The closest human receptors to the Project activities have been identified and used to define the spatial scope of the assessment; as defined in **Chapter 1: Introduction**. The sensitivities of receptor groups have been categorised by their nature using the criteria in Table 16-42 to help determine the potential significance of effects. The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the phases of the Project. The key activities likely to generate social impacts during each of the Project phases are included below in Table 16-41.

In addition to the specific activities listed in Table 16-41, each phase of the Project will create employment and procurement opportunities (both direct and indirect), which will be a source of direct, indirect and induced impacts. Resettlement and influx⁸⁷ (see Figure 16-60) triggered by the Project will also be key sources of further indirect and induced social impacts. Other social impacts are likely to arise from the presence of the Project as a whole and the overall changes it will bring to the physical and social environment and therefore cannot be attributed to a single Project activity. For many social impacts the actual effect on receptors is indirect or induced. The pathway between source of impacts and effects on receptors is described for each impact. Note that the impact assessment has some limitation due to the complexity of the Project and the vulnerabilities faced by several of the receptors identified

⁸⁷ Project-induced in-migration, or influx involves the movement of people into an area in anticipation of, or in response to, economic opportunities associated with the development and/or operation of a new project (Ref 16-78).

Table 16-41: Project Activities which may lead to Potential Impacts

Phase	Activity
Site Preparation and Enabling Works	<p>Land acquisition and land clearing for Project components;</p> <p>Mobilisation of plant and construction vehicles to the Project Site;</p> <p>Transportation of construction personnel to and from the Project Site;</p> <p>Deliveries of materials and supplies (including fuel and other hazardous substances) to the Project Site;</p> <p>Increased vehicle movements on the local and national road network;</p> <p>Physical presence of construction personnel;</p> <p>Drilling of boreholes for water abstraction (Buliisa camp, Bugungu camp, Tangi Camp, well pads and Industrial Area);</p> <p>Abstraction of water from boreholes for potable, washing and dust suppression purposes;</p> <p>Use of water to suppress dust generation;</p> <p>Lighting emissions;</p> <p>Excavation from borrow pits and quarries and the movement of excavated materials;</p> <p>Resource use (i.e. construction materials);</p> <p>Restoration of borrow pits and quarries;</p> <p>Physical movement of vehicles and plant (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities);</p> <p>Clearance of vegetation and soils (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities);</p> <p>Demolition of existing buildings at the Industrial Area, well pads, Water Abstraction System, if present;</p> <p>Construction of Camp (day camp, temporary facility) within Industrial Area;</p> <p>Civil works activities at well pads and Water Abstraction System sites;</p> <p>Installation of structure around well pads in the north of the Victoria Nile;</p> <p>Installation of temporary facilities at the Masindi Vehicle Check Point (i.e. containers);</p> <p>Construction of Victoria Nile Crossing Facility, including piling for the jetties;</p> <p>Installation of facilities at Victoria Nile Ferry Crossing (i.e. containers);</p> <p>Construction of new access roads (W1, C1, C3, N1, N2, inter field access roads south of the Victoria Nile) and upgrade works of existing roads (A1, A2, A3, A4, B1 and B2) including the installation of drainage;</p> <p>Discharge of surface runoff from roads; and</p> <p>Restoration of Access Road Right of Way (RoWs).</p>
Construction and Pre-Commissioning	<p>Mobilisation of plant and construction vehicles to the Project Site;</p> <p>Transportation of construction personnel to and from the Project Site;</p> <p>Deliveries of materials and supplies (including fuel and other hazardous substances) to the Project Site;</p>

Phase	Activity
	<p>Increased vehicle movements on the local and national road network;</p> <p>Physical presence of construction personnel;</p> <p>Abstraction of water (ground and surface) for use at well pads, camps, Industrial Area and Masindi Vehicle Check Point for potable, washing and dust suppression purposes;</p> <p>Use of water to suppress dust generation;</p> <p>Operation and discharge from temporary SuDS drainage system (including use of storm water facility);</p> <p>Installation of structures at all key Project components;</p> <p>Waste generation, storage and disposal (hazardous and non-hazardous);</p> <p>Activities including nighttime working (24/7) at well pads and Horizontal Directional Drilling (HDD) Construction Area;</p> <p>Construction activities at the Industrial Area and Water Abstraction System;</p> <p>Excavation of construction material from quarries and movement of excavated materials;</p> <p>Resource use (i.e. construction materials);</p> <p>Restoration of borrow pits and quarries;</p> <p>Physical movement of construction vehicles and plant within the Project Site;</p> <p>Transportation of materials and supplies including hazardous substances (i.e. drill cuttings) within the Project Site;</p> <p>Clearance of vegetation and soils for Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area;</p> <p>Movement of construction vehicles for Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area;</p> <p>Painting and coating of pipeline at Tangi and Industrial Area Construction Support Base;</p> <p>Construction of Production and Injection Network (i.e. Pipelines and Flowlines) and Water Abstraction System pipeline RoW including trenching, welding, storage of material, backfilling etc.;</p> <p>Pre-commissioning activities including use and disposal of treated water and associated chemicals;</p> <p>Restoration of Projection and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area;</p> <p>Clearance of vegetation and soils for the expansion of the existing Tangi Camp;</p> <p>Construction activities at Tangi Camp to expand facilities; and</p> <p>Restoration of pipeline RoWs.</p>
<p>Commissioning and Operations</p>	<p>Transportation of operational personnel to and from the Project Site;</p> <p>Delivery of materials and supplies (including fuel and other hazardous substances) to the Project Site;</p> <p>Abstraction of water from boreholes for potable, washing and dust suppression purposes;</p> <p>Abstraction of water via the Water Abstraction System;</p> <p>Waste generation, storage and disposal (hazardous and non-hazardous);</p>

Phase	Activity
	Discharge of treated waste water from Waste Water Treatment plant; Storage of fuel and hazardous materials; Lighting emissions from Industrial Area, Tangi, well pads (during work over activities only); Fuel and energy consumption from operational activities; Operation of CPF plant and equipment; Physical presence of the flare (Enclosed Ground Flare or Elevated Flare); Operation of plant and equipment at the well pads; Well pad maintenance activities (including the use of work-over rig); Pipeline and Injection Network maintenance (e.g. pigging activities); Operation and maintenance of Water Abstraction System; Operation and maintenance of the Victoria Nile Ferry; Discharge of surface runoff from all permanent facilities via drainage system (SuDS); and Storage of Non Hazardous and Hazardous Wastes.
Decommissioning	Dependent upon Decommissioning strategy - but expected to be similar as those for Construction and Pre-Commissioning Phase

16.8.1.1 Scope of Social Impact Assessment

Potential social impacts have been assessed under the categories outlined below. Explanations on how influx and human rights have been considered in the impact assessment are provided in Figure 16-59 and Figure 16-60.

Potential impacts on the health and safety of local communities are assessed in **Chapter 18: Health and Safety**. This includes consideration of impacts related to community safety and security (e.g. due to interactions with security personnel, risk of increases in gender based violence), and impacts on health, water and sanitation infrastructure and services.

The Ecosystem Services Impact Assessment (**Chapter 19: Ecosystem Services**) considers potential impacts related to natural resources used by local communities including pressure on fuel supply (firewood collection and charcoal making), disruption to water resources, disruption to fisheries, and changes in land use (open access grazing land and crop farming).

Categories of potential social impacts and summary of key issues addressed in this chapter are, as follows:

- **Displacement:** assesses the potential impacts related to the physical and economic displacement⁸⁸ of local populations triggered by land acquisition for the Project. An estimated 1,173 ha of land will be acquired, leased or secured for the Project. This will cause physical and/or economic displacement of PAPs primarily in Ngwedo, Buliisa and Kigwera sub-counties in Buliisa District. Although PAPs whose assets are identified and registered during surveys (i.e. asset & valuation, legal due diligence and socio-economic household) are considered directly affected by land acquisition, wider PACs are indirectly affected by the loss of access to natural resources and services. Host communities that will receive resettled PAPs are also indirectly affected. Displacement is likely to have a heightened impact on vulnerable groups such as the

⁸⁸ Physical displacement refers to relocation or loss of shelter while economic displacement refers to loss of assets or access to assets that leads to loss of income sources or other means of livelihood.

elderly, female headed households, households with a person with disability(ies); Balaalo herdsmen, non-registered migrants, child headed households and the landless.

- **Infrastructure and services:** assesses potential for disruption or improvement to key social infrastructure and services upon which local communities depend. The Project will involve the upgrade of several existing roads and the development of new ones in a remote, rural area where roads are generally in poor condition. Although the affected community will experience some disruption, the upgrade in road infrastructure will enhance accessibility. Influx triggered by the Project is likely to place increased demand on the provision of public infrastructure and services, which will have the potential to adversely impact local communities particularly in influx hotspots.
- **Social cohesion and cultural identity:** assesses how potential impacts to local communities' existing way of life may affect cultural identity and looks at potential impacts on social cohesion. Social cohesion refers to the nature of relationships within a community and incorporates aspects such as levels of marginalisation or inequality within the community (based on income, gender, ethnic group, migrant status etc.), levels of trust, and adherence to shared values and identity. The Project will have a profound impact on the current way of life of affected communities, which may adversely affect community dynamics including triggering increased conflict within families and communities or with outsiders as well as anti-social behaviour (e.g. alcoholism, substance abuse, prostitution, domestic violence, etc.). Changes to the social environment caused by the Project are also likely to affect sense of loss of place and community.
- **Employment and economic development:** considers potential impacts related to the direct and indirect employment opportunities that will be created by the Project as well as the potential impacts of the Project on the local and national economy. A considerable workforce will be required for the Project. The Project aims to recruit the majority of unskilled workers from within the Project Area. However, the workforce (including unskilled) will need to fulfil basic literacy and education requirements therefore there will be a need to reduce the existing knowledge and skills gaps within the local population to improve their opportunities to participate in the Project workforce and supply chain. Skilled workers will need to be recruited from elsewhere within Uganda and abroad. The procurement of goods and services will also generate employment among local businesses. The increased demand for local goods and services due to influx, increase in disposable incomes, and Project demand may create local price inflation. The Project is also expected to generate increased tax revenue for local and national government.
- **Governance:** assesses potential impacts to existing leadership, governance structures and community decision making. Members of local communities, including administrative and traditional leadership will be engaged through the Project and these participatory processes will help to strengthen governance and decision making processes within local communities. An inclusive process will also provide opportunities for women, who are generally excluded from decision-making in Uganda and the local area, to provide their input. However, the Project also has the potential of placing some strain on the very limited resources available to local governments for the management and monitoring of potential environmental and social impacts created by the Project. Changes and potential unrest within local communities induced by the Project could also lead to an erosion of leadership authority. The Project may also create increased risk of bribery and corruption.
- **Tourism:** assesses potential impacts on tourism activities in and around MFNP. The presence of the Project may reduce the demand for tourism in MFNP and access will also be restricted to some parts of the park (at a minimum at the fenced facilities).
- **Labour and working conditions:** looks at potential impacts related to labour and working conditions within the Project supply chain⁸⁹ including exposure of workers to inadequate labour and working conditions and potential for increased use of child labour.

⁸⁹ Supply chain refers to secondary contractors and sub-contractors who are supplying goods and services to the Project and over which the developers have less direct control or monitoring ability.

Human Rights consideration in the Social Impact Assessment

Although the ESIA does not explicitly seek to include a stand-alone Human Right Impact Assessment (HRIA)⁹⁰ it is recognised that potential social impacts have the ability to affect the human rights of members of affected communities and labour force. As guided by international good practice, business should endeavour to respect these rights:

“Business should respect human rights, which means to avoid infringing on the human rights of others and address adverse human rights impacts business may cause or contribute to.” IFC Performance Standard 1 (Ref. 16-1).

Consideration of human rights has been integrated into the impact assessment by looking at the potential human rights that could be affected by each identified adverse⁹¹ social impact following the methodology described below. Please note the results of this process do not reflect legal opinion.

An adverse human rights impact due to the Project occurs when an action or omission associated with Project activities removes or reduces the ability of an individual to enjoy her or his human rights.

Human rights impacts should be assessed according to their severity, which is determined by considering the scale (seriousness of the impact), scope (number of people affected) and irremediability of the impact (any limits to restore the individual impacted to at least the same as, or equivalent to, his/ her situation before the adverse impact occurred). Unlike the measurement of “significance” in ESIA, severity does not include consideration of probability, focusing instead on the human rights consequences of the impact. The United Nations Guiding Principles (UNGP) state that all impacts should be addressed simultaneously but recognises that it may not always be possible, in such cases the impacts should be addressed in order of their severity (Ref 16-79).

Parameters for evaluating impact severity

SEVERITY OF IMPACT	SCALE (including consideration of vulnerability)	Ability of individuals to enjoy their human right is completely removed	High
		Ability of individuals to enjoy their human right is significantly reduced	Moderate
		Ability of an individual to enjoy their human right is partially reduced	Low
	SCOPE	>50% of identifiable group or national extent	High
		11 – 50% of identifiable group or regional extent	Moderate
		<10% of identifiable group or local extent	Low
	IRREMEADIABILITY	Not possible to restore the individual impacted to their situation before the impact occurred	High
		Some limits to restore the individual impacted to their situation before the impact occurred	Moderate
		No limit to restoring the individual impacted to their situation before the impact occurred	Low

The following must be considered when evaluating potential human rights impacts (Ref 16-80):

- Vulnerability needs to be an integral part of considering the scale, or seriousness, of the impact. This is because the individual’s particular circumstances, including their resilience, may have an influence on how ‘serious’ an impact may be for that individual.
- The evaluation of severity cannot be made by simply adding up the values in the right hand column, because an impact can be considered severe even if just one of scale, or scope, or irremediability is high. A human rights perspective places emphasis on rights and freedoms as they are enjoyed and exercised by specific individuals. It is therefore important to consider scope, not in absolute numbers but also to consider more precisely who the individual workers and community members are that are

⁹⁰ This is a similar but distinct process that requires the collection of information to develop a human rights baseline and analysis of potential impacts.

⁹¹ ‘Positive’ human rights enhancements are not identified as the focus is on impacts that could affect the Project’s responsibility to respect human rights.

impacted.

The lists below are some of the key human rights aspects that have the potential to be affected by each of the social impact categories mentioned earlier:

A. Displacement:

- Right to adequate standard of living
- Right to Property
- Right to continuous improvement in living conditions
- Right to Rest and Leisure
- Right to Free Primary Education
- Right to Access to Safe Drinking Water

B. Social Infrastructure and services:

- *see Section H*

C. Social cohesion and cultural identity:

- Right to Family Life
- Right to Freely Participate in the Cultural Life of the Community
- Right of the Enjoyment of the Highest Attainable Standard of Physical and Mental Health

D. Employment and Economic Development Impacts

- *see Section H*

E. Governance

- Right to Equal Access to Public Services

F. Tourism

- *see Section H*

G. Labour and Working Conditions

- Right to Freedom from Slavery or Servitude
- Right to safe working conditions

H. Human rights that are potentially affected across all the above categories of social impacts are:

- Right to Freedom of Thought, Conscience and Religion
- Right to Life, Liberty and Security of Person
- Right Not to be deprived of its own Means of Subsistence
- Right to Freedom of Movement
- Right to Freedom of Opinion
- Right to Freedom of Expression
- Right to Freedom of Peaceful Assembly
- Right to Education
- Right to Equal Opportunity
- Right to Freedom from Discrimination
- Right to Effective Remedy
- Right to Information
- Right to Participation
- Rights of Woman and Girl-child
- Rights of the Child

*NB: The assessment of Human Rights implications does not constitute a legal assessment and takes into consideration Project's impacts **prior** to the application of additional mitigations.*

Figure 16-59: Consideration of Human Rights in the Social Impact Assessment

Consideration of Influx in the Social Impact Assessment

Influx of people will be a major source of many of the changes to the social environment caused by the Project. Rather than assessing in-migration as an impact in itself, it is therefore considered in this impact assessment as a source of further induced impacts. Major pull factors for in-migration are likely to be Project employment, expectation of indirect economic opportunities created by the Project and its workforce, and anticipation of overall development of the area (e.g. expectations of improved social and health infrastructure and services through increased government spending and Project community investment programmes). In-migration can be expected to occur mainly close to the construction and operation areas in major urban centres and areas where workers and contractors are accommodated. Indicators favouring in-migration included:

- Proximity to a large town - relevant to Buliisa, Masindi, Hoima and Nebbi.
- Easy access route from a major centre - relevant to Buliisa, Masindi and Hoima.
- Past history of in-migration in area / refugee settlement - relevant in Buliisa, Masindi, Hoima, Nebbi and Nwoya.
- Proximity to neighbouring country with few economic opportunities or with risk of conflict or insecurity - relevant to Nwoya, Buliisa, Hoima and Nebbi.
- Presence of other economic opportunities in the area - relevant to Buliisa, Masindi, Hoima and Nebbi.
- High number of jobs available - relevant to Buliisa.
- Work lasting several years - relevant to Buliisa and Hoima.

The risk of Project-induced in-migration and in-migration from regional development is identified as **high** in the following areas:

- Buliisa Town and surrounding communities (Kigwera, Kisansya and Kijangi): Buliisa town is the main administrative centre with the bulk of government services. The scale of in-migration is expected to be high and capacity to absorb in-migrants is low.
- Wanseko Town and surrounding communities (Ndandamire): This is the main fish landing site for Lake Albert in Buliisa District and there is already a history of in-migration here for the fishing industry. The scale of in-migration is expected to be high and capacity to absorb migrants is low.
- Pakwach Town: Pakwach is located on a national transport route and is likely to attract construction workers. The scale of in-migration is expected to be high and capacity to absorb migrants is low.
- Hoima Town: Regional urban capital, which will attract oil-related business development and cumulative impacts from dams and railway projects. The scale of in-migration is expected to be high and capacity to absorb migrants is low.
- Kaiso & Tonya Town: Fish landing sites on Lake Albert with large numbers of migrants. The scale of in-migration is expected to be high and capacity to absorb migrants is low.

In-migration risk is considered **moderate** in the following areas:

- Ngwedo (Ngwedo village and Kibambura village): These villages are located close to the Industrial Area. The scale of in-migration is expected to be moderate and capacity to absorb migrants is low.
- Biso sub county and Biso Town: Located on main transport route to Project area. The scale of in-migration is expected to be moderate and capacity to absorb migrants is low.
- Masindi Town: Located on main transport route to the Project. The scale of in-migration is expected to be moderate and capacity to absorb migrants is moderate.

In-migration is likely to begin to rise as Project activity increases during the Site Preparation and Enabling Works phase but will likely be most intense during the Construction and Pre-Commissioning phase before stabilising and potentially reversing as activities slow down again when the Project moves into the Commissioning and Operations phase. In-migration may also be experienced at the end of the 25 year Project lifetime, when decommissioning activities are being planned.

Figure 16-60: Consideration of Influx in the Social Impact Assessment

16.8.1.2 Impact Assessment Criteria

Criteria have been developed for assessing the potential social impacts from the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations, and Decommissioning phases of the Project, and include impact magnitude and receptor sensitivity. The impact significance matrix in **Chapter 3: ESIA Methodology** is used to determine the significance of each impact.

It is also important to incorporate perceptions of stakeholders in relation to an issue when assessing significance of social impacts and consequently the concept of perception is explicitly brought into the evaluation of significance, such that when an impact is of significant stakeholder concern, this may result in an increase in significance rating, for example from minor to moderate. This prompts the formulation of more rigorous and appropriate mitigation measures which focus on the source of the impact but also address stakeholder perception. The risk of not addressing stakeholder perceptions are that the true impacts of the Project are misunderstood, which could result in reputational damage.

16.8.1.3 Receptor Sensitivity

Sensitivity criteria specific to the social study are presented in Table 16-42. Sensitivity in relation to social receptors (also sometimes referred to as vulnerability) is defined in relation to a shortage of specific types of livelihood assets or capital. Livelihood assets refer to the material and social resources, as well as the broader structures and processes required by communities and people to sustain a means of living. It includes physical capital (infrastructure, equipment and facilities), social capital (social networks and organisations, culture, religion, decision making structures), human capital (skills, education, health, leadership capacity), natural capital (land, forests, water, biodiversity) and economic capital (diversity, legitimacy and productivity of livelihoods, savings, cash, income).

Table 16-42: Social Receptor Sensitivity

Sensitivity	Description
High	Low existing levels of livelihood assets and/ or inadequate access to structures and processes to protect or improve livelihoods resulting in profound or multiple levels of vulnerability that undermine the ability of the receptor to adapt to changes brought by the Project and opportunities associated with it.
Moderate	Moderate existing levels of livelihood assets and/ or some restricted access to structures and processes to protect or improve livelihoods resulting in some, but few areas of vulnerability; still retaining an ability of the receptor to at least in part adapt to change brought by the Project and opportunities associated with it.
Low	High level of existing livelihood assets and good access to structures and processes to protect or improve livelihoods resulting in minimal vulnerability; consequently with a high ability to adapt to changes brought by the Project and opportunities associated with it.
Negligible	No shortage of existing livelihood assets or access to structures and processes to protect or improve livelihoods resulting in no vulnerability; consequently receptor will not have any difficulty adapting to changes brought by the Project or accessing opportunities associated with it.

16.8.1.4 Receptor Identification

Social receptors are the individuals, organisations or groups that can be affected by Project activities. For the purposes of the social impact assessment receptors are broadly defined according to the groups presented in Table 16-43.

An overall sensitivity rating is given for the receptor groups listed in Table 16-43. It is recognised that these broadly defined groups are made up of individuals and groups that may have differing levels of vulnerability and that vulnerability of social receptors itself is multidimensional (i.e. one individual may be highly vulnerable to one type of impact, but very resilient to another type). The impact assessment has assessed impact significance based on the overall sensitivity of the broader group given in Table 16-43 but, where relevant, the description of the impact also identifies where there are individuals or groups within the wider receptor group who are particularly vulnerable to the impact under consideration.

Vulnerable groups identified within the overall population are described in the Social Baseline (Section 16.6.8.4.1).

Table 16-43: Description of Identified Receptors

Receptor	Description	Receptor Sensitivity
Project Affected People in Buliisa District	Individuals or group of persons whom have legal or customary rights to assets in Buliisa Town Council, Buliisa Sub County, Ngwedo Sub County and Kigwera Sub County that will be impacted by physical and/or economic displacement due to land acquisition.	High
Project Affected Communities (PACs) in Buliisa District	Communities falling within Buliisa Town Council, Buliisa Sub County, Ngwedo Sub County and Kigwera Sub County.	High
Local communities (indirectly affected) in Nwoya District	Communities falling within Got Awpoyo Sub County and Purongo Sub County.	High
Supply chain workers	Workers indirectly employed in the Project supply chain (e.g. farmers working on farms that supply food products to the Project).	High
Local communities (indirectly affected) in Hoima Municipality, Masindi Municipality and Pakwach Town Council	Residents of Hoima Municipality, Masindi Municipality and Pakwach Town Council.	Medium
Local schools	Local schools in the Project Area.	Medium
Project workforce – unskilled workers	Workers employed directly on the Project (including through contractors and sub-contractors). Unskilled workers are likely to face more challenges accessing jobs and have lower awareness of their employment rights than skilled workers as well as lower overall access to livelihood assets.	Medium
Local business owners	Local economic actors including Small and Medium Sized Enterprises (SMEs), larger companies, contractors, sub-contractors and professional services companies.	Medium

Receptor	Description	Receptor Sensitivity
Local government	District, sub county and village level government representatives (technical and political staff).	Medium
Roadside settlements along transport corridor	Households and individuals living or undertaking economic activities adjacent to roads used for project transportation.	Medium
Local police force	Local police responsible for law enforcement in the Project Area.	Medium
Tourism businesses	Businesses providing tourism services within Murchison Falls Protected Area (lodges, tour companies, adventure companies)	Low
Project workforce – skilled workers	Workers employed directly on the Project (including through contractors and sub-contractors). Skilled workers are more likely to be able to access jobs and are likely to have greater awareness of their employment rights than unskilled workers as well as better overall access to livelihood assets.	Low
National business community	National economic actors including Small and Medium Sized Enterprises (SMEs), larger companies, contractors, sub-contractors and professional services companies.	Low
National government	Technical staff and members of parliament.	Low
Cultural Institutions	Bunyoro Kitara Kingdom, Alur Kingdom, Acholi Chiefdom leaders.	Low

16.8.1.5 Impact Magnitude

The impact magnitude measures the change from social baseline conditions and is described in terms of extent, duration, reversibility, and frequency (definitions for these criteria are provided in Table 16-44) and ranked as insignificant, low, moderate or high (see Table 16-45).

The significance criteria utilised are based on applicable Ugandan legislation, international guidance (e.g. IFC performance standards) and recognised GIIP. The required and voluntary standards relevant to the assessment of social impacts are detailed under Section 16.3.

Table 16-44: Social Impact Magnitude Criteria

Magnitude Criteria	Description
Extent	Local: Small number of people affected and/ or impact is localised. Regional: Moderate number of people affected and/ or impact extends to regional population. National: Large number of people affected and/ or impact extends to national population.
Duration	Temporary: Less than six months. Short-term: Six months to a year. Medium term: One to five years. Long term: Above five years Permanent: Impact lasts beyond the life of the Project.
Reversibility	Reversible in short term: changes to way of life, relationships within community or livelihood patterns with no lasting change. Reversible in long-term: changes to way of life, relationships within the community or livelihood patterns that are reversible in the long-term. Irreversible: Fundamental change in the way of life of the community, community relationships or livelihoods, that dominates over baseline conditions.
Frequency	One-off: Could occur, but reasonably expected to occur only once in the Project lifetime. Remote: Occurs periodically less often than once a year. Rare: Occurs about once a year Occasional: Occurs at least once every six months. Often: Occurs at least once a month. Constant: Impact occurs permanently.

Table 16-45 presents the definitions of magnitude for social impacts.

Table 16-45: Social Impact Magnitude Rating

Magnitude Rating	Description
High	An impact that is likely to affect a large area or number of people, on a long-term or permanent basis, is experienced often or constantly and is irreversible.
Moderate	Clearly evident change from baseline conditions. An impact that is likely to have regional or national extent, may be short, medium or long-term and be experienced often, and which may or may not be reversible.
Low	Perceptible change from baseline conditions. Generally an impact that is likely to affect a small number of people over a temporary or short-term duration, is experienced rarely or occasionally and the change is likely to be reversible.
Negligible	An impact that is unlikely to have a measurable or noticeable effect on the social baseline. Change remains within the range commonly experienced within the household or community. Frequency expected to be one-off or remote.

16.8.2 Embedded In-built Design Mitigation

A list of relevant embedded mitigation measures already built into the design of the Project are outlined within **Chapter 4: Project Description and Alternatives**. These measures have been taken into account when predicting the significance of the potential impact. A number of the key social related embedded mitigation measures that are of relevance are outline in Table 16-46 below.

Table 16-46 Embedded Mitigation

Relevant Embedded Mitigation Measures
<p>Community Content, Economic Development and Livelihood, Labour management</p> <ul style="list-style-type: none"> • The site manpower requirements will be in compliance with all relevant provisions of Ugandan law • The Project will aim to achieve a large proportion of Ugandan nationals in the workforce • There will be no permanent access restrictions to the pipeline RoW • Working hours will be based on the normal work day in line with Ugandan law • As per base case, there will be no routine nightshift activities associated with the Site Preparation and Enabling Works Phase. • The installation of boreholes across the Project Area is subject to the outcome of the Water Abstraction Feasibility Study currently being undertaken by the Project Proponents.
<p>Community Health, Sanitation, Safety and Security</p> <ul style="list-style-type: none"> • During construction and hydrotesting activities, there will be access restrictions to the RoW for safety reasons. Once complete there will be no restrictions to the public using the area • The length of open trenching at any given time will be approximately 1 km to allow wildlife and the local community safe passage • Lighting will be reduced to the minimum and its design consider need to limit associated nuisances (e.g. light directed inwards, of warm/neutral colour) without impacting safety and securityAs per base case, there will be no nightshift activities associated with Site Preparation and Enabling Works. • There will be no routine flaring during normal operations. • For the CPF, equipment will be designed to achieve occupational noise level compliance of 85dBA at 1 metre (which is an industry accepted standard). • The drainage arrangement of the CPF will be designed to segregate clean and potentially contaminated effluent streams. • Drainage channels will be installed along the edges of the upgraded roads to prevent excessive runoff and cross drainage culverts will be installed, as required. All drainage infrastructure will be designed taking into account the Uganda Ministry of Works and Transport - Road and Bridge Works Design Manual for Drainage (January 2010) Surface water will be managed via temporary sustainable drainage systems (SuDS) to manage flood and contamination risk. • Barriers and fences will be used to isolate work areas. • Implementation of a Dust Control Plan, which will include: <ul style="list-style-type: none"> o Measures to include the application of dust suppressants (including water), on potentially dust generating sources, including on site and off site roads used by Project vehicles and material stockpiles. o Water will be sprayed onto the roads and work sites to suppress dust generation, where necessary. Water will be provided at the work sites and mobile water bowsers will be available to control dust generation. o Activities likely to generate dust (e.g. drilling powders use and transfer) will be enclosed and dust catchers in place when practicable. o Trucks carrying potentially dusty material will be covered, to reduce fugitive dust emissions from the materials being transported. o Roads used by Project vehicles will be maintained, to the extent that this is possible, to reduce fugitive dust emissions associated with surface dust being disturbed by the passing of traffic. o Concrete batching materials to be stored in sealed silos with the batching area regularly watered down to suppress dust emissions. • For the upgraded roads, it will be necessary to cordon off the road (while retaining pedestrian access) before widening the road • Regular audits of the borrow pits and quarries will be conducted at the aforementioned sources to ensure compliance with Ugandan law • Construction activities will be contained within the permanent RoW which will have a width of 30 m and is designed to accommodate the pipeline trench(s), stockpile areas, laydown, welding, and the movement of construction equipment alongside the trench(s). • The use of animal crossing structures such as bridges, culverts, and over crossings, along pipeline and access road RoW will be considered. At special points such as crossings, deep excavations and tie-in bell holes, safety fences will be installed to prevent human or animal ingress

Relevant Embedded Mitigation Measures
<p>Resettlement Action Plan (RAP) and Livelihood Restoration</p> <ul style="list-style-type: none"> The LARF will be implemented prior to the start of the Project and describes the legal and administrative framework, the land-use and land tenure of the Project Area, and provides guiding principles on valuation methodology, entitlements, resettlement action planning, and livelihood restoration
<p>Road Safety and Transport Management</p> <ul style="list-style-type: none"> Buses will be provided to transport workers living in nearby villages A Road Safety and Transport Management Plan will be developed prior to commencing the Construction and Pre-Commissioning Phase All transportation will be compliant with applicable road transport regulations. In the Project Area, routine transportation operations will normally only occur in day light. Deliveries of equipment and the movement of people will be scheduled in convoys, where practicable All construction vehicles/equipment will be kept on site when not in use The base case for Tilenga is that there will be no night driving. However, night driving may be permitted in exceptional circumstances and with internal derogation where it is deemed safe and practicable to do so Drivers will be required to have a break during their journeys (every 2 hours for light vehicles, and every 4 hours 30 minutes for heavy vehicles).
<p>Stakeholder Engagement Plan, Grievance Management Procedure</p> <ul style="list-style-type: none"> A Stakeholder Engagement Plan is already in place; this will ensure the community are informed both prior to the commencement of work on site, during the works on a regular basis and after. A Grievance Mechanism will be established for the local community to raise compliant and concerns relating to Project activities (i.e. dust, noise etc.)

16.8.3 Assessment of Impacts: Site Preparation and Enabling Works

16.8.3.1 Introduction

The main sources of potential social and economic impacts during Site Preparation and Enabling Works will be land acquisition and creation of employment and economic opportunities on the Project. The increase in Project activity in the area is likely to begin to attract more mobile and migrant workers hoping to benefit from the perceived economic opportunities created by the Project, whilst the planning and implementation of resettlement will attract land and development speculation by people looking to benefit from compensation. Land acquisition will also likely contribute to a reduced availability of alternative land for use by local communities. A list of identified social impacts during the Site Preparation and Enabling Works phase is provided in Table 16-47.

Table 16-47: List of identified potential social impacts during Site Preparation and Enabling Works

Category	Identified potential impacts
Displacement	<p>Potential Social Impact 1: Physical Displacement of Communities due to Land Acquisition for the Project (direct impact)</p> <p>Potential Social Impact 2: Economic Displacement of Communities due to Land Acquisition for the Project (direct impact)</p> <p>Potential Social Impact 3: Changes to Traditional Land Tenure System (individualisation of land) exacerbated by Project Resettlement Process (induced impact)</p> <p>Potential Social Impact 4: Increased Impoverishment due to speculative activities generating inflation, lack of Financial Literacy and Misuse of Compensation Payments (indirect impact)</p> <p>Potential Social Impact 5: Increased travel distance to public social services and infrastructure facilities for displaced persons (indirect impact)</p>

Category	Identified potential impacts
	Potential Social Impact 6: Displacement of Public Infrastructure due to Land Acquisition (direct impact)
Social Infrastructure and Services	<p>Potential Social Impact 7: Improved accessibility within the Project Area due to upgrading of access roads and construction of new roads (direct impact)</p> <p>Potential Social Impact 8: Increased pressure on education facilities</p> <p>Potential Social Impact 9: Disruption to road users from Project traffic, construction and upgrading of access roads and due to access restrictions caused by land expropriation (direct impact)</p>
Social Cohesion and Cultural Identity	<p>Potential Social Impact 10: Social Disarticulation and Increased Community and Family Conflict (indirect/induced impact)</p> <p>Potential Social Impact 11: Changes to Traditional Way of Life Leading to Loss of Sense of Place and Community (indirect/induced impact)</p> <p>Potential Social Impact 12: Increase in Crime Rate due to Project Induced Immigration and Increased Wealth Generation (indirect/induced impact)</p> <p>Potential Social Impact 13: Increased Pressure on Local Police Force (indirect/induced impact)</p> <p>Potential Social Impact 14: Increase in Prostitution (indirect/induced impact)</p>
Employment and Economic Development Impacts	<p>Potential Social Impact 15: Direct and Indirect Employment Opportunities (direct, indirect and induced impact)</p> <p>Potential Social Impact 16: Increased Demand for Goods and Services Stimulating Economic Growth (direct, indirect and induced impact)</p> <p>Potential Social Impact 17: Development of more Educated and Skilled Workforce through Training and Skills Development for Affected Communities and Project Workers (direct and indirect impact)</p> <p>Potential Social Impact 18: Potential Economic Loss due to Damage to Assets or Injury to Livestock by Project Activities from Unplanned Events (direct impact)</p> <p>Social Impact 19: Local Price Inflation (induced impact)</p>
Governance	<p>Potential Social Impact 20: Community Empowerment and Increased Community Participation in Decision Making (induced impact) and demand for accountability of leaders</p> <p>Potential Social Impact 21: Overburdening and Challenges to Local and National Government and Cultural Leaders (indirect impact)</p> <p>Potential Social Impact 22: Increased Risk of Corruption in the Public and Private Sector (indirect impact)</p>
Tourism	Potential Social Impact 23: Loss of Tourism Revenue due to the Presence of the Project Detering Visitors to MFNP and Reduced Access to Key Visitor Sites within MFNP (indirect impact)

Category	Identified potential impacts
Labour and Working Conditions	Potential Social Impact 24: Impact on Welfare of Workers in the Project Supply Chain due to Poor local Enforcement of Standards to Uphold Labour and Working Conditions (indirect impact) Potential Social Impact 25: Increased use of Child Labour (indirect/induced impact)

16.8.3.2 Potential Impacts - Site Preparation and Enabling Works

16.8.3.2.1 Displacement

Overview

It is estimated that up to 1,173 ha will be acquired, leased or secured by way of an easement as a result of the Project. Acquisition of land for the Project will result in the temporary and permanent loss of land and resources used for livelihoods (economic displacement) as well as permanent loss of primary residential structures and shelter (physical displacement) for several villages within the Project footprint. Displacement will primarily affect communities in Buliisa District but some people in Nwoya District may also be affected by economic displacement associated with expansion of Tangi camp.

PAPs are defined as any individual or group of persons (this can be a family or clan with shared interest in an asset) whom have legal or customary rights to assets that may be lost because of project activities, as solely determined by the resettlement planning surveys (cadastral land and asset inventory). A PAP may have a right to one or more groups of assets including (a) rights to land, (b) ownership of annual and/or perennial crops and trees, (c) homestead property, (d) homestead structures, (e) graves, (f) shrines, and (g) other privately held physical assets location within the Project development footprint.

A summary of the Project components that will require land acquisition and the communities that will be affected by physical and economic displacement is provided in Table 16-48. Figure 16-54 shows where the Project footprint overlaps with existing land uses and settlements.

Table 16-48: Summary of Communities Affected by Land Acquisition during Site Preparation and Enabling Works

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
Kasinyi (Ngwedo sub-county)	Industrial Area and N1 access road	2722.2	318	11.68%	26
	Well pad NGR-01		5.5	0.20%	0
	Well pad NGR-02		7.6	0.28%	0
	Flow line NGR-01 to NGR-02		7.0	0.26%	0
	Flow line NGR-05A to CPF		4.9	0.18%	0
	Flow line GNA-01 to CPF		9.3	0.34%	4
	Flow line NSO-03 to CPF		3.8	0.14%	0
	Flow line Victoria Nile HDD Crossing to CPF via NGR-01		12.9	0.47%	0
	Flow line Victoria Nile HDD Crossing, North to Victoria Nile HDD Crossing, South		2.7	0.10%	0
	Victoria Nile HDD Crossing South- HDD Drill site		1.0	0.04%	0
	Victoria Nile HDD Crossing South HDD Path Extent		7.0	0.26%	0
	Victoria Nile HDD Crossing		0.3	0.01%	0
	Road A1		22.4	0.82%	1
	Road D1		2.8	0.10%	0
	Road D2		1.2	0.04%	2
TOTAL	406.4	14.92%	33		
Kisomere (Ngwedo sub-county)	Well pad GNA-01	741.3	6.5	0.88%	0
	Flow line GNA-01 to CPF		2.4	0.32%	0

⁹² Results based on the following components and sub-components: flowlines based on 30m RoW; Well pads based on maximum extent; Water Abstraction Station; HDD drill sites / path extent; Bugungu Camp, Buliisa Camp; 11 Borrow Pits. Different RoW have been calculated for roads: N1 – N2 at 50m RoW; A1 - A4 at 30m or 50m RoW; B1 - B2 at 50m RoW; D (All) - 15m RoW; W1 - 30m RoW. The following projects components and subcomponents within MFNP have not been included: 10 well pads and adjoining flowlines; Bugungu Airstrip; Road C3. The Tangi Camp, the Masindi Checkpoint and Road W1 have also not been included in the calculation. The Project will use existing borrow pits and, in the event that expansion will be required, then the avoidance protocol will be applied.

⁹³ Note that the number of homesteads given here is an estimation only based on the results of social avoidance survey mapping and satellite imagery carried out between 2015 and January 2018. However, as Project design progresses there could be still modifications to the areas needed for land acquisition. The exact numbers of affected structures and PAPs will be determined following detailed asset surveys to be undertaken as part of RAP surveys. Information has been included where this data is already available (i.e. RAP1 Priority Area). Overall land acquisition might not precisely add up due to several overlapping components (e.g. some flowlines intersect the industrial area). Where detailed data is available (i.e. RAP 1 Priority Areas) calculations have been done proportionally, otherwise some surface areas have been included in each affected village.

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
	Flow line GNA-04 to GNA-01		3.1	0.42%	0
	Road A1		7.6	1.02%	7
	Road A4		0.6	0.09%	0
	Road D8		0.5	0.07%	0
	Kisomere Borrow Pit 1		0.6	0.07%	0
	Kisomere Borrow Pit 2		0.3	0.05%	0
	Kisomere Borrow Pit 3		0.4	0.05%	0
	Kisomere Borrow Pit 4		0.6	0.08%	1
	Kisomere Borrow Pit 5		0.1	0.02%	0
	Kisomere Borrow Pit 6		0.2	0.02%	0
	Kisomere Community Borrow Pit		0.3	0.04%	0
	TOTAL		23.2	3.13%	8
Kirama (Kigwera sub-county)	Well pad NGR-03A	2577.4	6.5	0.25%	8
	Well pad NGR-05A		8.4	0.33%	2
	Flow line NGR-06 to NGR-05A		0.7	0.03%	0
	Flow line NGR-05A to CPF		4.5	0.18%	0
	Flow line NGR-03A to NGR-05A		6.4	0.25%	2
	Road N2		3.3	0.13%	2
	Road A1		9.8	0.38%	0
	Road D3		0.1	0.00%	0
	Road D5		0.2	0.01%	0
	TOTAL		39.9	1.55%	14
Kilyango (Ngwedo sub-county)	Well pad GNA-02	1252.2	5.6	0.44%	0
	Flow line GNA-02 to GNA-04		2.6	0.20%	0
	Road D9		0.3	0.02%	0
	Kilyango Borrow Pit		0.4	0.04%	0
	TOTAL		8.9	0.7%	0
Uduk II (Ngwedo sub-county)	Well pad GNA-03	709.4	5.8	0.81%	0
	Flow line GNA-04 to GNA-03		3.2	0.45%	0
	Road A1		4.3	0.60%	10
	Road A4		8.1	1.14%	3
	Road D10		0.4	0.05%	0
	TOTAL		21.8	3.05	13
Avogera (Ngwedo sub-county)	Well pad GNA-04	453.0	7.3	1.61%	4
	Flow line GNA-02 to GNA-04		3.5	0.76%	0
	Flow line GNA-04 to GNA-03		3.0	0.66%	0
	Flow line GNA-04 to GNA-01		3.0	0.66%	1
	Road A1		11.2	2.48%	47

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
	Road D11		1.0	0.22%	0
	Road D11 Alt		0.8	0.18%	0
	TOTAL		29.8	6.57%	52
Urigo (Buliisa sub-county)	Well pad KGG-01	514.7	5.8	1.14%	6
	Flow line KGG-03 to KGG-01		3.8	0.73%	0
	Flow line KGG-01 to KGG-04		2.1	0.41%	0
	Road A3		1.9	0.38%	0
	Road A4		8.7	1.70%	11
	Road D20		0.1	0.01%	0
	Road D22		0.6	0.11%	0
	TOTAL		23.0	4.48%	17
Kichoche Bugana (Buliisa sub-county)	Well pad KGG-04	4565.4	8.0	0.18%	0
	Well pad KGG-06		7.3	0.16%	0
	Flow line KGG-09 to KGG-04		4.1	0.09%	0
	Flow line KGG-06 to KGG-04		5.1	0.11%	0
	Flow line KGG-04 to NSO-04		3.7	0.08%	0
	Road A3		3.0	0.07%	0
	Road D23		0.1	0.00%	0
	Road D25		2.5	0.06%	0
	Road D26		1.9	0.04%	0
	TOTAL		35.7	0.79%	0
Kijumbya (Buliisa sub-county)	Well pad KGG-04	822.2	0.3	0.03%	0
	Well pad KGG-09		5.3	0.65%	2
	Flow line KGG-09 to KGG-04		1.5	0.19%	0
	Flow line KGG-01 to KGG-04		7.1	0.87%	0
	Road A3		7.0	0.85%	4
	Road D26		0.8	0.10%	0
	TOTAL		22.0	2.69%	6
Kakindo (Buliisa Town Council)	Well pad KW-02A	550.1	7.2	1.31%	0
	Flow line KW-02B to NGR-06		5.8	1.05%	7
	Flow line KW-01 to KW-02A		3.6	0.65%	0
	Flow line KW-02A to KW-02B		5.8	1.05%	2
	Road D13		0.7	0.12%	0
	TOTAL		23.1	4.18%	9
Ngwedo (Ngwedo sub-county)	Well pad NSO-01	405.5	7.4	1.82%	0
	Flow line NSO-06 to NSO-01		2.2	0.55%	0
	Flow line NSO-05 to NSO-03		1.9	0.46%	0
	Flow line NSO-01 to NSO-05		4.1	1.00%	2
	Road A4		7.8	1.93%	10
	Road D14		1.1	0.28%	0
	TOTAL		24.5	6.04%	12

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
Ngwedo Farm (Ngwedo sub-county)	Well pad NSO-02	822.0	5.5	0.67%	0
	Flow line KGG-05 to NSO-02		2.2	0.27%	0
	Flow line NSO-02 to NSO-06		5.0	0.61%	4
	Flow line NSO-06 to NSO-01		0.0	0.01%	0
	Road D15		1.4	0.17%	0
	Road D19 Alt		0.2	0.03%	0
	Road D24		1.1	0.13%	0
	TOTAL		15.4	1.89%	4
Kibambura (Ngwedo sub-county)	Well pad NSO-03	2076.4	5.5	0.26%	0
	Well pad NSO-04		5.5	0.26%	0
	Well pad NSO-05		7	0.27%	0
	Flow line KGG-04 to NSO-04		0.8	0.04%	0
	Flow line NSO-01 to NSO-05		2.9	0.14%	0
	Flow line NSO-03 to CPF		7.4	0.35%	0
	Flow line NSO-04 to NSO-03		7.6	0.36%	0
	Flow line NSO-05 to NSO-03		11.1	0.53%	0
	Road A2		9.5	0.46%	0
	Road B1		4.7	0.22%	1
	Road B2		8.5	0.41%	0
	Road D16		1.2	0.06%	0
	Road D17		0.4	0.02%	0
	Road D18		1.0	0.05%	0
TOTAL	73.1	3.43%	1		
Uduk I (Ngwedo sub-county)	Well pad NSO-06	438.8	4.2	0.95%	3
	Flow line NSO-02 to NSO-06		0.8	0.17%	0
	Flow line NSO-06 to NSO-01		3.6	0.81%	0
	Road A4		2.8	0.64%	11
	Road D14		0.2	0.06%	0
	Road D19		1.4	0.32%	2
	Road D19 Alt		2.7	0.61%	0
	Uduku Borrow Pit		1.6	0.37%	0
TOTAL	17.3	3.93%	16		
Kisiimo (Ngwedo sub-county)	Water Abstraction Station (WAS), including access roads and flowline	269.1	10.0	3.70%	0
	Well pad KW-02B		6.7	2.50%	19
	Flow line KW-02B to NGR-06		0.2	0.09%	1
	Flow line KW-01 to KW-02A		1.5	0.56%	0
	Flow line KW-02A to KW-02B		0.2	0.09%	1
	TOTAL		18.6	6.94%	21
Gotlyech (Buliisa sub-county)	Well pad KGG-05	286.3	5.6	1.95%	0
	Flow line KGG-05 to NSO-02		0.5	0.18%	0

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
	Road D24		0.3	0.09%	0
	TOTAL		6.4	2.22%	0
Bukongolo (Kigwera sub-county)	Well pad NGR-06	1256.4	6.0	0.48%	1
	Flow line NGR-06 to NGR-05A		0.9	0.07%	0
	Flow line KW-02B to NGR-06		5.2	0.42%	0
	Road N2		8.0	0.64%	0
	Road A2		19.6	1.56%	0
	Road B1		5.0	0.39%	0
	Road D6		0.2	0.02%	0
	TOTAL		44.9	3.58%	1
Kisansya East (Kigwera sub-county)	Flow line KW-02B to NGR-06	185.0	0.9	0.46%	0
Kizongi (Buliisa Town Council)	Flow line KW-01 to KW-02A	421.2	2.7	0.64%	2
Kijangi (Buliisa sub-county)	Flow line KGG-04 to NSO-04	1626.4	3.3	0.20%	0
	Road A3		15.7	0.97%	6
	Road B2		3.6	0.22%	2
	TOTAL		22.6	1.39%	8
Kigwera NE (Kigwera sub-county)	Well pad NGR-06	327.9	0.4	0.12%	0
	Flow line NGR-06 to NGR-05A		2.8	0.85%	0
	Road N2		3.8	1.17%	0
	Road A2		2.7	0.81%	0
	Road D6		0.5	0.16%	0
	TOTAL		10.2	3.11%	0
Beroya (Buliisa sub-county)	Well pad KGG-03	611.0	5.8	0.95%	5
	Flow line KGG-03 to KGG-01		1.0	0.16%	0
	Road D22		0.5	0.08%	0
	TOTAL		7.3	1.19%	5
Kityanga (Buliisa Town Council)	Well pad KW-01	565	7.1	1.26%	0
	Flow line KW-01 to KW-02A		0.4	0.07%	0
	Road D12		0.1	0.01%	0
	TOTAL		7.6	1.34%	0
Kigwera SE (Kigwera sub-county)	Flow line KW-02B to NGR-06	166.9	0.3	0.19%	0
	Road N2		1.0	0.58%	0
	Road A2		3.5	2.07%	0
	TOTAL		4.8	2.84%	0
Mvule I (Ngwedo sub-county)	Bugungu Camp	629.1	3.5	0.55%	0
	Ajigo Borrow Pit 1		2.6	0.42%	0
	TOTAL		6.1	0.97%	0
Nyapea (Buliisa Town Council)	Buliisa Camp	387.8	9.0	2.31%	0
Ajigo (Ngwedo sub-county)	Ajigo Borrow Pit 2	520.2	2.0	0.38%	1
	TOTAL		2.0	0.38%	1
Kamandindi (Ngwedo sub-county)	Road A1	330.1	2.7	0.82%	0
	Avogera Borrow Pit		0.4	0.11%	0
	TOTAL		3.1	0.93%	0

Village/ Area	Project Component ⁹²	Total Village area (ha)	Estimated total surface to be acquired (ha)	% of village land to be acquired	Approximate number of homesteads physically displaced ⁹³
Kigwera NW (Kigwera sub-county)	Road A2	153.6	0.3	0.18%	0
Kiyere (Kigwera sub-county)	Road A2	202.7	3.5	1.71%	2
Kitahura (Buliisa Town Council)	Road A3	731.9	0.8	0.11%	0
Kizikya (Buliisa Town Council)	Road A3	443.4	13.2	2.98%	1
Kichocho (Kigwera sub-county)	Road D3	1520.9	0.2	0.01%	0

The Project Proponents have committed to GIIP for resettling PAPs where feasible within their original villages to minimise disruption to PAPs' way of life and community cohesion. However, the identification of alternative land in which to accommodate resettled households and livelihood activities is an issue due to several factors including expanding residential, cropped, and industrial land take occurring in the Project Area. PAPs that are unable to find relocation land within their original villages are at higher risk of losing social and cultural attachments from their original villages.

Furthermore, the Project Proponents commit to take possession of the acquired land and assets only after compensation has been made available and/or resettlement sites and assistance to individual PAPs has been provided.

Potential Social Impact 1: Physical Displacement of Communities due to Land Acquisition for the Project

The acquisition of land is likely to cause loss of housing used as primary residence as well as for secondary purposes (e.g. private rents, housing of other family members; loss of cooking and sanitation facilities, and speculative and incomplete building structures).

Physical displacement requires PAPs to move to a new location and establish dwellings and associated infrastructure within new or existing communities.

Human Rights Implications

Right to Property

This is a potential impact of medium severity. Land acquisition has a tangible impact on PAPs right to own a property, however property ownership is limited in the Project area and the potential impact is remediable if the Project provides support to PAPs in obtaining land tenure. The government moratorium on acquisition of land titles in the Albertine Graben (and cancellation of applications and titles acquired) was introduced in an effort to address land speculation exacerbated by the temporary land access and compensation process for oil and gas activities. Inadequate compensation that does not fully consider the replacement cost of the land and/or affected assets on the land may deny some people fair and adequate compensation for property thereby failing to protect and respect their right to property. The potential impact is remediable as right-holders losing structures will be entitled to cash compensation at full replacement cost and where the affected structure is a primary residence, they are also eligible for in-kind compensation in the form of replacement houses.

Right to Adequate Standard of Living

This is a potential impact of medium severity. Land acquisition has a tangible impact of the right to an adequate standard of living for the PAPs and wider household. Although the number of physically displaced PAPs throughout the Project has not been quantified to date, it is likely that it will involve a high number of people who may lose their primary residences, and other structures. The potential impact is remediable as right-holders losing their housing will be entitled to cash compensation and additional support to re-establish or improve livelihoods and standards of living. Any delays in

payment of compensation and in particular non-payment of compensation before land is acquired will exacerbate the potential risk of this impact. Furthermore, inadequate compensation that does not fully consider the replacement cost of the land and/or the affected assets on the land may deny some people fair and adequate compensation, which again risks exacerbating this impact. The potential impact is remediable as right-holders losing structures will be entitled to cash compensation at full replacement cost and where the affected structure is a primary residence, they are also eligible for in-kind compensation in the form of replacement houses. Women are particularly vulnerable as they traditionally have limited input in the management of household finances.

Right to Freedom of Movement and Choice of Residence

This is a potential impact of low severity. Land acquisition has a tangible impact of the right to freedom of movement and choice of residence. The low population density across the Project Area and the fact that the proportion of land take is relatively small when compared to the total land available in the area means that it is likely that most PAPs will be able to relocate within an area of their choice. The impact is remediable.

Significance Assessment

Physical displacement of people will have a potential negative impact on PAPs and PACs in Buliisa District. The potential impact will be of high magnitude due to its extent locally, long term/ permanent duration, reversibility only in the long-term, and one-off frequency. The sensitivity of receptors is high, resulting in an overall potential impact significance that is **High Adverse**.

Potential Social Impact 2: Economic Displacement of Communities due to Land Acquisition for the Project

Communities in Buliisa are highly dependent on land and natural resources for their livelihood strategies. The livelihood base for the vast majority of PAPs is family farming (crop and livestock) and fishing activities, with some small trading and businesses. Most communal areas are used for cattle grazing and natural resource harvesting. Family land and clan land is also used for grazing and access to resources amongst specified users.

Most crop farming is characterised by small-scale-farm plots for household subsistence and some trading. Livestock rearing is an important livelihood strategy, which is undertaken by the majority of the population. During the 2015 SHBS most of the FGDs participants (livestock owners) in the grazing areas (western part of Buliisa district) confirmed that they hire Balaalo herdsman to look after their cattle. Fishing is generally practiced in Lake Albert, the Murchison Falls-Albert Delta Ramsar site, and the Nile River.

The acquisition of land will cause temporary and permanent loss of farming land and annual crops, perennial crops such as fruit trees, grazing land; and loss of access to other natural resources. Structures linked to agricultural activities such as kraals and other structures used for storage of tools as well as premises used for small trading activities will also be permanently lost.

Villages that will be affected by economic displacement are listed in Table 16-48.

Human Rights Implications

Right to Property

This is a potential impact of medium severity. Land acquisition has a potential tangible impact on PAPs right to own a property, however property ownership is limited in the Project Area and the potential impact is remediable if the Project provides support to PAPs eligible for in-kind compensation in the form of replacement land in obtaining security of tenure for their replacement land.

Right to Adequate Standard of Living

This is a potential impact of high severity. Land acquisition has a potential serious impact on the right to an adequate standard of living for the PAPs and wider household, including adequate food, clothing, and to the continuous improvement of living conditions. Although the number of economically

displaced PAPs has not been quantified to date, it is likely that it will involve a high number of people who may lose their farm or grazing land in the Project Area. The potential impact is remediable as right-holders losing their land will be entitled to cash at replacement cost or, where feasible, in-kind compensation and additional assistance to re-establish their livelihoods or find alternative livelihoods. Women are particularly vulnerable as their cultural position affects their involvement in the decision-making process of the household related to use of compensation.

Right to Freedom of Movement

This is a potential impact of low severity. Land acquisition has a potential tangible impact of the right to freedom of movement and choice of residence. The low population density across the Project Area and the fact that the proportion of land take is relatively small when compared to the total land available in the area means that it is likely that most PAPs will be able to relocate livelihood activities within an area of their choice. The potential impact is remediable.

Right Not to be deprived of its own Means of Subsistence

This is a potential impact of medium severity. Land acquisition has a potential serious impact on PAPs rights not to be deprived of their means of subsistence. This will affect all PAPs who are identified as economically displaced (the total number is not known at present) as well as labourers employed by PAPs to look after their cattle (Balaalo) or to help on farms during the rainy season. Women and Balaalo herdsman are particularly vulnerable. The potential impact is remediable, provided that viable alternative livelihood options are provided through a Livelihood Restoration Plan.

The Protection of the Rights of the Mother and Girl-child

This is a potential impact of medium severity. Land acquisition has a potential tangible impact on the protection of the rights of the mother and child, including concern for the upbringing and health of children; the provision of measures to safeguard the health and welfare of women and particularly of working mothers during pregnancy and the infancy of their children, as well as of mothers whose earnings are the sole source of livelihood for the family. It is likely that women will be particularly vulnerable to economic displacement as they generally carry out subsistence farming in the affected area and they traditionally have limited input in the management of household finances. The extent of displacement of agricultural land has been minimised through application of the Avoidance Protocol, in particular, by locating the Industrial Area (the biggest source of land take for the Project) in a predominantly grazing area and away from the 'food basket' of eastern Buliisa. The potential impact is remediable as there will be compensation at replacement cost for all lost assets as well as the option of in-kind compensation for eligible PAPs (in the form of replacement land in obtaining security of tenure for their replacement land), livelihood restoration programmes, and additional measures to safeguard women's rights in the resettlement and compensation process through, for example financial literacy training and provision for spousal consent forms.

Significance Assessment

Economic displacement of PAPs will have a potential negative impact on PAPs and PACs in Buliisa District. The potential impact will be of high magnitude due to its regional extent, long-term/permanent duration, reversibility only in the long term, and one-off frequency. The sensitivity of receptors is high, resulting in a potential impact with an overall significance of **High Adverse**.

Potential Social Impact 3: Changes to Traditional Land Tenure System (individualisation of land) exacerbated by Project Resettlement Process

It is estimated that approximately 1,576 ha of land will be acquired for the Project. Compensation (in-kind and cash) will be provided for loss of this land and assets on it.

The land acquisition, resettlement and compensation process is likely to create incentives for increased land speculation and commercialisation of land, leading to increased transition from customary land ownership and communally held land to privatisation and individualisation of land. The majority of land in Buliisa District is held under customary tenure managed by different ethnic groups. The Bagungu mostly own land communally on a clan basis and unfarmed communal land is mostly used for open access grazing and natural resource harvesting. The Alur and Acholi system (mainly for cultivated land) is one of individual customary tenure. Land-related sensitivities are high in the Study

Area (see Section 16.6.3.3.4) and have been increasing, with land (as property and as a resource) being one of the most important assets in the area. Land speculation⁹⁴ and commercialisation of land has already been a significant challenge in Buliisa District over the last few years.

The perceived benefits of the resettlement and compensation process present incentives for commercialisation of land, which depends on privatisation and individualisation of land. The process of land acquisition and compensation therefore risks exacerbating land speculation and a transition from a communal ownership land tenure system to individual ownership.

Changes in land tenure from communal to individual ownership could have several adverse indirect effects on local communities including:

- Fragmentation of open access grazing land potentially impacting pastoralist livelihood activities;
- Decreased size of farm holdings due to break up of cultivated land into smaller plots for sale, potentially impacting farming activities;
- Loss of security of tenure (loss of customary tenure rights) and increasing risk of landlessness for some individuals and groups due to sale of clan land without their knowledge or consent;
- Over-estimation of land values and Inflation of land prices making land unaffordable to poorer households;
- Increased land related disputes;
- Weakening of traditional leadership systems and clan identity as these are closely linked to control and management of traditional land tenure systems and associated access to resources for livelihood activities;
- Increased risk of bribery and corruption;
- Destitution of women, children; and
- Land grabbing.

Efforts have already been made by local and national government to manage land speculation in Buliisa District including:

- In 2016, Buliisa District Local Government issued a Draft Land Ordinance with the purpose of developing a framework for land tenure security; to clarify the different types of tenure systems in the district and how they are managed; to provide the norms of customary land ownership including communal ownership; to enhance land tenure security through land registration; to sensitise and empower local people and ensure their participation in development projects; to provide a framework for the co-existence of development projects and community livelihood activities; to provide for leasehold as the most appropriate tenure system for availing land for development projects; and, to create a framework for managing and resolution of conflicts arising out of land disputes.
- In February 2017, following a fact finding site visit in Buliisa District, the MLHUD made the decision to rescind all land applications that were made in Buliisa from 2010 until 2017, declaring all transactions and approvals that had taken place within that timeframe null and void.

A Resettlement Advisory Committee (RAC) has been established under the requirements of the LARF with representation from national government ministries, and the Project Proponents. The Committee has responsibility for establishing an effective mechanism to address and limit resettlement issues including land speculation. RAP1 was developed for the Industrial Area and N1 access road and included provisions for management of land speculation.

Land speculation, increased individualisation of land and the tensions these changes may trigger within local communities are major stakeholder concerns (see **Chapter 5: Stakeholder Engagement**).

⁹⁴ Speculation refers to when individuals intentionally move to a project site, purchase land inflating land values or build or plant assets in an opportunistic way so that they may receive compensation or receive additional compensation and other resettlement benefits.

Human Rights Implications

Right to Property

This is a potential impact of medium severity. Changes to traditional land tenure has a potential tangible impact on PAPs' right to own a property, however property ownership is limited in the Project Area and the potential impact is remediable if the Project provides support to PAPs eligible for in-kind compensation in the form of replacement land in obtaining security of tenure for their replacement land.

Right not to be deprived of its own Means of Subsistence

This is a potential impact of high severity. Changes to traditional land tenure have a potential serious impact on PAPs' right not to be deprived of their means of subsistence. The changes are likely to affect right-holders farming or grazing on land to be acquired – women are particularly vulnerable. The impact is remediable provided that viable alternative livelihood options are provided through a Livelihood Restoration Plan. Particular attention must be placed to those most vulnerable and marginalised.

Right to Effective Remedy

This is a potential impact of medium severity. Changes in land tenure and land speculation have a potential tangible impact on PAPs' right to effective remedy. Although the number of PAPs affected by land acquisition has not been quantified to date, it is likely that the change will affect all PAPs, particularly women, who have limited land rights and therefore will have difficulties accessing administrative or legislative authorities provided by the formal legal system. The potential impact is moderately irremediable, if the Project applies a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent.

Significance Assessment

The potential impact of changes to traditional land tenure systems will be of moderate magnitude (local extent, long term duration, reversible in the long-term and occasional frequency). Receptors likely to be affected are PACs in Buliisa District who have high sensitivity. The overall potential impact significance before additional mitigation is therefore **High Adverse**.

Women and unmarried youth are considered particularly vulnerable to this potential impact. Women do not have the same rights over land as men and are often excluded from land related decision making. Under customary norms, unmarried youth are excluded from owning land and therefore from decision making on communal land. Balaalo are also particularly vulnerable as their livelihoods are entirely dependent on cattle grazing. Reduced access to grazing land would result in their having to travel longer distances to access suitable grazing land, which can indirectly affect their physical wellbeing and would reduce time available for other activities.

Potential Social Impact 4: Increased Impoverishment due to Land Speculation, Indebtedness, lack of Financial Literacy and Misuse of Compensation Payments

The land acquisition phase of the Project will involve cash compensation payments and where feasible in-kind compensation to stakeholders affected by physical and economic displacement.

Following the initial disclosure of RAP1, it was observed that local residents took out loans to finance the building of speculative structures to benefit from compensation for these structures. People who took out loans faced the prospect of repayment at high interest rate while waiting for the RAP process to be completed, approved by the Project Proponents and the Government, and for implementation to begin including delivery of compensation. This practice is likely to cause further impoverishment through indebtedness and stress to local residents and their households.

There is also potential risk of impoverishment after PAPs obtain their compensation. At the time of writing, it is unknown how many PAPs will opt for cash compensation for loss of land and assets. The level of cash compensation would represent a significant increase in the income of affected individuals and communities. Average income for a casual labourer, for example, is just USD 6 per

day and average salary for a head teacher is between USD 210 to 230 per month. Most subsistence based households would earn less than this.

The provision of cash as a mitigation to replace lost livelihoods or housing relies on the existence of adequate markets where assets that were lost can be easily replaced. There is a risk that compensation payments will be mismanaged or misspent due to lack of available markets where replacement assets can be purchased, and due to a low financial management capacity within the population.

Within the Project Area the majority of local communities lack formal land titles and the majority of land is held under customary ownership. The process of land registration is not well understood by local communities and is perceived to be difficult due to administrative barriers to the cost of surveying and the cost of registration.

Provision of cash as a mitigation for economic and physical displacement also assumes affected communities' are committed (and have the capacity) to use the compensation for the intended purpose (i.e. replacement of housing or restoration of livelihood). Within the PACs, livelihoods are mainly subsistence based and households have little experience with managing significant sums of money and lack financial literacy and business skills. There is one banking operator in Buliisa District.

Cash compensation as a result of land acquisition is therefore likely to cause increased impoverishment due limited financial literacy and lack of experience in the long-term management of large sums of money. The risk of compensation mismanagement is increased when large sums of cash compensation are provided in one go, as it can give a false impression of wealth and encourage changes of consumption behaviours in the short term. Payment of compensation through banks can also create costs for account holders, however, as banks request fees for the opening and management of accounts. They can deter PAPs from their use.

The mismanagement of compensation payments may lead to the following negative consequences:

- Changes in consumption can limit investment in house construction or income generating activities (e.g. land preparation for farming) and thereby constrain income generating capacity in the medium and long-term, leading to impoverishment of affected households over the long term;
- Increased spending in the local economy driven by the injection of cash compensation can increase local inflation through the increased demand for land, goods and services, making these assets unaffordable to those who did not receive compensation;
- Breakdown in family structures if compensation is not appropriately distributed across family members and misspent by one member to the detriment of others (e.g. if the head of household purchases a motorbike for personal use). Men predominantly hold land rights and are traditionally in charge of household finances, making them the main recipients of cash compensation; and
- Increases in antisocial behaviours if money is spent on prostitution, increased drug or alcohol consumption.

Other potential causes of speculation and increased impoverishment due to the land acquisition process include:

- *Selling off of communal land without following due procedures.* Land speculation activities included the acquisition by individuals of Clan and/or family land through transactions that did not follow the requirements set by the Ugandan land legislation. This has led to several disputes in land ownership that may cause delay in the compensation process and may leave rightful owners without compensation;
- *Lack of clarity over the Government ban on acquisition of land titles in the Albertine Graben.* In February 2017, the MLHUD issued a directive to cancel all land titles issued between 2010 and 2017 to ensure that all titles are registered by following the right procedures. However, the cancellation is also likely to affect land that has been bought legally, potentially causing further confusion and creating potential exposure to vulnerabilities; and
- Non-payment or delays in payment of compensation.

Human Rights Implications

The following human rights implications are expected, and are considered to be the same as described for Social Impact 1 and Social Impact 2:

- Right to Adequate Standard of Living;
- Right not to be deprived of its own means of subsistence; and
- The protection of the rights of the mother and child.

Significance Assessment

It is estimated that induced impoverishment due to financial illiteracy and misuse of resettlement compensation payments will have an induced potential negative impact on PACs affected by resettlement in Buliisa and Nwoya District. The potential impact will be of moderate magnitude due to the moderate number of people who are predicted to opt for cash compensation, medium-term duration, reversibility in the long-term and constant frequency. The sensitivity of receptors is high, resulting in an overall potential impact significance that is **High Adverse**.

Women and children are particularly vulnerable as they traditionally have limited input in the management of household finances.

Potential Social Impact 5: Increased travel distance to public social services and infrastructure for displaced persons

The acquisition of land in the Project Area will lead to the physical displacement of PAPs. Education facilities are limited in the Project Area and school attendance in the Project Area is already low – according to the 2014 census, about 87% of the boys and girls of primary school going age (6-12 years) were attending school and about 1 in every 10 children of primary school going age had never been to school. Of the total population, 19.3% have never been to school (21% for females and 16% for males). The primary school completion rate⁹⁵ was 62% and in addition 22% of secondary school age (13-18) students had already left school (Ref. 16-29 and Ref. 16-33). Education services are hindered by inadequate educational infrastructure, poor quality and numbers of teachers and lack of management at district level. One of the reasons given for non-attendance at school amongst PACs is long travel distances and associated time and costs. Schools in the Project Area are typically between 2-8 km away from households and the only means of access are on foot, by bicycle or by vehicle (a one-way bus ticket costs approximately UGX 4000) (Ref. 16-29).

Although the resettlement process will aim to resettle PAPs within their existing communities, the limited availability of land could lead some PAPs to be resettled further away from their original village and further from school facilities. Households who opt for cash compensation may also end up moving farther from education facilities. Increasing the travel distance to schools is likely to result in lower attendance rates. On the other hand, it should be noted that there is also a possibility that some PAPs will move closer to education facilities, which may improve access to education and attendance rates.

Human Rights Impacts

Right to Education

This is a potential impact of medium severity. The increased travel distance to education facilities for displaced communities has a tangible impact on PAPs right to education, particularly of children and young people. Although the number of PAPs who will be physically displaced and resettled within the community has not been quantified to date, it is likely to affect some PAPs. The potential impact is remediable, provided that suitable options will be implemented through the Community Impact Management Strategy and associated Community plans to manage the potential impact.

Right to Free Primary Education

⁹⁵ Total number of pupils/students who registered for the end of cycle exams regardless of age, expressed as a percentage of the population at the official primary graduation age (12 years).

This is a potential impact of medium severity. The increased travel distance to education facilities for displaced communities has a potential serious impact on children's right to free primary education, particularly if the child (or his/her carer) will have to pay to reach primary education facilities (for example by using boda boda motorbikes). The potential impact is remediable, provided that suitable options will be implemented in the Community Impact Management Strategy and associated Community plans to manage the potential impact.

Significance Assessment

It is estimated that increased travel distance to education facilities for displaced communities will have a potential indirect negative impact on PACs in Buliisa District. The potential impact will be of low magnitude due to its local extent, medium term duration, reversibility in the short-term and one-off frequency. The sensitivity of receptors is high resulting in a potential impact with overall significance of **Moderate Adverse**.

Children will be most impacted because they are the primary users of education facilities.

16.8.3.2.2 Social Infrastructure and Services

Potential Social Impact 6: Displacement of Public Infrastructure due to Land Acquisition

Land acquisition will trigger displacement of some public infrastructure and services currently accessed by local communities. The Project Proponents initiated their own Avoidance protocol which was used by the FEED Engineers in the development of the Project's design. The aim of Avoidance protocol is avoidance of sensitive features to minimise the footprint when siting options for key facilities, taking into account both environmental and social sensitivities. A preliminary summary of the infrastructure that will be potentially impacted is provided in Table 16-49. This is based on preliminary review of mapping of social receptors against the location of Project components (as presented in **Chapter 4: Project Description and Alternatives**) and does not include RoW for roads. The RAPs will ground truth this data and, based on full asset surveys, will identify the exact number and location of public infrastructure that will be displaced.

Table 16-49: Infrastructure Displaced due to Land Acquisition

Infrastructure	Estimated Number of Displaced Infrastructure per Project Component ⁹⁶ (to be confirmed by the detailed surveys of the resettlement planning studies)				
	Name	Well pads	Flowlines	Roads	Industrial Area
Borehole	3	0	12	0	0
Community meeting point	0	0	1	0	0
Open water source	0	0	1	0	0
Play ground	0	0	2	0	0
Grinding mill	0	0	1	0	0

⁹⁶ Flowlines based on 30m RoW; well pads based on maximum extent; roads based on 50m RoW - all roads

Infrastructure	Estimated Number of Displaced Infrastructure per Project Component ⁹⁶ (to be confirmed by the detailed surveys of the resettlement planning studies)				
Commercial store/ trading area	0	0	8	0	0
Schools	1	0	0	0	0
Place of worship	1	0	3	0	0
Administrative building	0	0	1	0	0
Health Centre	1	0	0	0	0
Total	6	0	29	0	0

Human Rights Implications

Right to access to safe drinking water

This is a potential impact of moderate severity. Although the displacement of public infrastructure due to land acquisition poses a potential tangible impact on the right to access to safe drinking water due to the potential displacement of some boreholes, affecting primarily vulnerable groups such as women and children, it is unknown at this stage the percentage of the population who uses the affected boreholes. The displacement is likely to affect a small number of the community and is remediable.

Right to Rest and Leisure

This is a potential impact of low severity. The displacement of public infrastructure due to land acquisition poses a potential minor impact on the right to rest and leisure of members of affected communities. The displacement is likely to affect a small number of persons in the community and is remediable.

Right to Freedom of Peaceful Assembly

This is a potential impact of low severity. The displacement of public infrastructure due to land acquisition poses a potential tangible impact on the right to freedom of peaceful assembly of members of affected communities. The displacement is likely to affect a small number of the community and is remediable.

Right to Freedom of Thought, Conscience and Religion

This is a potential impact of low severity. The displacement of public infrastructure due to land acquisition poses a potential tangible impact on the right to freedom of thought, conscience and religion of affected communities. The displacement is likely to affect a small number of persons in the community and is remediable.

Right to Education

This is a potential impact of medium severity. The displacement of public infrastructure due to land acquisition has a potential serious impact on PAPs right to education. The displacement is likely to affect children and young people. The potential impact is remediable, provided that suitable options will be implemented through the Livelihood Restoration Plan (required as part of the LARF) to manage the direct impacts and through the Community Impact Management Strategy and associated Community plans to manage the indirect impacts.

Significance Assessment

Displacement of public infrastructure will have a potential direct adverse impact on PACs affected by resettlement in Buliisa District. The potential impact will be of low magnitude due to the small number of people who will be affected, medium term duration, reversibility in the short-term and one-off frequency. The sensitivity of receptors is high, resulting in a potential impact with overall **Moderate Adverse** significance.

Potential Social Impact 7: Improved accessibility within the Project Area due to upgrading of access roads and construction of new roads

A number of minor roads will be upgraded to accommodate Project traffic. The existing roads to upgrade are A1, A2, A3, A4, B1 and B2 (B1 and B2 will be private Project roads) and M1. The A and B roads vary in length from 1.9 km to 11.6 km and the M1 road is 1 km. In addition four new roads (N1, N2, South of Nile and C1 and C3 North of the Nile within MFNP) will be constructed to provide access and circulation within the Project Area during the Site Preparation and Enabling Works phase. The N roads vary in length from 100 m to 3,176 m. Furthermore, 24 inter field access roads (D roads) to the well pads south of the Nile will be provided by upgrade works to existing tracks/ roads and development of new roads. The length of the D roads varies from 32 m to 1,839 m.

Roads in the Project Area are generally in poor condition. The majority of roads are surfaced graded and there are no tarmacked/ high class murrum roads. Seasonal changes affect the road conditions and during the rainy season potholes, water-logged areas, and slippery mud make access difficult.

Upgrading of the roads will enhance accessibility within the Project Area by reducing travel times to local markets and between places of residence and places of study, work and recreation. This can have potential induced beneficial impacts such as increased trade and increased productivity (resulting in higher incomes). Poor road infrastructure was identified to be a constraint for local governments in their ability to effectively deliver services to local communities therefore road upgrades will also help to address this challenge.

Significance Assessment

Improving accessibility within the Project Area will have a potential indirect beneficial impact primarily on PACs in Buliisa District where the majority of road upgrades will take place. PACs from other districts that are travelling through Buliisa District will also benefit but to a lesser extent. The potential impact will be of low magnitude for all PACs. This is based on local extent, long-term duration, reversibility in the long-term, and occasional frequency. The sensitivity of PACs in Buliisa District is high, resulting in an overall potential impact significance that is considered to be **Moderate Beneficial**. The sensitivity of PACs from other districts to this particular impact is considered low due to their much lower dependence on transport routes within Buliisa District. The overall potential impact significance for PACs from other districts is therefore considered **Low Beneficial**. The benefits of this potential impact will continue through all future Project phases.

Potential Social Impact 8: Increased Pressure on Education Facilities

In-migration into the Project Area is likely to place increased pressure on local infrastructure and services in the short term, including on education facilities. Furthermore, increased household incomes in the local community and increased employment opportunities may create increased demand for school places as more families become able to afford school fees and associated costs and the perceived value of education increases. Improved road access within the Study Area may also increase school enrolment as it may reduce travel time and transports costs, which are currently two of the barriers to education for many families (see Section 16.6.4.1).

Education services within the Primary Study Area are currently hindered by inadequate infrastructure and poor quality. Current capacity to absorb a high number of new pupils is therefore limited.

During the Site Preparation and Enabling Works and Construction and Pre-Commissioning phase it is unlikely that increased tax revenue from the Project for local governments will yet be sufficient to allocate significant increased budget on enhancing the capacity of local educational facilities to meet increased demand.

Villages that use schools within predicted influx hot spots are likely to be most affected by this potential impact. This includes the schools and villages outlined in Table 16-50.

Table 16-50: Schools in Influx Hotspots within Project Area

Influx 'hot spot'	School
Buliisa Town (civic cell)	Buliisa Civic Cell School
Kigwera (Kigwera North East, Kigwera North West, Kigwera South East and Kigwera South West)	NGO Forum primary school Nanamere Primary School
Kisansya	Kisansya Primary School (public) Saint Damalie Nursery and Primary School Bugungu Secondary School (public)
Kijangi	Kijangi Primary School
Wanseko Parish	Masaka Primary School Wanseko High School Good Hope Primary School (Katanga) Katanga Secondary School
Ndandamire Parish	Saint Paul Katodio Nursery and Primary School Kiyere Primary School (accessed by pupils from Ndandamire and Wanseko Parish)
Purongo Town	Got Apwoyo Primary School Pakwach schools

Source: Based on data provided in the 2015 SHBS.

The potential impact is not predicted to happen during the Commissioning and Operations Phase as there will be some out-migration following reduction in employment numbers after construction and capacity of education facilities to meet increased demand is also predicted to have increased by the Commissioning and Operations phase.

Human Rights Implications

Right to Education

This is a potential impact of high severity. The increased pressure to education facilities has a tangible potential impact on the right to education of members of project affected communities, particularly of children and young people. The potential impact is likely to affect several children and young people. The potential impact is remediable, provided that suitable options will be implemented to manage it.

Significance Assessment

Increased pressure on education facilities in the Project Area will be a potential induced adverse impact of moderate magnitude. This is based on local extent, medium term duration, reversibility in the short-term, and constant frequency. Receptors likely to be affected are PACs in Buliisa and Nwoya District who have high sensitivity, as well as PACs in influx hotspots (medium sensitivity), and local schools (medium sensitivity). The overall potential impact significance is therefore considered to be **High Adverse** for receptors in Buliisa and Nwoya Districts and **Moderate Adverse** for all other receptors affected.

Potential Social Impact 9: Disruption to road users from Project traffic, construction and upgrading of access roads and due to access restrictions caused by land expropriation

A number of minor roads will be upgraded to accommodate Project traffic, as discussed above. Pedestrian access and access for passage of cattle will be maintained throughout upgrade works, however, temporarily access for vehicles (including boda bodas, cars, and minibus taxis, will be created. Construction work of the roads will be covered by 20 work areas, which will operate concurrently. Restricted access for road users (apart from pedestrians) during road upgrade works has the potential to cause disruption to existing road users by requiring users to divert journeys, which may increase total journey times to places of work, study and recreation.

Land expropriation for well pads will not result in any permanent or temporary loss of access to roads currently used by local communities or by tourists in MFNP. There will be some disruption to pathways used by communities to travel on foot around grazing and farming areas including at KW-02A, KW-02B, NGR-03A, NGR-05A, and NSO-04. Disruptions will not cause any permanent restrictions and will not significantly increase journey times on foot (the total land intake for each of these well pads will be 5.3 to 8.9 ha in size).

The RAP1 undertaken for the Industrial Area and N1 access road established that there is no significant displaced public access (roads) or cattle corridors within the RAP1 area. However, an analysis of satellite imagery indicates that there are a number of community footpaths that lead to the local people's residences within the Industrial Area and only a few community foot paths (two or three community foot paths) that cross the Industrial Area. In addition, the proposed N1 access road extension runs along an existing secondary road in the north.

During Site Preparation and Enabling Works there will be an increase in the volume of traffic using local roads with a total additional 806 daily traffic movements expected (based on information provided in **Chapter 4: Project Description and Alternatives**). Traffic will include a mixture of heavy and light machinery, which will operate seven days a week. Baseline traffic in the Project Area is very light and most people travel on foot or by bicycle. Motorbike taxis (boda bodas) are the main form of public transport used to access markets, health facilities, transport people and local produce. Given the low levels of baseline traffic, increases in traffic due to Project vehicle movements is not expected to cause congestion on local roads.

Human Rights Implications

Right to Freedom of Movement

This is a potential impact of low severity. Disruption to road users from Project traffic, construction and upgrading of access roads and due to access restrictions caused by land expropriation has a potential tangible impact of the right to freedom of movement of PACs. It is likely that all members of the communities will be affected. The potential impact is remediable through appropriate mitigation for community road safety and traffic management that takes into consideration vulnerable people.

Significance Assessment

The overall potential impact on road users due to increases in Project traffic, construction and upgrading of access roads, and restrictions caused by land expropriation will be of low magnitude (based on local extent, temporary duration, reversibility in the short-term, and frequency rating of 'often'). Receptors likely to be affected are PACs in Buliisa District. Their overall sensitivity is considered high as they have a dependency on road use by foot, bike, motorcycle and/or with cattle although transport by vehicles is limited. The overall potential impact significance is therefore considered to be **Moderate Adverse**.

16.8.3.2.3 Social Cohesion and Cultural Identity

Potential Social Impact 10: Social Disarticulation⁹⁷ and Increased Community and Family Conflict

The Project will potentially create sources of increased conflict within the community leading to social disarticulation, break-up of community ties, and family breakdown.

Frictions within families and communities can have a detrimental effect on community cohesion, sense of belonging and may cause breakdown in social and family structures. It may also cause increased vulnerability for certain individuals and groups if they are socially excluded or discriminated against as a result of tension or conflict (for example, it was reported that accusations of witch craft against elderly women increased during the exploration phase and these women were expelled from their villages as a result) or if social support networks (including family, village, clan) are eroded. Minority ethnic groups and migrants are considered particularly vulnerable as they generally have lower levels of social capital within the local community and are more likely to be accused of taking resources from host/dominant groups or bringing in unwelcome practices.

Increased unrest within the community could also result in protests against the Project or against local leaders. An unstable social context can have a number of consequences for the Project, such as increased cost of security, need for increased compensation payments, increased cost associated with community impact management programs and disruptions to construction or operations due to community protests.

Potential sources of increased conflict within the community are outlined below.

In-migration

Creation of tension between newcomers and host communities due to perceptions that migrants are introducing illicit habits, placing pressure on existing resources, and increasing competition for jobs and other Project benefits.

Land Acquisition and Resettlement Process

The land acquisition and resettlement process is a source of multiple tensions including:

- Unmet expectations and dissatisfaction over the resettlement and compensation process, including disagreement over compensation rates, scope of assets and resources that are entitled to compensation, and eligibility criteria for compensation (there may be disagreements over who is entitled to compensation if customary rights to land cannot easily be proven or due to pre-Project land disputes);
- Increased land disputes triggered by contested claims of land ownership, boundaries (at individual, village, and clan level) or disagreement within families and clans over who is entitled to compensation for communally held land. Villages within Buliisa District that have existing boundary conflicts⁹⁸ are summarised in Table 16-51;
- Conflict between those who are affected by land acquisition and those who are not: individuals and households not affected by land acquisition and who are therefore not entitled to compensation, relocation assistance or livelihood restoration may be resentful towards those who are affected by resettlement;
- Family conflicts: within families there may be disagreements about how compensation payments should be distributed and managed. There is anecdotal evidence that mismanagement of compensation payments during previous resettlement and compensation processes in the area (including in Buliisa District for compensation of crops and temporary land access during exploration phase activities and in Hoima District for the Kabaale refinery) led to marital breakdown, men abandoning their families and increased domestic violence. Women and

⁹⁷ Social disarticulation refers to the process by which the social networks and support mechanisms within a social group are disrupted. It often happens as a result of resettlement and influx.

⁹⁸ As identified during resettlement impact scoping and the 2015 SHBS.

children are particularly vulnerable as their role in household financial management and decision making is generally weak; and

- Land acquisition will reduce the overall availability of land for cultivation and grazing (though the proportion of land taken in relation to the total land available in the district is relatively small), which may push crop farming and pastoralist activities closer together (i.e. cultivators encroaching on grazing land and vice versa), exacerbating conflict between farmers and herders.

Table 16-51: Identified Boundary Disputes in Buliisa District

Village	Village boundary dispute	Inter-Family boundary dispute	Clan boundary dispute
Kigwera Sub County			
Kirama	Yes	Yes	No ⁹⁹
Kichoke	Yes	Yes	No
Kigwera North East	Yes	Yes	No
Kigwera North West	Yes	Yes	Yes
Kiyere	Yes	Yes	No
Kisansya East	No	Yes	No
Kisansya West	No	Yes	Yes
Kakindo	No	Yes	No
Kizongi	No	Yes	No
Ndandamire	Yes	Yes	No
Ngwedo Sub County			
Ajigo	No	Yes	No
Avogera	No	Yes	No
Karatum	No	Yes	No
Kasinyi	Yes	Yes	No
Kibambura	No	Yes	Yes
Kilyango	No	Yes	No
Muvule I	Yes	Yes	No
Muvule Nunda	No	Yes	No
Ngwedo Town Centre	No	Yes	No

⁹⁹ No disputes have been identified at the time of writing the ESIA report; however, disputes may arise during the Project forthcoming phases.

Village	Village boundary dispute	Inter-Family boundary dispute	Clan boundary dispute
Buliisa Sub County			
Bugana Kataleba	No	Yes	No
Kakoora	Yes	Yes	No
Kigoya	Yes	No	No
Kigwera south west	Yes	Yes	No
Kijangi	Yes	No	No
Masaka	No	Yes	No

Source: Developed based on findings from 2015 SHBS

Project Employment and Procurement

Local and national stakeholders view opportunities for direct and indirect employment created by the Project to be one of the major Project benefits. Unmet expectations around Project employment opportunities are likely to cause a sense of disappointment and frustration against the Project at a local, regional, and possibly national level. This may manifest itself in community protests or grievances against the Project or against local leaders acting as intermediaries between the Project and local community, who are often perceived to have influence over Project benefit sharing. Furthermore, if the recruitment process is not managed in a transparent manner there may be misperceptions that job opportunities are disproportionately given to one segment of the population over another, which could lead to inter- or intra community rivalry and tensions.

Perceptions of eligibility may also cause tensions, for example, those who have been living in the area for a long time may feel more entitled than more recent migrant communities. There may be a perception that those living closer to Project infrastructure have more of a right to benefit from Project employment and procurement. Also, the prioritization of PAPs into vocational training and local employment may cause the perception of some members of the same communities benefiting more than others

Community perceptions that only 'menial' work is given to the local population may further cause dissatisfaction against the Project and tension between the local workforce and workers that come from elsewhere. While most stakeholders are aware that a large proportion of jobs will require skills that are not available locally (especially in the early stages of the Project), there are nevertheless very high expectations for employment (skilled and unskilled) and for the government and Project Proponents to invest in training and skills development to enhance local content and to enhance opportunities for the District population to get higher skilled jobs. Staff registered within Buliisa District will provide a source of increase in revenue for the District Government through payment of the local service tax, whereas those registered elsewhere pay their service tax in their place of registration even if they work in Buliisa all year round. This could be a further source of tension against national workers coming from elsewhere.

While direct, indirect and induced employment and increased household income will bring many potential beneficial impacts to local communities (see Section 16.8.3.2.4), there is also a risk that introduction of higher cash incomes will have potential adverse impacts on families. Men not accustomed to high levels of disposable income may choose to spend the money on prostitution or alcohol (alcohol abuse is already a serious issue in the Project Area – see Section 16.6.3.3), for example, leading to family disputes and potential increase in separation and divorce. Women earning cash incomes through direct, indirect or induced employment may be under pressure to give the money they earn to their husbands or else face risk of domestic violence (there were anecdotal reports that some women that earned cash compensation during the exploration phase were subject to domestic violence when their husbands tried to take the compensation from them – see Section 16.6.3.3).

Access to Information

There is a potential for community unrest due to perceived lack of transparency over Project decision making and perceptions of lack of access to Project information. Best practice principles for stakeholder engagement are outlined in **Chapter 5: Stakeholder Engagement**.

During previous phases of oil and gas activities in the area there were allegations of inadequate consultation and informed participation, lack of access to information for affected communities, and lack of understanding about recruitment processes (see Section 16.6.8.4). Perceived lack of access to information can erode confidence in the Project as well as in local leaders who are perceived to be interlocutors between the Project and local community. It should be noted, however, that certain information that stakeholders request, for example in relation to the specific locations of Project infrastructure, must be withheld in order to avoid speculative activity.

The importance of continued access to information and transparency with local communities was raised as one of the top priorities amongst stakeholders during ESIA consultations (see **Chapter 5: Stakeholder Engagement**). Therefore, though several initiatives have already been undertaken by civil society, the developers, and government to improve access to information about Project activities, this remains a sensitive issue that has the potential to cause local and regional discontent due to the spreading of false rumours and misinformation if not managed properly.

Human Rights Implications

Right to Family Life

This is a potential impact of high severity. Social disarticulation and increased community and family conflict have a tangible impact on the right to family life of members of PACs which will affect all communities. The potential impact is remediable through engagement of PACs in mediation and conflict resolution processes to address sources of tensions and to try and amend frayed relationships.

Right to Freedom from Discrimination

This is a potential impact of medium severity. Social disarticulation and increased community and family conflict have a tangible impact on the right to freedom from discrimination particularly of migrant members of PACs. The potential impact is likely to affect a small number of people. The potential impact is irreparable.

Right to Information

This is a potential impact of high severity. Social disarticulation and increased community and family conflict have a potential tangible impact on the right to information of members of PACs. Social disarticulation and increased community and family conflict will affect all communities. The potential impact is remediable by implementing a stakeholder engagement plan.

Significance Assessment

The extent of this potential impact is regional, the duration is long-term, it is reversible in the long-term, and the frequency is occasional. The overall magnitude before additional mitigation is therefore moderate. Receptors that will be affected include all PACs in Buliisa and Nwoya districts (high sensitivity), and local communities in Pakwach Town Council, Hoima Municipality and Masindi Municipality (medium sensitivity). The overall significance of the potential impact is therefore **High Adverse** for Buliisa and Nwoya Districts and **Moderate Adverse** for receptors in Pakwach Town Council, Hoima Municipality and Masindi Municipality.

Potential Social Impact 11: Changes to Traditional Way of Life Leading to Loss of Sense of Place and Community

Sense of community and social identity may be lost as the social context and way of life within the local communities changes due to the factors explained below.

In-migration

In-migration will result in an increased presence of people (Project workers, Project sub-contractors, their families and others looking to benefit from the Project) from outside the community, who may have different backgrounds and cultural values to those of local communities. During ESIA consultations stakeholders raised concerns that newcomers to the area would erode traditional values, 'corrupt' youth (particularly girls are perceived to be more vulnerable) and 'dilute' traditional clans through inter-marriage and introduction of new languages (see Section 16.6.3.2 and **Chapter 5: Stakeholder Engagement**).

The majority of the Project workforce will be housed in closed accommodation camps, which will minimise workforce interactions with the local community. CTLO teams are also already in place and help to manage the ongoing relationship with local communities (Ref. 16-16).

Land Acquisition and Resettlement

Communities that are relocated from their traditional lands are likely to experience a sense of loss due to the economic, social and cultural resources lost during the resettlement process. Bagungu, Alur and Acholi cultures are strongly intertwined with their livelihood systems. There is therefore a risk that potential impacts on livelihoods due to economic displacement can indirectly affect cultural identity.

The changing values attached to land and increased individualisation of land in the Study Area is already seen to be impacting traditional livelihoods and affecting relationships between individuals. This process is likely to be exacerbated by the resettlement and compensation process for the Project. Potential indirect impacts of the land acquisition and resettlement process on traditional land tenure systems (see 16.8.3.2.1) can also lead to an erosion of the customary leadership structures and family and clan networks that traditionally manage community land and resources.

The resettlement process itself risks breaking up community support networks if communities are not resettled together. This may include, for example, village savings groups, self-help groups, livelihood groups, water resources committees, village health teams and environmental committees.

Most settlement patterns in the Study Area are based on clan structures and different ethnic groups (Bagungu, Alur and Acholi) have distinctive styles of housing. If these aspects are not taken into account in the physical resettlement process there is a risk of further eroding cultural identity and community ties.

Employment and Procurement

The introduction of waged labour may result in movement away from traditional subsistence livelihoods affecting cultural identity and sense of community as people may no longer practice livelihoods together and traditional livelihood support networks are weakened.

Increased levels of education and wealth amongst some segments of the population, achieved through direct, indirect or induced employment may lead to increased disparities in standards of living and lifestyles. Such differences may erode a common cultural identity within local communities. Traditional decision making and leadership hierarchies may also be challenged as some members of the population move out of subsistence livelihoods and become more empowered through increased wealth.

Physical Changes to the Environment Affecting Amenity

The presence of the Project itself and the changes it will bring to the physical environment including noise disturbance, light disturbance, increased built environment, increased traffic and potential impacts on local biodiversity and ecosystems can all affect sense of place.

Human Rights Impacts

Right to Family Life

This is a potential impact of high severity. Changes to traditional way of life leading to loss of sense of place and community have a potential tangible impact on the right to family life of members of project affected communities. The changes will affect all members of all affected communities. The potential impact is irremediable.

Rights of the Child

This is a potential impact of high severity. The changes to traditional way of life leading to loss of sense of place and community have a potential serious impact on the rights of a child due to potential erosions of traditional values, a lost sense of “home” and identity, tensions within families, and conflict with outsiders and break in community support networks that can negatively affect the environment within which a child is raised and expose them to stress and emotional or physical violence. The potential impact is likely to affect all children and young people living in the Project Area. The potential impact is moderately irremediable, though the Project should implement suitable additional mitigations measures.

Right Freely to Participate in the Cultural Life of the Community

This is a potential impact of medium severity. The changes to traditional way of life leading to loss of sense of place and community have a potential tangible impact on the right freely to participate in the cultural life of the community. The impact is likely to affect all people living in the Project Area. The potential impact is highly irremediable, though the Project should implement suitable mitigations measures to support the promotion of local culture and way of life.

Significance Assessment

The extent of this potential impact is regional, duration is medium term, it is reversible in the long-term and frequency is constant resulting in overall high magnitude. PACs in Buliisa and Nwoya District are likely to be affected (high sensitivity) giving an overall potential impact significance that is considered to be **High Adverse**.

Potential Social Impact 12: Increase in Crime Rate due to Project Induced In-migration and Increased Wealth Generation

Buliisa and Nwoya Districts are poor rural communities, whose populations depend primarily on subsistence agriculture, livestock and fishing activities. Both districts have a large youth population and high unemployment rates. There is a strong expectation among the local population of accessing employment and procurement opportunities created by the oil development in the Lake Albert region. The prospect for direct and indirect employment in the oil sector will also attract high levels of in-migration especially of single males. Migrants may be more likely to behave illicitly when they are separated from their families and are operating outside their usual sphere of social control. Furthermore migrants who cannot find work in the area may resort to criminal activities as a means of subsistence.

The introduction of a wage based employment and the distribution of cash compensation as part of the resettlement process will increase the circulation of cash in the Project Area and the perception of wealth.

Influx and increased perceptions of wealth in the Project Area may lead to increased rates of crime and/ or increased perception of insecurity by the local community. Increased risk of crime was raised as a key stakeholder concern during ESIA consultations (see **Chapter 5: Stakeholder Engagement**).

Potential types of criminal activities include: theft, sexual and physical assault, substance-abuse and related nuisance¹⁰⁰. Women and minors (especially girls) are considered particularly at risk of sexual and physical assault while men are considered more vulnerable to substance abuse. Influx hotspots will be most at risk of experiencing increased crime rates.

Police resources within the Project Area are currently under resourced and there is limited access to formal justice for local communities. Existing resources for law enforcement are therefore unlikely to have the capacity to deal with an increase in crime rates.

Human Rights Implications

¹⁰⁰ Potential increases in poaching and illegal fishing are addressed in Chapter 19: Ecosystem Services.

Right to Life, Liberty and Security of Person

This is a potential impact of high severity. Increase in crime rate due to Project induced in-migration and increased wealth generation has a serious impact on the right to life, liberty and security of members of the affected communities, particularly, women, children, and the elderly. The scope of the potential impact is moderate as only a proportion of the affected population could be affected. The potential impact is moderately irremediable provided that local government and law enforcement have the required resources and training and the VPSHR are fully implemented.

Rights of Women and Girl-child

This is a potential impact of high severity. Increase in crime rate due to Project induced in-migration and increased wealth generation has a potential serious impact on the rights of women and girl-child, including gender-based violence, harassment, exploitation, and trafficking. The scope of the potential impact is moderate as the change will affect some women and girls in the affected communities. The potential impact is moderately irremediable provided that local government and law enforcement have the required resources and training and the Project implements appropriate mitigation measures.

Rights of a Child

This is a potential impact of high severity. Increase in crime rate due to Project induced in-migration and increased wealth generation may have a potential serious impact on the rights of children (boys and girls) living in the Project affected area by, for example, increasing their exposure to violence, assault, underage sexual exploitation and substance abuse. The impact is likely to affect some children across the region particularly in influx hotspots, and is considered of moderate scope. The potential impact is moderately irremediable provided that local government and law enforcement have the required resources and training and the Project has implemented appropriate mitigation measures.

Significance Assessment

It is estimated that the increase in the rate of crime will have a potential adverse impact on PACs in Buliisa District, Nwoya District, Hoima municipality, Pakwach TC and Masindi municipality. The potential impact will be of low magnitude due to its local extent, medium term duration, reversibility in the short-term and occasional frequency. The sensitivity of receptors is high for PACs in Buliisa District and local communities in Nwoya District and medium for all other receptors, resulting in an overall significance that is **Moderate Adverse** for all receptors.

Potential Social Impact 13: Increased Pressure on Local Police Force

The Project could lead to an increase in crime rates (see Social Impact 10 and Social Impact 12). As well as increased demands placed on local police to manage crime such as theft, assault and substance abuse, pressure will also be placed on police to monitor increased levels of traffic in the Project Area likely to arise from project induced in-migration, assist in dealing with family and community conflicts, and to assist UWA in handling potential increases in illegal hunting and fishing in protected areas.

Police resources within the Project Area are currently under resourced (see Section 16.6.4.8). Control of migration from the Democratic Republic of Congo (DRC) coming across Lake Albert is also low. Existing resources for law enforcement are therefore unlikely to have the capacity to deal with increased demands for their services due to Project induced changes to social cohesion and crime rates and due to influx both from within Uganda and due to an increase in in-migration from boarder countries (e.g. DRC).

Human Rights Implications*Right to enjoy just and favourable conditions of work*

This is a potential impact of low severity. Increased pressure on the local police force will have a tangible but small effect on the police workforces' ability to enjoy just and favourable conditions of work. A small number of people will be affected and the potential impact is remediable.

Significance Assessment

Increased pressure on local police is an induced potential adverse impact of low magnitude. This is based on local extent, temporary duration, reversibility in the short-term, and frequency rating of 'often. Receptor sensitivity is medium, giving an overall potential impact significance of **Moderate Adverse**.

Potential Social Impact 14: Increase in Prostitution

Project induced influx in the region particularly of a predominantly male workforce and male opportunistic migrants have the potential to create increased demand for sex workers. The introduction of wage based employment and the distribution of cash compensation as part of the resettlement process will increase the circulation of cash (see Social Impact 11) which may also increase the demand for prostitution. The number of women in the Project Area engaging in prostitution is reported to be increasing and the ability to earn 'quick money' from prostitution is reportedly seen as one of the only options for unskilled women to earn an independent income (see Section 16.6.3.3.1). Increased disposable income and increased demand for sex workers could therefore encourage more local women to enter into prostitution as well as attracting sex workers from elsewhere to come to the area in search of work.

There is a risk that the Project could increase instances of family conflict and family breakdown (see Social Impact 9). The ESIA social baseline found that most women engaged in sex work are separated from their husbands or widows and several entered into sex work out of economic necessity to provide for their children. Therefore there is a risk that increase in family breakdown could lead to an increase in the women entering into prostitution if they cannot find other means of earning a living. This risk is exacerbated for women who have lost access to land due to displacement. Conversely, women who enter into prostitution may generate a higher income than their husbands, have more economic independence and potentially destabilise the power balance within a family, potentially causing breakdown.

Women entering into prostitution increase their vulnerability to discrimination, health risks, trafficking and gender based violence.

Apart from the influx hotspots, locations considered particularly at risk of attracting prostitution include stop-off or rest points along transport routes and the Masindi vehicle check point (to be constructed during the Site Preparation and Enabling Works phase but becoming operational during the Construction and Pre-Commissioning phase).

Human Rights Implications

Rights of Women and Girl-child

This is a potential impact of high severity. Increase in prostitution has a serious impact on the rights of women and girl-child, including gender-based violence, harassment, exploitation, trafficking, unwanted pregnancies and Sexually Transmitted Diseases (STDs). Although the increase will affect some women and girls in the affected communities, its effect may be felt by other groups. The potential impact is moderately irremediable provided that the Project has measures in place to manage its directly employed workforce and contractors; Community Impact Management Programmes are implemented; and local government and law enforcement have the required resources and training.

Rights of a Child

This is a potential impact of high severity. Increase in prostitution has a serious potential impact on the rights of children living in the Project affected area. The potential impact is likely to affect several children, including children whose mothers have entered prostitution and/or children conceived as a result of prostitution. The potential impact is moderately irremediable provided that the Project has measures in place to manage its directly employed workforce and contractors; Community Impact Management Programmes are implemented; and local government and law enforcement have the required resources and training.

Right of the Enjoyment of the Highest Attainable Standard of Physical and Mental Health

This is a potential impact of high severity. Increase in prostitution has a serious impact on the right to health. The impact is likely to affect several members of the affected community. The potential impact is moderately irremediable provided that the Project has measures in place to manage its directly employed workforce and contractors; provides support to community health; and local government and law enforcement have the required resources and training.

Significance Assessment

Increase in prostitution is an adverse potential induced impact of low magnitude. This is based on local extent (mainly affecting influx hotspots although women entering into prostitution may come from other parts of the Project Area or other parts of Uganda), reversibility in the short-term, long term duration and remote frequency. The sensitivity of receptors is considered high for PACs in Buliisa and Nwoya Districts and Medium for PACs in Pakwach TC, Hoima and Masindi, resulting in a potential impact with an overall significance that is **Moderate Adverse** for all receptors.

16.8.3.2.4 Employment and Economic Development Impacts

Potential Social Impact 15: Direct and Indirect Employment Opportunities

The Site Preparation and Enabling Works Phase will require a maximum work force of approximately 2,000 personnel. It is expected the majority of the non-skilled workforce will come from nearby villages and towns with skilled workers (supervisors and operators) travelling from outside the area. The Project is working in line with the targets for employment and training of Ugandan citizens as set in the Upstream National Content regulations, 2016, shown in Table 16-52:

Table 16-52: Targets for Employment and training of Ugandan Citizens

Minimum % of Ugandan citizens	Start of activities	Five years after start of activities
Management staff	30%	70%
Technical staff	40%	60%
Other staff	95%	

Where:

- "**Management staff**" means supervisory, professional, senior management staff with a diploma / degree qualified and/or possessing the relevant number of years of experience.
- "**technical staff**" means skilled and semi-skilled staff certified under a technical training scheme and with verified competency including petroleum , chemical, electrical and instrumentation, process engineers and technicians, geoscientists, chemists, personnel trained and qualified in EHHS and Technical Standards matters, petroleum economists, cost engineers, etc.
- "**Other staff**" means technically uncertified / inexperienced or unskilled staff.

Some specific expertise will necessarily be recruited from other regions of Uganda and from outside Uganda. Most of the jobs sourced locally and regionally will pertain to "other staff" category. Recruitment from local communities will be dependent on the availability of the required skills (Management and Technical staff in particular) and the fulfilment of basic literacy requirements and education levels.

Jobs during the Site Preparation and Enabling Works Phase will be short term though there will be potential for some of the employees recruited during this phase to continue employment into the Construction and Pre-Commissioning phase.

In addition to any potential direct employment generated by the Project itself there will be an increase in local employment arising from indirect and induced effects of the Project. Indirect employment

includes the procurement of goods and services from regional and national companies which could generate jobs with these companies. Employment growth may therefore arise locally by way of indirect or supply linkage employment multiplier effects. Additionally, part of the income of the Project workers and suppliers will be spent within local communities, generating further employment by way of induced employment multiplier effects. Spending from non-local workers who are housed in the accommodation camps will be limited, however, as the camp will operate as a closed camp and all workers' needs will be provided for within the camp. Supply of goods and services for the camp may still be procured from regional companies though.

National content is a key priority for the Project Proponents and for Government of Uganda in the sustainable development of the Project. The Project Proponents will comply with statutory requirements for national content provided in the policy and regulations outlined in Table 16-1.

The Production Licences issued to the Project Proponents highlight employment of nationals under the following provision:

- Employment of nationals: the licensed companies have committed to the employment of Ugandans whenever possible. About 70% of the jobs in these developments are expected to be at technician/artisan level, 25% as casual workers and 5% professionals (geoscientist, engineers and administrators) (Ref. 16-85).

There are very few people in formal employment in the Project Area and livelihoods are primarily based on subsistence activities and highly dependent on natural resource use. Opportunities for employment are highly valued by local communities and expectations that local communities will be prioritised for employment are high. Levels of education and skills amongst local communities are low, which limits their potential to benefit from some of the employment opportunities created by the Project.

Recruitment of workers locally will provide their households with additional income, which can lead to improved standards of living. Some of this additional income is likely to be spent on local trade and businesses promoting more widespread income generation.

Without active measures to promote the education and the employment of women, employment opportunities for women from local communities may be limited by cultural gender norms and gender inequalities in education. Women face a heavy burden of responsibilities for household production as well as childcare, care for the sick and elderly, cooking and maintaining the home. The opportunity cost of work outside the home is therefore considered greater for women than for men. Local definitions of gender roles disproportionately allocate unpaid domestic responsibility to women, limiting their professional and skill development opportunities, as well as exposure. This limits their ability to participate in productive employment outside the house. The perception that jobs with oil companies are 'male jobs' is also widespread and can deter women from applying for jobs.

Significance Assessment

The magnitude of this potential impact is low based on local extent, short term duration, reversibility in the short-term, and frequency of 'often'. Receptors that will benefit from the potential impact are PACs in Buliisa and Nwoya District, communities in Hoima and Masindi Municipalities and in Pakwach Town Council (medium sensitivity), as well as skilled and unskilled workers (low and medium sensitivity) and supply chain workers. While the sensitivity of PACs in Buliisa and Nwoya Districts and supply chain workers is usually considered 'high', their sensitivity to this potential impact is moderated to 'medium' to reflect the difficulties that members of PACs will face in gaining Project employment based on existing levels of education and skills in the local population. The overall significance of the potential impact is therefore **Low Beneficial** for all receptors.

Potential Social Impact 16: Increased Demand for Goods and Services Stimulating Economic Growth

Increased demand for local goods and services through project procurement and increased disposable income from the Project's workforce spent locally, as well as increased spending by in-migrants, will stimulate local economic growth resulting in improved living standards and quality of life for local communities. Positive benefits for the local and regional economy will be enhanced by improved road connectivity to Buliisa and, to a lesser extent, Nwoya Districts, which will increase the movement of people and goods into the region.

Local economic growth will bring further induced benefits to local communities by attracting more investment in the area due to increased market for goods and services. This may bring greater diversity in the availability of goods and services including financial services, private health care and education facilities. Increased business activity will also provide increased tax revenue to local and national government, which may be invested in improving local infrastructure and service delivery.

The Petroleum (Exploration, Development and Production) (National Content) Regulations, 2016 includes a provisional list of the goods and services that should exclusively be provided by Ugandan companies, Ugandan citizens and registered entities, as follows (Ref 16-86):

- Transportation;
- Security;
- Food and beverages;
- Hotel accommodation and catering;
- Human Resource Management;
- Office supplies;
- Fuel supply;
- Land surveying;
- Clearing and forwarding;
- Crane hire;
- Locally available construction materials;
- Civil works;
- Support of locally available drilling and production materials;
- Environment studies and impact assessment;
- Communications and information technology services; and
- Waste management, where possible.

In Buliisa and Nwoya District the local community's ability to benefit from local procurement at present is limited due to inability to supply goods and services that meet the required quality standards or consistently deliver required quantities.

Women are less likely to benefit from this potential impact as they generally have lower levels of education (literacy and numeracy) and less access to information meaning they will be less likely to hear about opportunities and less aware of key information required to start up a business (e.g. information on pricing, demand, supply), as well as lower ability (lack of business and technical skills) to maintain a sustainable business. Women also have less access to finance meaning they are less likely to be able to access and save the capital required to start up an income-generating project or enterprise. Cultural norms that favour men for leadership and 'professional' positions and place heavy obligations on women to undertake household-based activities also place constraints on their ability to benefit from this impact.

Residents of remote villages who have poor access to transport infrastructure will also be less likely to benefit from this potential impact as they have less access to markets.

Significance Assessment

The potential impact associated with increased demand for goods and services is an indirect beneficial impact of low magnitude. This is based on regional extent, short-term duration, reversibility in the short-term and occasional frequency. Receptors likely to benefit from this potential impact include PACs in Buliisa and Nwoya District (high sensitivity), local communities in Hoima, Masindi and Pakwach Town Council (medium sensitivity), local business owners (medium sensitivity), and the national business community (low sensitivity). The overall significance of this potential impact is

therefore **Moderate Beneficial** for receptors in Buliisa and Nwoya districts; and **Low Beneficial** for all other receptors.

Potential Social Impact 17: Development of more Educated and Skilled Workforce through Training and Skills Development for Affected Communities and Project Workers

Whilst the Project will make maximum use of existing skills present within the local labour market, it will be necessary to provide education and training to upskill the workforce in order to meet targets on local content. Employees will also benefit from continuous learning through on the job and classroom training. The increase in the level of skills and safe working practices will contribute to an overall improvement in the skill-base of the local and national workforce.

The Petroleum Development and Production Act, 2013 (Upstream Law) (Ref 16-82) requires that oil companies provide a plan for training and employment of Ugandans in the oil and gas sector. Companies are required to submit to the Petroleum Authority a detailed programme for recruitment and training of Ugandans every year for approval.

The Project is committed to providing relevant training and job-readiness support for affected communities (Ref. 16-87). Furthermore existing education programmes should be incorporated and extended through the community impact management strategy and associated plans in order to enhance the establishment of mentoring programs and scholarships for non-employees (Ref 16-88).

The development of a more educated and skilled workforce is likely to be enhanced in areas predicted to experience high levels of in-migration. In-migration will increase the local labour pool, which will benefit other local businesses and industries. In-migrants may also bring new skills and innovations, which can improve productivity in existing businesses and lead to new business opportunities locally.

Without additional mitigation women are less likely to benefit from this potential impact due to: cultural gender norms, which place a higher value on the education of males than females; lower existing levels of education amongst women meaning they may be less likely to be selected for scholarships or participation in other educational programmes that require a certain baseline standard of literacy and numeracy; cultural norms that place heavy obligations on women to undertake household-based activities may also limit their ability to participate in education and training programmes; the perception that jobs with oil companies are 'male jobs' is also widespread and can deter women from applying for jobs where they would benefit from on-the-job training and skills development.

Significance Assessment

The development of a more educated and skilled workforce will be an indirect potential impact of medium magnitude based on regional extent, medium term duration, reversibility in the long-term, and occasional frequency. Receptors likely to be affected are PACs in Buliisa and Nwoya District (high sensitivity), local communities in Hoima Municipality, Masindi Municipality and Pakwach Town Council (medium sensitivity), national business community (low sensitivity), and the local business community (medium sensitivity), as well as skilled and unskilled workers (medium and low sensitivity). The overall significance of the potential impact is therefore **High Beneficial** for receptors in Buliisa and Nwoya District, and **Moderate Beneficial** for receptors in Hoima Municipality, Masindi Municipality and Pakwach Town Council and the local business community, and **Low Beneficial** for the national business community.

Potential Social Impact 18: Potential Economic Loss due to Damage to Assets or Injury to Livestock by Project Activities from Unplanned Events

Project activities could directly or indirectly cause the loss or damage of community assets leading to temporary loss of income. Direct loss or damage may result from accidental collision with Project traffic or accidental damage caused by Project workers. Indirect loss or damage could occur from environmental contamination or degradation caused by the Project subsequently damaging community assets, e.g. water or soil contamination leading to poisoning of livestock or affecting crop yields. There is also a risk that community and individual assets will be damaged or livestock will be injured through accidental collision with Project vehicles or with vehicles introduced to the area due to in-migration.

During Site Preparation and Enabling Works Phase there will be an increase in the volume of traffic using local roads with a total additional 806 daily traffic movements expected (based on information provided in **Chapter 4: Project Description and Alternatives**). Traffic will include a mixture of heavy and light machinery, which will operate seven days a week during daylight hours.

Road transport through Kenya and Tanzania into Uganda will be the main transportation mode used for the Project.

Traffic into and around the Project Area is also likely to increase due to in-migration into the area, which will lead to an increase in overall numbers of road users, increased demand for transport services such as boda bodas and mini bus taxis, and increased numbers of vehicles transporting goods into and out of the area.

The majority of minor road users in the Primary Study Area are pedestrians, followed by cyclists, boda boda drivers and cars. Minor and main roads (R roads) are used to transport goods and materials including firewood and water. Main roads are also used by local trucks to transport goods and fuel transportation and buses to transport people. Cattle and goats are often seen along minor roads supervised by local herdsman. Settlement patterns in Buliisa and Nwoya District are primarily centred on main and minor roads (see Section 16.6.5). Trading centres are also located along roads. Roadside activities along roads that will be used for the Project within the Study Area are particularly dense in urban centres including Biso Town, Buliisa Town, Wanseko, Masindi and Hoima.

During ESIA consultations it was reported that speeding on roads increased following road upgrades (e.g. in Hoima Municipality and Purongo and Got Apwoyo Sub County). This suggests there is a risk that speeding by non-Project vehicles will increase on roads upgraded for the Project, increasing the risk of accidental collisions along these roads.

Accidental damage to community and individual assets may cause temporary loss of income due to crop damage, injury to livestock or costs to repair or replace any structural damage.

Human Rights Implications

Right to Property and Right Not to be deprived of its Own Means of Subsistence

This is a potential impact of medium severity. Potential economic loss due to damage to assets or injury to livestock by Project activities has a potential tangible impact on the right to property and on the right not to be deprived of its own means of subsistence. Due to the extensive route, the potential economic loss is likely to occur in the Project area, nationally, and internationally but as it is not expected to occur as part of routine operations, it is likely that only a small percentage of the overall population could be affected. The potential impact is moderately irremediable provided that suitable mitigation measures can be implemented and a grievance mechanism and compensation procedure is in place.

Significance Assessment

This potential impact is likely to be experienced at the local level¹⁰¹, will be temporary, reversible in the short-term and occurrence will be rare. The overall magnitude of the potential impact is therefore low. PACs in Buliisa and Nwoya District (both high sensitivity); local communities in Hoima Municipality, Pakwach Town Council, and Masindi Municipality (medium sensitivity); and roadside settlements along the transport corridor (medium sensitivity) are likely to be affected. The overall significance of the potential impact is therefore **Moderate Adverse** for Buliisa and Nwoya Districts and **Low Adverse** for all other areas.

Potential Social Impact 19: Local Price Inflation

Increased demand for local goods and services due to influx and increase in disposable incomes from Project direct and indirect employment and procurement may cause local price inflation. Procurement

¹⁰¹ This means that the potential impact itself would be localised although the entire area over which the impact could occur is international (Uganda, Tanzania or Kenya)

from local suppliers for the Project may place additional inflationary pressure on local goods and services.

There is also a risk that the compensation process for land acquisition and resettlement will cause inflation due to over-valuation of the compensation rates set by government for land and assets. Furthermore the land acquisition and resettlement process itself is placing an increased value on land as speculators perceive an opportunity to benefit from the compensation process if they can acquire land that will be expropriated for the Project. During RAP1 TEP Uganda undertook a detailed market valuation research study in the project area that was communicated to the CGV for his review of the compensation rates set by the Buliisa District Land Board (DLB). As a result, the crop compensation rates that were originally set by the DLB were better moderated by the CGV, which helped to avoid the overvaluation of assets and inconsistencies in rates.

The Project is likely to trigger an increased demand for housing due to in-migration and from PAPs who opted for cash compensation and therefore are required to find or construct their own replacement house. This is likely to push up house rental prices particularly in influx hotspots, while also pushing up costs associated with building construction.

Increase in prices without a parallel increase in incomes can make goods and services unaffordable for some households and lead to increased risk of impoverishment and deteriorating standards of living. Households that are cash poor and depend mainly on subsistence based activities are particularly at risk.

Human Rights Implications

Right to Adequate Standard of Living

This is a potential impact of medium severity. Local price inflation has a potential tangible impact on the right to adequate standard of living, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The potential impact is likely to affect all members of communities in the Project Area, particularly vulnerable households. The potential impact is moderately irremediable assuming suitable mitigation measures are put in place.

Right Not to be deprived of its Own Means of Subsistence

This is a potential impact of medium severity. Local price inflation has a tangible impact on the right not to be deprived of its own means of subsistence. The potential impact is likely to affect all members of communities in the Project Area, particularly vulnerable households. The potential impact is moderately irremediable assuming suitable mitigation measures are put in place.

Significance Assessment

Local price inflation is an induced potential adverse impact of moderate magnitude based on regional extent, reversibility in the short-term, short term duration and remote frequency. It is likely to affect PACs in Buliisa and Nwoya District (both high sensitivity) as well as communities in Hoima, Masindi and Pakwach TC (all medium sensitivity). The overall significance of the potential impact is therefore **High Adverse** for PACs in Buliisa and Nwoya and **Moderate Adverse** for all others.

16.8.3.2.5 Governance

Potential Social Impact 20: Community Empowerment and Increased Community Participation in Decision Making

A programme of stakeholder engagement will continue to be undertaken for the Project to keep communities informed about Project activities and respond to questions and concerns raised by stakeholders. The experience of participating in these processes of community engagement and dialogue will enhance communities' competence in communicating their needs, grievances and expectations. This is enhanced by the increased presence of civil society organisations in the Project Area who are working within PACs on community empowerment and sensitisation on community rights. Enhanced communication competencies, improved knowledge of rights, and increased awareness of government structures and processes promotes community empowerment and can increase local participation in decision making.

Women are considered particularly sensitive to this potential impact (i.e. particularly likely to benefit) as they are traditionally excluded from household and community decision making processes and are unaccustomed to speaking in public. The benefits of this potential impact may be enhanced for those women who benefit from direct or indirect employment as this will give them greater financial independence, which may increase their confidence to participate in household and community decision making.

Significance Assessment

The potential impact of community empowerment and increased community participation in decision making will be an induced beneficial impact. The magnitude of the potential impact is low. This is based on local extent, medium-term duration, reversibility in the long-term, and rare frequency. Receptors likely to be affected are PACs in Buliisa District and Nwoya District who have high sensitivity. The overall significance of the potential impact is therefore **Moderate Beneficial**.

Potential Social Impact 21: Overburdening and Challenges to Local and National Government and Cultural Leaders

Increased pressure is likely to be placed on local and national government due to an increased need for their services in monitoring oil and gas activities and helping to manage potential Project related environmental and community impacts such as resettlement, influx and land issues. Furthermore community leaders (both political and traditional cultural leaders) and national government will be expected to represent community interests in relation to the Project including in the resettlement process and in distribution of other benefits (such as employment, procurement, and social investment). They may therefore be challenged if benefits are perceived to be unevenly distributed or if compensation for resettlement is perceived by communities to be insufficient or unfairly allocated. Distrust of the formal government and traditional leadership will be aggravated if communities feel isolated from decision making processes due to a lack of engagement with and feedback to communities. This places pressure on government to undertake continued engagement and sensitisation with affected communities, which can be a challenge with limited capacities and resources for mobilisation.

National and local governments (district and sub county) in Buliisa and Nwoya Districts face existing capacity challenges and resource constraints. Key constraints include understaffing, lack of logistical resources, poor technical capacity, poor roads hampering service delivery, limited monitoring or accountability for service delivery, and corruption and misuse of public resources (see Section 16.6.1). In the short term, without additional support, it is therefore unlikely that local governments will be able to sufficiently improve capacity and increase resources to address the increased demands for their services created by the Project.

Human Rights Implications

Right to Effective Remedy

This is a potential impact of medium severity. Overburdening and challenges to local government have a tangible impact on people's right to effective remedy. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making and have limited access to administrative or legislative authorities provided by the legal system of the State. The potential impact is remediable provided that the Project applies a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent and that local and national government participate in the grievance management process and have the necessary resources and capacity to do so.

Right to Equal Access to Public Services

This is a potential impact of medium severity. Overburdening and challenges to local government have a potential tangible impact on people's right to equal access to public services. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making and have limited access to administrative or legislative authorities provided by the State. The potential impact is moderately irremediable, provided that local authorities receive adequate resources and training from the State.

Right to Information

This is a potential impact of low severity. Overburdening and challenges to local government pose a potential minor impact on the right to information. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making and have limited access to administrative or legislative authorities. The potential impact is remediable provided that the Project applies a stakeholder engagement plan that takes into consideration marginalised groups and a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent. The effectiveness of the Grievance Mechanism and stakeholder engagement processes will depend on the participation of local and national government, who will therefore need to have the necessary resources and capacity in place.

Right to Participation

This is a potential impact of low severity. Overburdening and challenges to local government pose a potential minor impact on the right to participation. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making and have limited access to administrative or legislative authorities. The potential impact is remediable through delivery of institutional capacity building under the community impact management strategy and associated plans.

Significance Assessment

Overburdening and challenges to local government will be a potential indirect adverse impact of low magnitude. This is based on local extent, medium term duration, and reversibility in the short-term, and occasional frequency. Receptors that will be affected are local government authorities (medium sensitivity), national government (low sensitivity) and cultural institutions (low sensitivity). The overall significance is therefore rated as **Moderate Adverse** for local government and **Low Adverse** for both national government and cultural institutions.

Potential Social Impact 22: Increased Risk of Corruption in the Public and Private Sector

Increased revenues for local and national government generated by the Project; increased opportunities to benefit from employment and procurement contracts; and opportunities to benefit from the compensation process for land and assets expropriated for Project infrastructure are all likely to create new incentives for bribery and corruption within the public and private sector locally and nationally. Corruption and misuse of public resources is already identified as a constraint to the effective functioning of local and national government.

Corrupt practices can have multiple induced negative effects that include deterioration in delivery of public services due to shortages in funding; deterioration in local investment due to perceptions of unfairness and corruption; and substandard production and service delivery if the best candidates for employment or procurement contracts are not awarded them due to bribery and corruption.

Human Rights Implications

Right to Equal Access to Public Services

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on people's right to equal access to public services. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making process. The potential impact is moderately irremediable, provided that the Project has a strong Code of Conduct, anti-bribery and corruption policy and procedure and adequate training is provided to employees, contractors and local government officials; a whistleblowing mechanism should also be put in place.

Right to Equal Opportunity

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on people's right to equal opportunity for employment. It is likely that the potential impact will affect all members of the affected communities. The impact is remediable, provided that the Project has a strong Code of Conduct, anti-bribery and corruption policy

and procedure and adequate training is provided to employees, contractors and local government officials; a whistleblowing mechanism should also be put in place.

Right to Freedom from Discrimination

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on people's right to freedom from discrimination. It is likely that the potential impact will affect all members of the affected communities, particularly women, immigrants and people from different ethnic groups, who may not be considered for some positions. The potential impact is remediable, provided that the Project has a strong Code of Conduct, anti-bribery and corruption policy and procedure and adequate training is provided to employees, contractors and local government officials; a whistleblowing mechanism should also be put in place.

Right to Effective Remedy

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on people's right to effective remedy. It is likely that the potential impact will affect all members of the affected communities. The potential impact is remediable provided that the Project applies a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent. The effectiveness of the Grievance Mechanism process will depend on the participation of local and national government, who will therefore need to have the necessary resources and capacity in place. Delivery of institutional capacity building under the community impact management strategy and associated plans will therefore also help to remedy this potential impact.

Right to Information

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on the right to information. It is likely that the potential impact will affect all members of the affected communities, particularly women and immigrants who traditionally are excluded from decision making process. The potential impact is remediable provided that the Project applies a stakeholder engagement plan that takes into consideration marginalised groups and a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent. The effectiveness of the Grievance Mechanism process will depend on the participation of local and national government, who will therefore need to have the necessary resources and capacity in place. Delivery of institutional capacity building under the community impact management strategy and associated plans will therefore also help to remedy this potential impact.

Right to Participation

This is a potential impact of medium severity. The potential increased risk of corruption in the public and private sector has a tangible impact on the right to participation. It is likely that the potential impact will affect all members of the affected communities, particularly women, who traditionally are excluded from decision making process. The potential impact is remediable provided that the Project applies a stakeholder engagement plan that takes into consideration marginalised groups and a grievance mechanism that is legitimate, accessible, predictable, equitable, right-compatible, and transparent. The effectiveness of the Grievance Mechanism process will depend on the participation of local and national government, who will therefore need to have the necessary resources and capacity in place. Delivery of institutional capacity building under the community impact management strategy and associated plans will also help to remedy this potential impact.

Significance Assessment

Potential increased risk of corruption is an induced adverse impact. Magnitude is assessed as low based on local extent, short term duration, reversibility in the short-term and rare frequency. Receptor sensitivity is low for national government and the national business community and medium for local government and the local business owners. Overall potential impact significance is assessed as **Low Adverse** for national government and the national business community, and **Moderate Adverse** for local government and the local business owners.

16.8.3.2.6 Tourism

Potential Social Impact 23: Loss of Tourism Revenue due to the Presence of the Project Deterring Visitors to MFNP and Reduced Access to Key Visitor Sites within MFNP

The presence of the Project could reduce the demand for tourism in MFNP due to perceived and potential impacts of Project activities, which could lead to a loss in revenue to tourism operators and other service providers, local government and national government, UWA and local communities bordering the park (the communities that share a boundary with the MFNP are shown in Table 16-31 and number 20 villages).

Project activities and perceived impacts that are likely to impact negatively on tourism activities include:

- Potential noise, lights and project traffic and visual amenity impacts;
- Potential impacts on biodiversity;
- Land acquisition for Project components within the park;
- Construction of the Nile pipeline HDD crossing and Victoria Nile Ferry Crossing, and use of the ferry crossing at Paraa; and
- Increased traffic congestion on local tourism roads within MFNP, at park entry and exit points, and on the local road system (e.g. on Road R3) due to Project related traffic and the security check point at Masindi.

The Western region of Uganda is home to 42% of the country's tourist attractions (lakes, hot springs, monuments and national parks) and MFNP was the most visited national park in Uganda in 2014 (Ref. 16-61). Tourism accounted for 9.9% of GDP in 2014 and the tourism sector has been prioritised in the Uganda Vision 2040 and as a primary growth sector in the National Development Plan II (2015 to 2020). Tourism has also been highlighted as an important component of Local Government Development Plans.

A small percentage of total revenue in Nwoya and Buliisa districts is derived from tourist activities in the region. In Nwoya District 3% of the total revenue received by Nwoya District for that financial year came from funds disbursed by UWA from the park revenue sharing scheme. The disbursement of funds has benefited three sub-counties bordering MFNP (Purongo, Anaka and Koch Goma). Similarly, in Buliisa District, 5% of the district's total revenue in 2014 came from funds disbursed by UWA, which benefited two sub-counties (Buliisa and Ngwedo) (Ref. 16-3). It is estimated that the tourism sector provides approximately 525 direct employment opportunities for the local community. Other income-generating activity related to tourism includes the sale of local craft (pottery, baskets).

Human Rights Implications

Right Not to be Deprived of its Own Means of Subsistence

This is a potential impact of medium severity. Loss of tourism revenue due to the presence of the Project deterring visitors to MFNP and reduced access to key visitor sites within MFNP pose a potential minor impact on the right not to be deprived of its own means of subsistence. The potential impact is likely to affect a limited group of members of affected communities as well as tourism businesses. The potential impact is remediable provided that the Project implements adequate management measures.

Significance Assessment

This is a potential indirect adverse impact. The magnitude of the potential impact is assessed as moderate based on regional extent, long term duration, and reversibility in the long-term, and occasional frequency. Receptors likely to be affected include tourism businesses (low sensitivity), local government (medium sensitivity), and national government including UWA (low sensitivity) and PACs in Buliisa and Nwoya district, particularly local communities bordering MFNP. While PACs usually have a high sensitivity, their sensitivity to this potential impact is considered low given the low level of dependence they currently have on tourism for employment and revenue generation. The significance of the potential impact is therefore assessed as **Moderate Adverse** for all receptors.

16.8.3.2.7 Labour and Working Conditions

Potential Social Impact 24: Impact on Welfare of Workers in the Project Supply Chain due to Poor Enforcement of Standards to Uphold Labour and Working Conditions

The Project will procure a number of goods and services locally and nationally (see 16.8.3.2.4). Workers employed by secondary sub-contractors and Project suppliers might be exposed to labour and working conditions that put their welfare at risk. Welfare of Project Proponents' staff and employees of primary contractors is considered to be sufficiently safeguarded by embedded mitigation, which includes TEP Uganda corporate policies and standards outlining its commitments to labour and accommodation standards that are in alignment with GIIP (further details on these standards are provided in **Chapter 2: Policy, Regulatory and Administrative Framework**). The lower down in the 'subcontractor hierarchy' a supplier is, however, the greater the potential for exposure of workers to insufficient labour and accommodation standards due to challenges associated with direct control and monitoring. This is considered a particular risk in the Project's context due to the reported challenges in monitoring compliance with national labour law in Uganda; challenges with bringing labour disputes to court; and the weak level of trade union activity in the construction sector in particular, lack of capacity in the district labour offices, and lack of political support for labour unionisation by Government.

Migrant workers and women are considered particularly vulnerable to this potential impact. Women are considered particularly at risk of discrimination in the hiring and promotion process, unequal pay, and exposure to sexual harassment (see Section 16.6.8.3).

Human Rights Implications

Right to Freedom from Slavery or Servitude

This is a potential impact of high severity. The risk to welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions has a potential serious impact on workers' right to freedom from slavery or servitude. It is likely that the impact will affect all potential workers in the supply chain. The potential impact is remediable, provided that the Project has a strong Code of Conduct, Contractors policy and procedure and adequate training is provided; a whistleblowing mechanism should also be put in place.

Right to Equal Opportunity

This is a potential impact of medium severity. The risk to welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions has a potential tangible impact on workers' right to equal opportunity for employment. It is likely that the potential impact will affect all potential workers in the supply chain. The potential impact is remediable, provided that the Project has a strong Code of Conduct, anti-bribery and corruption policy and procedure, Contractors policy and procedure and adequate training is provided; a whistleblowing mechanism should also be put in place.

Right to Freedom from Discrimination

This is a potential impact of medium severity. The risk to welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions has a potential tangible impact on workers' right to freedom from discrimination. It is likely that the potential impact will affect all potential workers in the supply chain, particularly women, immigrants and people from different ethnic groups, who may be excluded for some positions. The potential impact is remediable, provided that the Project has a strong Code of Conduct, anti-bribery and corruption policy, Contractors policy and procedure and adequate training is provided; a transparent and fair Community Employment Procedure is followed; and a whistleblowing mechanism should also be put in place.

Significance Assessment

Potential impact on the welfare of workers in the project supply chain is an indirect adverse impact of low magnitude. This is based on local extent, reversibility in the short-term, short-term duration and

rare frequency. Receptor sensitivity (supply chain workers) is high giving an overall potential impact significance rating of **Moderate Adverse**.

Potential Social Impact 25: Increased use of Child Labour

The Project will procure a number of goods and services locally and nationally (see 16.8.3.2.4).

Child labour was reported in the Study Area, and was noted to be of particular concern in Nebbi District and Pakwach TC. Within the Study Area, sectors in which children were most likely to work were reported to be agriculture, trade (working in the markets or as street vendors), and fishing. There were also several reports that during the exploration phase children dropped out of school to seek work as casual labourers.

There is a potential risk that child labour may be used by companies supplying goods or services to the Project, which may also increase the rate of school dropout. The lower down in the 'subcontractor hierarchy' a supplier is the greater the potential for use of child labour due to challenges associated with direct control and monitoring.

Project induced in-migration is likely to exacerbate the potential risk of increased child labour in the Project Area. Increased opportunities to sell goods and services to the increased population can provide incentives for children to drop out of school and engage in work to produce and deliver these goods and services.

Human Rights Implications

Rights of a Child

This is a potential impact of high severity. Potential increased use of child labour has a serious impact on the rights of the child. It is likely that the potential impact will affect all children in the PACs. The potential impact is remediable, provided that the Project has a strong Code of Conduct, mitigation management and monitoring system, Contractors policy and procedure and adequate training is provided; a whistleblowing mechanism should also be put in place.

Significance Assessment

Potential increase in child labour is an induced adverse impact of low magnitude. This is based on local extent, reversibility in the short-term, short-term duration and rare frequency. Receptor sensitivity (children in all PACs and supply chain workers) is high, giving an overall potential impact significance rating of **Moderate Adverse**.

16.8.3.3 Additional Mitigation and Enhancement

A summary of the additional mitigation and enhancement measures that will be implemented to address adverse and enhance beneficial impacts is given in Table 16-53. It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

It should be noted that additional mitigation and enhancement measures outlined in the following chapters may also contribute to the mitigation of social impacts identified in this chapter:

Chapter 7: Noise and Vibration;

Chapter 11: Landscape and Visual;

Chapter 17: Archaeology and Cultural Heritage;

Chapter 18: Health and Safety; and

Chapter 19: Ecosystem Services.

Table 16-53: Additional Mitigation and Enhancement Measures

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>S.1: RAPs and Livelihood Restoration Plans (LRPs) for future land acquisition</p> <p>Development of further RAPs and LRPs consistent with the goals, objectives, principles and processes described in the LARF and continuously drawing on lessons learned from RAP1. Resettlement planning and implementation will, be undertaken in one go for a defined geographic area/ footprint to minimise disturbance for communities from resettlement activities and to minimise the risk of double displacement.</p> <p>Specific actions include;</p> <ol style="list-style-type: none"> i. Avoiding forced eviction. ii. The RAPs will adequately cater for the respective interests of the PAPs in accordance with criteria for eligibility and the PAPs choice of type of compensation (cash or in-kind) by ensuring that the process: <ul style="list-style-type: none"> - Provided compensation for loss of assets at replacement cost; - Appropriate disclosure of information, consultation, and informed participation of those affected. - Improves livelihoods or at least restores the livelihoods and standards of living of displaced persons which choose to remain within the project area of influence; and - Improves living conditions among displaced persons which have chosen in-kind compensation through provision of adequate housing with security of tenure at resettlement sites. iii. Livelihood Restoration of Project Affected Persons (PAPs): In compliance with the LARF, support will be provided through the Livelihood Restoration Plans to re-establish community support groups and livelihood groups. Project Proponents will in consultation with local communities, government and civil society, consider investments to restore and improve existing economic activities such as fishing, crop farming, livestock farming, and trade, as well as programmes that support economic diversification for project affected persons. These programmes will be aligned with the strategic objectives outlined within the Project National and Community Content Programme and will consider how project affected persons can be involved in Project employment opportunities (direct and indirect) and how skills learned on the Project can be applied to other sectors in the local area. Specific training and job readiness support programmes that will be considered will include (but are not limited to): <ul style="list-style-type: none"> - Adult Literacy and Numeracy (including Financial literacy) - Business management training and links to microfinance; - Vocational training and linkage to employment; - Food security and agriculture programs (irrigation, crops, vegetables, trees, honey, livestock, fishing); - Improve management of natural resources and access to energy - Improve access to health, water and sanitation - Social assistance for vulnerable groups iv. Financial literacy training and access to financial services for Project Affected Persons (PAPs): Inclusive training in basic financial literacy will be provided to PAPs (men and women) who have opted for cash compensation including advice and assistance on how to open bank accounts, especially for savings. The aim is to minimise the risk of misuse of the compensation package. The Project Proponents will work with suitable partners to facilitate the rollout of banking (mobile where possible) services in remote locations. Additional assistance will also be given as per RAPs consideration on assistance and entitlement. 	<p>Social Impacts: 1, 2, 3, 4, 5, 6, 9, 10, 14, 18, 19, 20</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>v. PAPs will be encouraged to take in-kind compensation. The RAPs will have plans for support to PAPs in the relocation and resettlement process for eligible PAPs who choose in-kind compensation. Design of replacement housing will take into consideration cultural preferences where technically feasible and in accordance with the entitlement matrix to ensure fair and adequate compensation. In compliance with the LARF, the RAPs will include special provisions for vulnerable groups. The orphaned land will be acquired by the project on a case by case basis.</p> <p>vi. Where replacement land has been identified, a suitability assessment will be undertaken to confirm the suitability of the sites in terms of legal due diligence, ground suitability, agricultural potential, water supply, access to public facilities, safety and distance from existing community and social network. The assessment will take into consideration environmental protected areas as well as the locations of future infrastructure development including for associated facilities and supporting infrastructure in order to avoid risks of double displacement.</p> <p>vii. Coordination with other developers:</p> <ul style="list-style-type: none"> - Project will propose to the RAC Chairperson (MEMD) to invite UNRA and Uganda Electricity Transmission Company Limited (UETCL) to participate in the RAC; - Coordination meetings will be held with UNRA and UETCL to advise on best practice approach for resettlement and to continue to share lessons learned from Project experience; and - UNRA and UETCL will be invited to consult with the Project before implementing resettlement to check that any proposed relocation sites do not fall within the Project footprint. - The Project Proponents will be involved as observers of any monitoring and evaluation bodies (e.g. committee) and/or review the monitoring and evaluation documentation of resettlement activities undertaken by UNRA and UETCL in addition to resettlement undertaken for direct Project components. <p>viii. Where land is held collectively (as opposed to individual ownership of land), the RAPs will follow a process of identifying the affected groups and signing agreements with these groups (i.e. families and/ or clans) .</p> <p>ix. Payment of compensation will be made at the household level (to husband and wife), and at the family or clan level where appropriate (through nominated representatives). Costs associated with opening bank accounts and bank charges incurred in the first six months after opening the account will be paid for those who choose cash compensation and are paid through the banking system (to avoid liquid cash injection and security issues). Design of relocation sites and housing will take into consideration cultural preferences.</p> <p>x. Vector and Malaria Control Programme - Specifications for surveillance and monitoring of vectors and vector control activities; Review of building design for resettlement housing to reduce vector-human contact to minimise disease risk.</p> <p>xi. Wherever possible, material for the Project will be sourced from existing borrows pits, to minimise the need for land acquisition.</p>	
<p>Community Impact Management Strategy</p> <p>The Project Proponents will develop a Community Impact Management Strategy for the PACs, which will include an overarching policy statement on the key principles of community impact management (compliant with IFC PS, Ugandan regulations and Project Proponent HSE, Ethics, Anti-Corruption and Anti-Bribery standards). The Community Impact Management Strategy will involve the development of associated community plans in order to incorporate the aspects outlined below. Participative monitoring and evaluation will be part of the Community Impact Management Strategy and, as far as possible, will be integrated into the ESMP for ongoing monitoring of wider environmental and social mitigation implementation.</p>	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>S2: Community Health, Sanitation, Safety and Security Plan – Building capacity for a participatory approach to social impact management, monitoring and evaluation.</p> <p>A participatory model, in partnership with national and local government agencies, relevant NGOs or CBOs, will be followed for the planning and implementation of community programmes to manage and monitor community impacts. Ongoing capacity building support will be provided to help communities and implementing institutions develop competence in prioritising, planning, managing and monitoring development projects and programmes.</p>	<p>Social Impacts: 1, 10, 19, 20, 21, 22</p>
<p>S3: Community Content, Economic Development and Livelihood Plan – Support to education to increase youth employability and improve adult literacy and numeracy.</p> <p>The Project will in consultation with relevant stakeholders (local communities and government, donor agencies, NGOs...), evaluate the feasibility and consider investments to support adult and children educational services provision in the project area to deal with the predicted growth in population and to enhance participation of the local population in the Project workforce and supply chain. The objective of educational support programmes will be to increase the completion rate of secondary school education thereby improving the employability of youths, and to improve adult literacy and numeracy which is a preliminary requirement for capacity building and development of vocational training. Interventions will be selected based on feasibility studies to identify how key challenges to existing education provision can be addressed. The feasibility and long term sustainability of this measure will depend on government providing necessary resources and taking responsibility for ongoing management of the facilities (including staffing and upkeep of facilities), which will depend on availability of sufficient government funding (provided from local and national government). This will be established through an MoU between relevant parties with potential support from donor organisations.</p>	<p>Social Impacts: 4, 5, 12, 13, 14, 15, 16, 19, 25</p>
<p>S4: Community Content, Economic Development and Livelihood Plan – Women and Girls capacity building programme:</p> <p>Feasibility assessment for delivering a girls empowerment programme in partnership with suitable local organization to build confidence of girls and women in PACs (e.g. education and sports programmes for girls).</p>	<p>Social Impacts: 5, 10, 11, 12, 13, 14, 25</p>
<p>S5: Community Health, Sanitation, Safety and Security Plan - Child and Gender Based Violence Prevention Programme</p> <p>A suitable partner will be identified to deliver awareness training to prevent child and gender based violence. The training will focus on increasing sensitisation amongst local communities within the Project Area as well as in influx hotspots (focusing on women and children) on their legal rights to protection from violence and avenues through which incidents of violence can be reported; training of community leaders (political leaders, cultural institutions, religious leaders and local police) to address this issue with members of their communities; and targeted training of male employees and PAPs affected by resettlement against child and gender based violence (GBV). The exact format for delivery of the training and sensitisation programme will be defined following the selection of a suitable partner and completion of a feasibility study but will draw on lessons learned from similar programmes already carried out elsewhere in Uganda. The programme will be implemented for the duration of the Site Preparation and Enabling Works Phase and the beginning of the Construction and Pre-Commissioning Phase (up until peak employment). At that point the need for continuation of the programme will be determined following a review of the outputs and outcomes of its implementation.</p>	<p>Social Impacts: 5, 10, 11, 12, 13, 14, 25</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>S6: Community Health, Sanitation, Safety and SecurityPlan - Legal Aid</p> <p>The Project Proponents will investigate options to facilitate increased access to quality legal aid services to PAPs within Buliisa District. This is likely to take the form of a partnership with a suitable and qualified organisation. The partner will be selected following a due diligence process to establish its suitability to provide such a service in a prompt and efficient manner. The due diligence process should in particular assess the organisation's objectivity (no conflict of interest and no incentives to encourage individuals to pursue legal cases erroneously); knowledge of legal processes and alternative dispute resolution (ADR); knowledge of land rights and the land tenure system in Uganda and the Project Area; experience in sensitisation of local communities about their legal rights; and track record of successfully resolving disputes for legal aid clients through legal proceedings or ADR mechanisms. Emphasis of legal aid provision should be to sensitise communities about their rights and the formal justice system and should avoid risk of trapping participants in court cases. This will be established through an MoU between the Project Proponents and the independent organisation. The MoU will be valid for an initial period of one year.</p>	<p>Social Impacts: 1, 2, 3, 4, 9, 10, 11, 12, 13, 18, 21, 22, 23</p>
<p>S7: Community Environmental Conservation Plan</p> <p>A number of environmental conservation initiatives will be undertaken in partnership with local communities, UWA, environmental and tourism organisations, following feasibility studies, to mitigate the project impacts and to give communities a sense of ownership over the management of their local environment and natural resources. Options that will be considered include but are not limited to:</p> <ul style="list-style-type: none"> • Extension of tree nurseries; • Promotion of alternative fuel use e.g. solar technology, briquettes, fuel saving/ efficient cooking stoves business development; • Sensitisation on poaching and illegal fishing; • Sensitisation on the environmental consequences of deforestation, overgrazing, and over-harvesting of natural resources; • Community based fisheries management and monitoring programme that will entail engagement of communities through BMUs or other suitable local structures engaged in fisheries management e.g. beach landing sites to give them a sense of ownership over the management of their local environment and natural resources. Engage with UWA, National Fisheries Resources Research Institute (NaFIRRI), Ministry Agriculture, Animal Industry and Fisheries and Ministry of Defence to discuss options to support management and monitoring of fishing activities in Lake Albert and rivers within the Project Area e.g. through establishment and better management of protected zones, provision of equipment, advice on designing and implementing monitoring systems, joint training of communities on monitoring and conservation activities; • Sensitisation on the environmental consequences of deforestation, overgrazing, and over-harvesting of natural resources; • Community based tourism and conservation programs to develop alternative forms of income; and • Joint planning with environment and social teams to look at opportunities for both community forest use and use of tree plantations for conservation and to provide buffers around protected areas. This will draw on existing research. • Resettlement Action Plans (RAPs) will provide measures to avoid resettling people within or closer to sensitive habitats or protected areas in order to avoid placing any additional pressure on natural or critical habitats. Any longer term monitoring requirements related to this issue will be agreed with relevant Ugandan departments and international interested groups, where relevant. 	<p>Social Impacts: 3, 10, 11, 23</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>S8: Cultural Heritage and Archaeology Management Plan - Community Cultural Heritage & Archaeology</p> <p>Support cultural activities and enhance the preservation and awareness of cultural heritage and traditions including language. The focus of programme activities will be identified through consultation with local communities and cultural leaders and will take into consideration recommendations included in the 2017 'guidelines by cultural institutions for oil and gas'. This may involve undertaking outreach activities to involve local communities, particularly school children, in understanding and caring for their past.</p>	<p>Social Impacts: 10, 11, 23</p>
<p>S9: Livelihood Restoration Plan (for PAPs) and the Community Content, Economic Development and Livelihood Plan (for PACs) - Financial literacy training and access to financial services for the local workforce and local businesses in the supply chain.</p> <p>Inclusive training in financial literacy and financial management will be provided to the local Project workforce (targeting those unaccustomed to waged employment) including advice and assistance on how to open bank accounts, especially for savings. This aims to help employees to maximise the benefits of increased cash incomes and encourage re-investment of wages into productive activities or savings accounts. This will be provided with the assistance of a relevant local NGO or CBO or financial institutions and will be made available to employees and their families. The Project Proponents will work with suitable partners to facilitate the rollout of banking (mobile where possible) services in remote locations. Financial and business management training and advice will also be provided for local businesses that have expressed interest in participating directly or indirectly in the Project supply chain to promote local business development. Local businesses will be made aware about the opportunity to participate in the programme through announcements on local radio and in local newspapers and will be required to meet minimum criteria (to be established as part of a feasibility study for the programme) for eligibility to participate in the training. The feasibility of expanding the programme to the wider local business community, to further enhance local business development, will be examined following the first phase of programme delivery targeted on the Project's direct and indirect supply chain.</p>	<p>Social Impacts: 1, 2, 4, 9, 14, 15, 18, 19</p>
<p>S10: Community Content, Economic Development and Livelihood Plan (for PACs) - Economic Development of Project Affected Communities (PACs) to enhance their capacity to participate in the project supply chain.</p> <p>Project Proponents will, in consultation with local communities, government and civil society, consider investments to extend livelihood programs (targeting PAPs only) to the wider project affected communities, in order to improve food security and economic resilience of affected communities, develop local capacities and enhance activities such as fishing, crop farming, livestock farming, and trade, as well as programmes that support economic diversification. These programmes will be aligned with the strategic objectives outlined within the Project National and Community Content Programme and will consider how affected communities can enhance their capacity to participate in the project supply chain, and how skills learned on the Project can be applied to other sectors in the local area. Specific training and job readiness support programmes that will be considered will include (but are not limited to):</p> <ul style="list-style-type: none"> • Institutional capacity building (targeting local government, local institutions); • Adult Literacy and Numeracy (including Financial literacy); • Business management training and links to microfinance; • Vocational training and linkage to employment; 	<p>Social Impacts: 10, 12, 13, 14, 15, 16, 18</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<ul style="list-style-type: none"> • Food security and agriculture programs (irrigation, crops, vegetables, trees, honey, livestock, fishing); • Improve access to education and employability of youth and in particular girl & women empowerment; • Improve management of natural resources and access to energy; • Improve access to health, water and sanitation; and • Social assistance for vulnerable groups. 	
<p>Community Health, Sanitation, Safety and Security Plan and the Community Content, Economic Development and Livelihood Plan : <i>Institutional Capacity Building</i></p> <p>Capacity building will be provided for local communities and local institutions. The capacity building programme will include the following components:</p>	
<p>S11: Community Health, Sanitation, Safety and Security Plan –</p> <ul style="list-style-type: none"> • Conflict Resolution & Crime Prevention Capacity Building programmes for local communities and local institutions; • Facilitate dialogue with key partners; • Empower local institutions, NGO and government to find solutions to challenges of land speculation and land disputes; • Support training of community organisations, local leaders and police in mediation and conflict resolution. A suitable partner will be identified to deliver the training; • Build the capacity of the local government and security forces to deal with crime, working in particular with community crime preventers (mayumba kumi) and oil and gas police to provide a coordinated approach to crime prevention; and • Establish a conflict monitoring programme in partnership with local government (District Welfare Officer, Sub county councils, LC1s) and CSOs to monitor the incidence of conflict within villages in order to identify any emerging issues early on to prevent escalation. This may be through provision of equipment to register and track instances of conflict and allow a rapid alert system (e.g. using mobile phones). 	<p>Social Impacts: 1, 2, 3, 10,11, 13, 14, 21,</p>
<p>S12: Community Health and Wellbeing Plan - Anti-bribery and anti-corruption capacity building programmes for local communities and local institutions. Sensitisation on bribery and corruption and provide assistance, in partnership with UHRC or other suitable third party, to local and national governments to establish a whistleblowing mechanism to report corruption.</p>	<p>Social Impacts: 11, 13, 15, 20, 21, 22, 27, 28</p>
<p>S13: Community Content, Economic Development and Livelihood Plan - Institutional Capacity Building - Economic planning.</p> <p>Support capacity building for economic development planning, in partnership with international donors, to help national and local government plan the use of oil revenues during production to finance investments that will allow diversified economic growth.</p>	<p>Social Impacts: 2, 13, 19 15, 16, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30</p>
<p>S14: Community Content, Economic Development and Livelihood Plan - Institutional Capacity Building - Land use planning.</p> <p>The Project Proponents will provide support to the MLHUD and Bulisa District Government to develop a District Land use Plan through financing of</p>	<p>Social Impacts: 3, 5, 6, 7, 21, 22</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>a study that can be used as basis of such planning. The study will consider existing Land use and Land tenure, trends in Land use, and future Land use requirements including for Project infrastructure and for any mitigations required to off-set Project impacts, e.g. relocation Land, influx hotspots, and Land for biodiversity offsetting. The study will also identify areas that will benefit from improved accessibility across Buliisa District.</p> <p>S15: Stakeholder Engagement Plan - Community Engagement Capacity Building programme for local government</p> <p>Measures will be taken to enhance local government's role in community engagement and their capacity to provide proactive information dissemination and feedback on their monitoring activities to local communities. Strengthening technical capacity will need to be supported with an increased resource capacity provided through local and national government budget allocation to provide for sufficient resources to mobilise to communities and undertake engagement activities.</p> <p>Focus will be placed on communicating around some of the key Project impacts and mitigation measures linked to employment, resettlement and influx, including but not limited to:</p> <ul style="list-style-type: none"> • The resettlement process including information about land rights, the valuation process, and mediation mechanisms; • Land speculation through community sensitisation, campaign to raise awareness of land rights implemented in partnership with government, local civil society organisations and community leaders; • The Project's Local Employment Procedure to anticipate conflicts over Project employment and; • The dangers of alcoholism, drug abuse, domestic violence, prostitution and the importance of safe sex. 	<p>Social Impacts: 10, 11, 12, 13, 14, 20, 21, 22</p>
<p>S16 Road Safety and Transport Management Plan and Community Road Safety</p> <p>The Project Proponents will establish a Project Road Safety and Transport Management Plan. All contractors will also be contractually required to develop their own Road Safety and Transport Management Plans in compliance with standards of the Project Proponents and with the overarching Project Road Safety and Transport Management Plan. Specific aspects that will be included in the Plan are:</p> <ol style="list-style-type: none"> i. An overarching policy statement on Road Safety and Transport Management (compliant with IFC PS 4, Ugandan regulations and Project Proponent HSE standards). ii. <u>Traffic assessment</u>: A traffic assessment will be undertaken that will include: <ul style="list-style-type: none"> - Survey to collect existing baseline traffic data along project transport corridor; - Estimation of future baseline traffic flows (without Project); - Forecast cumulative vehicular trips along Project transport corridor; - Impact assessment of increased traffic flow; and - Identify location of key pedestrian (& cattle) road crossing points. iii. <u>Road maintenance</u> should be planned and implemented to keep the roads usable during site preparation and enabling works, and construction and pre-commissioning. A hand over plan will be developed to hand over responsibility for ongoing maintenance of roads to government for the Operations Phase onwards. 	<p>Social Impacts: 5, 6, 7, 9, 13</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>iv. Journey management plan and Route optimisation: Optimising the logistics to maximise use of available vehicles, reduce number of trips and reduce movements on more sensitive routes; using convoys when appropriate (e.g. via using one shared logistics service provider who can ensure appropriate planning across all parts of the Project and ensure efficiencies are made).</p> <p>v. Minimising travel distances: As far as possible, sourcing materials close to the Project site to reduce haulage distances, and therefore the exposure to dust.</p> <p>vi. Maintaining speed limits as defined in the Land transportation procedure e.g. max. 40 km/hr for light trucks and 25 km/hr for heavy trucks transporting material in the Project Area.</p> <p>vii. Use of road signs: Providing temporary road signage during Project works.</p> <p>viii. Use of flag men: Deploying traffic guides (flag men) where necessary, particularly at high-risk locations and to manage road safe crossing points (for access to schools, access to health centres, cattle crossings, etc....).</p> <p>ix. Project and Contractor Vehicle safety specifications, inspection and maintenance programs.</p> <p>x. Project and Contractor Driver: Sensitising drivers, emphasising the need to stick to designated routes and speed limits; all drivers will be required to complete and conduct refresher defensive driving training. All Project drivers will be required to comply with including a 'Code of Conduct' which forbids use of drugs or alcohol when on duty and strictly forbids Project drivers from using prostitutes while they are on a Project related journey.</p> <p>xi. Monitoring & Evaluation framework of the implementation of the Road Safety and Transport Management Plan with the definition of key performance indicators for inputs, outputs and outcomes.</p> <p>Community Road Safety – as part of the Community Health, Sanitation, Safety and Security Plan and in conjunction with the Project Road Safety and Transport Management Plan, additional mitigation measures involving the affected community, local authorities and other project developers will be developed, including (but not limited to):</p> <ul style="list-style-type: none"> i. Community Transport Communication Plan (within the SEP): <ul style="list-style-type: none"> - Providing regular information to stakeholders regarding timing of the Project; - Use of the Grievance Mechanism, to allow recording and follow up of any complaints related to Project traffic and road maintenance; and - Safety briefings for all drivers entering the Project Area. - Coordinate with UNRA on scheduling of roadworks to avoid works on multiple roads taking place simultaneously in order to ensure reasonable access through Project Area for local communities is maintained at all times. ii. Road safety campaign and initiatives: Agree MoU with local government and Uganda Police about a road safety campaign that will include: <ul style="list-style-type: none"> - Sensitisation on road safety e.g. wearing seatbelt, respecting speed limits, not overloading vehicles, keeping safe distance from other vehicles, safe road crossing, dangers of driving under influence of drugs or alcohol, managing the presence of livestock and cattle crossing roads; - Targeted campaigns and provision of equipment to ensure that bicycle and motorcycle users wear appropriate protective helmets and reflective jackets' - Provision of equipment to traffic police to help monitor and enforce speed limits, verification of vehicle safety and driving licenses, use of protective 	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>helmets and other driving rules; and</p> <p>iii. Monitoring & Evaluation framework of the implementation of Community Road Safety initiatives with the definition of key performance indicators for inputs, outputs and outcomes.</p> <p>S17 Influx Management Strategy</p> <p>Development of an Influx Management Strategy to mitigate in-migration impacts and maximise benefits for local communities. Implementation of the strategy will depend on joint coordination between the Project, government, other project developers, local communities and civil society. The Strategy will be built on the recommendations and will set out the overarching approach and objectives for mitigating the negative impacts of influx and enhancing the benefits. The strategy will make reference to more detailed actions and procedures contained within other environmental and social management plans that are relevant to addressing influx. The strategy will also propose a specific monitoring & evaluation framework to measure Project-induced in-migration trends, hotspots and key social impacts throughout the site preparation and enabling works and construction and pre-commissioning phases.</p> <p>Specifically, the Influx Management Strategy will include (but is not limited to):</p> <ol style="list-style-type: none"> i. Working with local government in in-migration hot spots and building their capacity in dealing with impacts. ii. Reviewing the range of management plans which will deal with in-migration impacts and ensuring each Project department is putting in place the required measures. iii. Monitor in-migration impacts with local government and continue to provide capacity building support and report on findings to the Social Affairs Department. iv. The Project will roll out a series of education campaigns and capacity-building training to the PACs on a range of key in-migration impacts including on: <ul style="list-style-type: none"> - The Project's Local Employment Procedure to anticipate conflicts over Project employment and - The dangers of alcoholism, drug abuse, domestic violence, prostitution and safe sex. v. Mechanism (implemented under Labour Management Plan) to verify where job applicants come from (e.g. checking ID cards) so that jobs prioritised for members of local communities are not given to in-migrants. vi. Provision for monitoring of local inflation e.g. price index - feasibility of extending the tool (Price indices) to Buliisa will be investigated. vii. Management of influx hotspots through support of public infrastructure. The Project Proponents will, in consultation with relevant stakeholders (local communities and government, donor agencies, NGOs...), evaluate the feasibility and consider investments to improve access to and capacity of public infrastructure to meet the increased demand particularly in influx hot spots for the following key services: health, water, sanitation, education, etc. Investments will be based on feasibility studies and will align with government development plans and the land use plan (to be developed). The feasibility and sustainability of any measures to support improvement in public infrastructure will depend on input from national and local government stakeholders and/or community associations to provide resources for the ongoing management, staffing and upkeep of such infrastructure. This will be established through and MoU between relevant parties with potential support from donor organisations. 	<p>Social Impacts: 3, 6, 8, 10, 11, 12, 13, 14, 16, 17, 19, 21, 22, 25, 26</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>The Community content, economic development and livelihood plan will include measures to mitigate impact of population growth and in particular increased pressure on farming areas, increased demand for crop products, increased pressure on grazing areas, increased demand for fibres and ornamental resources and rise in harvesting pressure, and increased pressure on fisheries resources due to population growth including looking at ways of providing a registration scheme for the fishing industry (e.g. so only local people are registered and can fish).</p> <p>The Community Health, Sanitation, Safety and Security plan will include measures to address potential impacts of influx and in particular to:</p> <ul style="list-style-type: none"> - monitor water quality and use in PACs; - monitor community health and safety impacts related to influx with the District local governments; and. - provide health and wellness education and communication campaigns programme for local communities in particular on the dangers of alcoholism, drug abuse, domestic violence, prostitution and safe sex. <p>The plan will also include measures to:</p> <ul style="list-style-type: none"> - work with district health teams and health service providers in influx hotspots to identify gaps and provide capacity building measures amongst local health providers; - mitigate impact of increased demand for natural medicines and rise in harvesting pressures on medicinal plants and animals; and - support Central Government working together with Bullisa District Authorities to implement a robust policing system to curtail the increasing criminal tendencies associated to increased influx. <p>Specific measures to assess the risk of and deter influx around Masindi check point including:</p> <ul style="list-style-type: none"> - Operation of Masindi check point as a 'closed camp' following the same rules and procedures in place for other contractor accommodation camps; and - Engagement with Masindi district local government and local police force to discuss requirements to monitor illegal buildings, settlements, trading activities, and illicit activities within the vicinity of the Masindi check point. Support will be provided to facilitate monitoring activities based on a MoU between these parties and may include, for example, provision of vehicles or equipment (cameras, radios, sign posting etc.). 	<p>Social Impacts: 4, 10, 12, 13, 14, 16, 18, 21, 22,, 24, 25</p>
<p>S18 Labour Management Plan</p> <p>A Project Labour Management Plan will be developed by the Project Proponents. All contractors will also be contractually required to develop their own Labour Management Plans in line with TEP Uganda standards. Necessary provisions will be provided in contracts to ensure compliance with the requirements set out in the Labour Management Plan, together with a monitoring system. The Project Labour Management Plan will include:</p> <ol style="list-style-type: none"> i. An overarching policy statement on labour and working conditions (compliant with national laws and regulations, IFC PS 2 and ILO conventions). ii. Development of a comprehensive set of human resource policies, in line with national laws and regulations, IFC PS 2 and ILO conventions: <ul style="list-style-type: none"> - Working Conditions and Management of Worker Relationship, including: Working Conditions & Terms of Employment including minimum 	<p>Social Impacts: 4, 10, 12, 13, 14, 16, 18, 21, 22,, 24, 25</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>wages, working hours and rest time; Workers' Organisations and Freedom of Association; Non-Discrimination & Equal Opportunity; Retrenchment; Anti-harassment and Management of Grievances (Employee Grievance Mechanism for all workers;</p> <ul style="list-style-type: none"> - Recruitment: Measures to provide for a transparent, fair and non-discriminatory and ethical recruitment processes, which is developed in consultation with local communities and local government, will be provided; This shall also include measures to avoid unethical recruiting practices of migrant workers, and the recruitment policy and procedure shall clearly indicate in clear terms that the confiscation of identity documents by the employer is strictly forbidden. - Protection of the Workforce, including measures to identify and avoid child labour and forced labour, - Occupational Health & Safety including the provision to all employees and workers of PPE in good condition and free of charge; - Workers Engaged by Third Parties; and - Procurement and the Supply Chain: auditing of third parties who use subcontracted workers to make sure they are reputable and legitimate and have an appropriate Environmental and Social Management System (ESMS) that will allow them to operate in a manner consistent with the Project's requirements. Requirements should be incorporated into contractual agreements with third party employers. Due diligence to ensure that the Project does not inadvertently support, via its primary suppliers, child labour or forced labour, by including such wording in terms and conditions of business, and ensuring that it is part of all future contractual agreements. Where risks of use of child labour or forced labour are considered significant, the Project will institute a program of periodic monitoring and inspection of main suppliers' facilities. In cases where the Project's influence over suppliers is limited, suppliers should be informed that future contracts will be dependent on these issues being addressed. iii. Procedures to manage the issues in point (b) will be developed. These will be clearly written, explaining step-by-step how Human Resources (HR) policies will be implemented. All of the above should be clearly communicated to workers at all levels of the company, in languages that they can understand. iv. An employee whistleblowing system will be established by the Project and its contractors to provide a confidential mechanism to report any cases of bribery and corruption, or labour rights infringements within the workforce. v. The project and its contractors will implement a Workforce Code of Conduct, including (but not limited to) the following specifications: <ul style="list-style-type: none"> - Most project workers will reside at the Project camp where services like meals, waste management services and clean water will be provided, minimising need for worker interaction with local communities. - Requirement that all workers (direct and contracted) must do Anti-Bribery and Corruption and Ethics and Compliance training annually. - Cultural awareness induction training for all new staff regarding local customs, traditions and responsible community relations. - Ban on alcohol and drug use for workers - Rules to forbid staff/contractors from purchasing charcoal & provide sensitisation against unsustainable use of firewood and charcoal. - General site rules will include ban on bushmeat hunting/purchase for employees and employee sensitisation against bush meat hunting/purchase (Within component on environmental awareness training)." vi. The Project and its contractors will provide a Retrenchment Plan: to include analysis of alternatives and measures to minimise adverse impacts of collective dismissal including notification of public authorities, and provision of information to and consultation with workers and their 	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>organisations.</p> <p>vii. The project will provide a Workforce Accommodation Plan consistent with national and international guidelines (IFC, WB, EBRD). Provisions will be included within the supply chain management component of the Labour Management Plan to perform an HSE and sanitation check of contractor/sub-contractor accommodation outside the construction camps directly managed by the Project proponents or primary contractors, within the Project Area of Influence.</p> <p>viii. Training certification system: Successful completion of training and attainment of competency in new skills will be formally recognised through a certification system. This system will also help trainees find work elsewhere upon termination of employment on the Project. In addition, on-the-job training in simple tasks will be certified.</p> <p>ix. Measures to ensure gender-fair hiring and workplace policies. This will include development of a Diversity Implementation Procedure, enforcement of a zero-tolerance policy on sexual harassment, equal pay for men and women who perform the same jobs, and provision of maternity and paternity leave in line with national requirements.</p>	<p>Social Impacts: 15, 16, 17, 24, 26, 28, 29, 30</p>
<p>S19 National and Community Content Programme , Economic Development & Livelihood Plan</p> <p>A National and Community Content Programme (NCCP) for the Project is under development, which aims to increase local economic participation and increase local business access to contract opportunities. The ongoing stakeholder engagement programme will include engagement with local business associations, local and national government to jointly discuss the National and Community Content Programme.</p> <p>The NCCP will incorporate the following key points:</p> <ol style="list-style-type: none"> A clear set of objectives and milestones on employment and training of National citizens for the Project. A clear set of objectives and milestones on procurement of Goods and Services from Ugandan companies, registered entities and Ugandan citizens for the Project. A clear set of objectives and milestones for Technology Transfer, including capacity building, support to education and training, etc. <p>Creation of joint-ventures and partnerships will be promoted between national and international companies to foster technology transfer and capacity building in O&G.</p> <p>Alignment with government strategies including:</p> <ul style="list-style-type: none"> - Business Education, Technical Education, Vocational Education (BTVET) Policy and Strategic Plan 2011-2020, which provides for skilling Uganda with a special focus on the oil and gas sector; and - Skilling Uganda Technical, Vocational Education and Training (TVET) Reform Policy, which seeks to provide and enable technical institutes and polytechnic colleges to provide technical vocational training based on industrial needs and the needs of specific sectors. <p>A Skills Development Programme will be defined and will include:</p> <ul style="list-style-type: none"> - Assessment of capacity development needs to ensure local businesses are able to deliver to required standards; - Requirements for educational and skills development and means to help meet the requirements will be detailed The Project Proponents and contractors will work with the sector skills council of the Uganda Petroleum Institute, Kigumba and other education & training institutions to review courses and curricula and to modify them to fit to the sector needs and demands through the Tilenga “Train the Trainers” programme. 	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>Promotion of the Industrial Enhancement Centre: Establishment of supplier linkage program in partnership with government, development partners and local NGOs and CBOS to help local businesses to access skills development programs particularly technical mentoring and business development skills.</p> <p>Labour & Supplier Mobility Strategies:</p> <ul style="list-style-type: none"> - Development, in partnership with GoU and other relevant industry stakeholders, a labour mobility strategy (looking at options for redeploying skilled professionals from oil and gas industry to other fields); and - Development, in partnership with GoU and other relevant industry stakeholders a strategy for redeploying suppliers to other industries in Uganda or foreign markets, which demand similar goods and services. When selecting priority sectors for national content development, the programme will consider the possibility of using products of these sectors in other industries in Uganda and/ or overseas. <p>NCC Monitoring & Evaluation: Ongoing monitoring and reporting of implementation of local employment procedures will be undertaken; and</p> <ul style="list-style-type: none"> - Monitoring and reporting of local procurement impacts using business activity and output indicators including value of goods and services procured locally, regionally and nationally; number of local suppliers; number of employees hired by local suppliers; and local procurement as a percentage of total procurement. <p>The Project will update its Community Employment Procedure to manage local recruitment via clear, transparent process which will be compliant with Code of Conduct and to anticipate conflicts over Project employment. The Community Employment Procedure will set out the processes to:</p> <ul style="list-style-type: none"> - Appointment of Community Employment Officers (respectively within the Project Proponents' CTLO team and the contractor CTLO teams) who will have responsibility for enhancing opportunities for local communities to benefit from employment opportunities created by the Project, e.g. through regular disclosure of information on employment opportunities and a fair, transparent and ethical recruitment processes, and to monitor and report back to relevant stakeholders on local content in a transparent way. - Verify where job applicants come from (e.g. checking ID cards) so that jobs prioritised for members of local communities. - Prioritisation of PAPs (first) and local residents (second), for local employment opportunities particularly where semi-skilled and non-skilled work is needed. - Fill vacancies for unskilled labour, semi-skilled labour from the Project Areas through a transparent and fair process that takes into consideration gender balance, equal opportunities should be given to women where feasible – some opportunities should be reserved for women. - Measures will be undertaken to engage marginalised groups including women and disabled, to allow the opportunity for employment benefits to reach all parts of local communities. - Provide a measure to ensure that anyone signing a contract for work understands the content of the contract they are signing. - The local recruitment processes will include but not limited to: adverts on radio, print, and notice boards. <p>The project and its contractors will foster partnerships with local government and civil society to promote healthy work environments and sensitise local communities about labour rights.</p>	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>National supplier development program aiming at building capacity at national level will be encouraged and monitored:</p> <ul style="list-style-type: none"> - Mapping of local businesses to identify their capabilities and identify which businesses could benefit most from opportunity to participate in local supply chains; - Criteria will be developed to identify opportunities and scopes of work that would best fit local, regional and national procurement; - Goods and services will be procured from local communities where feasible and available, and following a risk assessment of potential indirect impacts (i.e. related to food security for example); - Capacity building will consider opportunities for local suppliers to supply to the Project as well as other clients and markets; - Adoption of tendering and procurement documents to suit local businesses as far as possible within the standards required for the Project; <p>Regional / Community supplier development program aiming at building capacity at local level will be encouraged and monitored:</p> <ul style="list-style-type: none"> - Mapping of local businesses to identify their capabilities and identify which businesses could benefit most from opportunity to participate in local supply chains; - Criteria will be developed to identify opportunities and scopes of work that would best fit local, regional and national procurement; - Goods and services will be procured from local communities where feasible and available, and following a risk assessment of potential indirect impacts (i.e. related to food security for example); - Capacity building will consider opportunities for local suppliers to supply to the Project as well as other clients and markets; - Adoption of tendering and procurement documents to suit local businesses as far as possible within the standards required for the Project; <p>All contractors will be required to develop their own National and Community Content Plans that align with the overarching NCCP for the Project and must be able to demonstrate measures and staff organisation they will implement to comply with the Project's overarching NCCP. The Project Proponents and contractors will work with local and national government to develop a human resources database detailing skills and education levels available locally. This database will be consulted to identify the maximum number of locally available candidates for roles. Project Proponents and contractors will deliver a skills training programme to enhance employability of the local workforce.</p>	
<p>S20 Community Impact Management Strategy - Compensation Procedure for temporary disturbance associated to the Project Activity</p> <p>A Compensation Procedure that provides standard and transparent compensation agreements for any accidental or unexpected damage directly due to the Project activities to either individual or community assets will be developed by the Project Proponents. All contractors and sub-contractors will be required to follow the measures and requirements set out in the Compensation Procedure.</p> <p>The Compensation Procedure will define the process for assessing claims and providing compensation for the following potential impacts that could arise upon evidence that is it specifically related to the Project activities:</p> <ul style="list-style-type: none"> • Accidental damage to buildings, structures, equipment, machinery, land, crops, livestock, water resources and graves that are owned by community members or by the community; • Unexpected additional temporary land intake during the site preparation and enabling works phase or construction and pre-commissioning 	<p>Social Impact: 18</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>phase for land that is owned by community members or by the community; and</p> <ul style="list-style-type: none"> • Unexpected temporary disturbance to the economic activity of community members. • The Compensation Procedure will define: • The types of accidental damage and temporary disturbance that would be eligible for compensation; • The roles and responsibilities for the Project Proponents and Contractor in recording and resolving claims for compensation; • The process for receiving and assessing claims; • The basis for compensation, including standard compensation rates; • The process for providing compensation and closing compensation claims; and • Templates for use in recording claims and compensation • The following types of damage or disturbance to economic activity are not covered by this Compensation Procedure: • Damage that is or will be subject to police investigation or legal proceedings, or involves personal injury or death; • Damage or disturbance to affected assets and economic activity that is part of the planned land expropriation and resettlement programme. This is covered by the resettlement process, and claims related to land expropriation will be managed under the scope of the RAPs; • Damage or disturbance to environmental, health, security aspects that is covered under the scope of the environmental and biodiversity and other social management plans; • Disturbance that does not lead to a noticeable impact on economic activity. Such complaints should be managed through the Grievance Mechanism; • Damage to Contractor or Project Proponent assets, or injury to their personnel; and • Disturbance to Contractor or Project Proponent economic activity, e.g. through labour stoppages. <p>The Compensation Procedure will not replace the procedure for recording HSE incidents. HSE incidents that lead to a claim for compensation under the Compensation Plan should also be recorded and managed as HSE incidents.</p>	
<p>S21 Community Impact Management Strategy – Transparent accounting</p> <p>The Project Proponents will make payments of taxes and royalties in a transparent, accurate and timely manner during the operations phase. Sound financial principles and accounting processes will be used and the Project will publish an annual statement of taxes and royalties paid, in line with good international practice as promoted by the Extractives Industry Transparency Initiative Standards.</p>	<p>Social Impact: 22</p>
<p>S22 Tourism Management Plan</p> <p>A Tourism Management Plan that sets out objectives and procedures for managing relationships with and working with key tourism stakeholders to minimise potential negative effects of the Project on tourism and maximising benefits will be developed by the Project Proponents. Activities scheduling should consider avoiding tourism peak activities. All contractors and sub-contractors will be required to follow the measures and</p>	<p>Social Impact: 23</p>

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<p>procedures set out in the plan.</p> <p>The Tourism Management Plan will include the following components:</p> <ul style="list-style-type: none"> i. Communication Plan: to set out the requirements for regular engagement with tourism stakeholders (including UWA and tourism businesses) to: <ul style="list-style-type: none"> - notify them of upcoming Project activities especially those that may affect the peak tourism season (e.g. transport); - provide a mechanism to get regular feedback from them about the Project and the effectiveness of mitigation measures intended to avoid impacts on tourism; - notify them of the Grievance Mechanism; - notify them of Project contact details including those of an appointed tourism officer from within the CTLO team; and - Produce information pamphlets for visitors to the National Park that outline the activities taking place during each phase of the Project. Pamphlets should be provided to lodges and at entrances to the National Park. ii. Feasibility study of alternative tourism routes: the Project Proponents will, in partnership with UWA, Wetlands Management Department (WMD) and Ministry of Tourism, undertake a feasibility study of opening up alternative tourism routes within and outside the park such that tourism activities and Project activities can be separated as far as possible. iii. Visitor Centre: the Project Proponents will assess the feasibility of opening a visitor centre at a central tourism location (e.g. the Paraa ferry crossing or the Masindi gate) to provide information to tourists and visitors about the Project including about how it is working with UWA to manage impacts in the park and enhancement measures being implemented to protect and promote biodiversity and support local communities. iii. Educational visits: the Project Proponents will assess the feasibility, in consultation with contractors, MEMD, UWA, ministry of education, and universities, of using the Project to provide educational opportunities for students and other technical specialists through visits to Project facilities. iv. Tourism promotion strategy: the Project Proponents will support tourism stakeholders to develop a strategy to promote tourism nationally and internationally through a communication campaign that advertises the areas of MFNP unaffected by Project activities as well as the wider area's attractions e.g. Ramsar sites. v. Monitoring: Regular monitoring of impacts on tourism will be undertaken such as through surveys of tourists post-visit, particularly during the peak tourist season, to understand their perceptions of the Project. The adequacy of the existing tourism baseline will be assessed as a basis for future monitoring and updated if necessary. <p>Support of UWA. If significant impacts on tourism which result in loss of revenue are identified (through a detailed assessment conducted by a suitable and qualified organization selected by the project proponent), options to provide in-kind support UWA in the management of MFNP will be assessed (in compliance with project anti-bribery and anti-corruption policies).</p>	<p>Social Impacts: 1, 2, 3, 8, 9, 10, 14, 15, 18, 19, 21, 22</p>
<p>S23 Stakeholder Engagement Plans</p> <p>The Project SEP will be reviewed and updated at the start of each Project phase and at least annually with phases. In addition to Project SEP and Project CTLOs, all contractors will also be required to have their own SEP and to appoint their own CTLOs (with supervisor where required). All SEPs will align with the Project Proponents' corporate requirements for stakeholder engagement and will include provisions to:</p>	

Additional Mitigation or Enhancement Measure	Potential Impacts addressed
<ul style="list-style-type: none"> • Acknowledge 2017 Guidelines by Cultural Institutions for Oil and Gas; • Provide for recruitment of CTLOs who speak local languages; • Provide for the training and capacity building of CTLOs; • Produce all stakeholder materials in local languages; • Provide sensitisation of contractor workers on local culture; and • Grievance management procedure. <p>The Project SEP will include provisions for the establishment of a dedicated webpage and will assess the feasibility of setting up and managing social media platform(s) to facilitate information disclosure and communication with a wider local, national and international audience. The webpage and social media tools will be developed in line with a wider External Communications and Media Strategy developed for the Project and will be managed by the Corporate Affairs team.</p> <p>Information campaigns will be incorporated into the Stakeholder Engagement Plan on the Project's local employment policy and procedure. The Grievance Mechanism Procedure will include measures to record, respond to and monitor grievances related to employment and recruitment.</p>	

16.8.3.4 Residual Impacts - Site Preparation and Enabling Works

A summary of the residual significance of impacts following the implementation of the additional mitigation is given in Table 16-54.

Table 16-54: Residual Impacts during Site Preparation and Enabling Works Phase

Potential Impact	Potential Impact Significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 1: Physical Displacement	High adverse	Low adverse
Social Impact 2: Economic Displacement	High adverse	Moderate adverse
Social Impact 3: Changes to traditional land tenure exacerbating land conflict	High adverse	Moderate adverse
Social Impact 4: Increased impoverishment following resettlement due to indebtedness and lack of financial literacy	High adverse	Low adverse
Social Impact 5: Increased travel distance from existing education facilities for displaced communities	Moderate adverse	Low adverse
Social Impact 6: Displacement of public infrastructure due to land acquisition	Moderate adverse	Low adverse
Social Impact 7: Improved accessibility within the Project Area due to upgrading of access roads and construction of new roads	Moderate beneficial (<i>Buliisa District</i>)	Moderate beneficial
	Low beneficial (<i>other districts</i>)	
Social Impact 8: Increased pressure on education facilities	High adverse	Moderate adverse
	Moderate adverse	
Social Impact 9: Disruption to road users due to Project traffic and construction and upgrading of roads	Moderate adverse	Low adverse
Social Impact 10: Social disarticulation and increased family and community conflict	High adverse (<i>Buliisa and Nwoya Districts</i>)	Low adverse
	Moderate adverse (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality</i>)	

Potential Impact	Potential Impact Significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 11: Changes to traditional way of life leading to loss of sense of place and community	High adverse	Low adverse
Social Impact 12: Increase in crime rate due to Project induced in-migration and increased wealth generation	Moderate adverse	Low adverse
Social Impact 13: Increased pressure on police	Moderate adverse	Low adverse
Social Impact 14: Increase in prostitution	Moderate adverse	Low adverse
Social Impact 15: Direct and indirect employment opportunities	Low beneficial	Moderate beneficial
Social Impact 16: Increased demand for goods and services stimulating economic growth	Moderate beneficial (<i>Buliisa and Nwoya Districts</i>)	Moderate beneficial
	Low beneficial (<i>Pakwach Town Council, Hoima and Masindi, local business owners, national business community</i>)	Moderate beneficial
Social Impact 17: Development of more educated and skilled workforce	High beneficial (<i>Buliisa and Nwoya District</i>)	High beneficial
	Moderate beneficial (<i>Hoima, Masindi and Pakwach Town Council, local business community</i>)	
	Low beneficial (<i>national business community</i>)	
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Moderate adverse (<i>Buliisa and Nwoya Districts</i>)	Low adverse
	Low adverse (<i>other districts</i>)	
Social Impact 19: Local price inflation	High adverse (<i>Buliisa and Nwoya Districts</i>)	Moderate adverse
	Moderate adverse (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality</i>)	
Social Impact 20: Community empowerment and increased community participation in decision making	Moderate beneficial	High beneficial

Potential Impact	Potential Impact Significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 21: Overburdening of and challenges to local government	Moderate adverse (<i>local government</i>)	Low adverse
	Low adverse (<i>national government and cultural Institutions</i>)	
Social Impact 22: Corruption within local and national government and in Project supply chain	Moderate adverse (<i>local governments and businesses</i>)	Low adverse
	Low adverse (<i>national government and businesses</i>)	
Social Impact 23: Loss of tourism revenue	Moderate adverse	Low adverse
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Moderate adverse	Low adverse
Social Impact 25: Increased use of child labour	Moderate adverse	Low adverse

16.8.4 Assessment of Impacts: Construction and Pre-Commissioning

16.8.4.1 Introduction

During the Construction and Pre-Commissioning phase a number of the impacts that were experienced during the Site Preparation and Enabling Works phase will continue to be experienced. The majority of impacts will be indirect or induced impacts due mainly to the secondary effects of immigration and Project employment and procurement. The scale of influx is predicted to be higher during Construction and Pre-Commissioning than it was during Site Preparation and Enabling Works as the economic benefits of the Project (direct and indirect employment and procurement) increase. No further land expropriation will be required in the Construction and Pre-Commissioning phase, and therefore there will be no further displacement impacts.

16.8.4.2 Potential Impacts - Construction and Pre-Commissioning

The impacts listed in Table 16-55, which were assessed during the Site Preparation and Enabling Works phase, are predicted to also occur during the Construction and Pre-Commissioning phase. The initial significance of the impacts (pre-additional mitigation) is given in the table with comments provided to explain the rating. The additional mitigation measures presented in Table 16-53 will be implemented to address these impacts. Additional impacts expected in the Construction and Pre-Commissioning Phase are described in section 16.8.4.2.1.

Table 16-55: Construction and Pre-Commissioning Phase Impacts already described under Site Preparation and Enabling Works

Potential Impact	Potential Significance during Site Preparation Phase (pre additional mitigation)	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Comments
Social Impact 8: Increased pressure on education facilities	High adverse for PACs in Buliisa and Nwoya Districts	High adverse	This impact is likely to be exacerbated during the Construction and Pre-Commissioning phase due to higher levels of influx and higher wealth generation in the area, which will likely both lead to increased demand for school places.
	Moderate adverse for PACs in Pakwach TC, Hoima and Masindi		
	Moderate adverse for local schools		
Social Impact 9: Disruption to road users from Project traffic ¹⁰²	Moderate adverse	Moderate adverse	<p>During Construction and Pre-Commissioning there will be an increase in the volume of traffic using local roads with a total additional 6,929 monthly traffic movements expected and 2,400 estimated monthly trips on the inter field access roads south of the Victoria Nile. Traffic will include a mixture of heavy and light machinery, which will operate seven days a week during daylight hours. It is expected that a peak of approximately 2,000 truck deliveries per month will be required to the CPF and well pads during the peak Construction and Pre-Commissioning Phase.</p> <p>Traffic into and around the Project Area is also likely to increase due to in-migration into the area, which will lead to an increase in overall numbers of road users, increased demand for transport services such as boda bodas and mini bus taxis, and increased numbers of vehicles transporting goods into and out of the area.</p>
Social Impact 10: Social disarticulation and increased family and community conflict	High adverse (<i>Buliisa and Nwoya Districts</i>)	High adverse	Higher levels of in-migration during the Construction and Pre-Commissioning phase are predicted to make this a more significant source of community tension. Legacy issues related to the resettlement process are also likely to be a continued source of tension in the beginning of the Construction and Pre-Commissioning Phase. Widespread job losses at the end of this phase may be another source of tension; there is a risk that men who feel that they can no longer be providers for their family may become depressed or angry, which can manifest in increased alcohol abuse and violence.
	Moderate adverse (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality</i>)		
Social Impact 11: Changes to	High adverse	High adverse	Higher levels of in-migration during the Construction and Pre-Commissioning

¹⁰² Risks to public safety caused by the significant increase in vehicle movements within the Project Area is assessed within the Chapter 18: Health and Safety. Air quality and noise and vibration impacts caused by Project traffic movements are covered under Chapter 6 and Chapter 7, respectively.

Potential Impact	Potential Significance during Site Preparation Phase (pre additional mitigation)	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Comments
traditional way of life leading to loss of sense of place and community			phase are predicted to make this a more significant source of impact on community sense of place. Higher levels of Project employment during this phase are also likely to further exacerbate impacts on traditional way of life. Increased physical changes to the environment as the Project is constructed will also exacerbate this impact.
Social Impact 12: Increased crime	Moderate adverse	Moderate adverse	Continued in-migration and higher levels of wealth generation during the Construction and Pre-Commissioning phase are predicted to continue to increase crime rates and/ or perceptions of increased crime compared to baseline levels.
Social Impact 13: Increased pressure on police	Moderate adverse	Moderate adverse	During the Construction and Pre-Commissioning phase the level of in-migration is likely to increase, which will continue to place increased pressure on local police.
Social Impact 14: Increased prostitution	Moderate adverse	High adverse	Higher levels of in-migration and higher levels of wealth generation during the Construction and Pre-Commissioning phase are predicted to make this a more significant impact than during the Site Preparation and Enabling Works phase. The Masindi check point will also become operational during the Construction and Pre-Commissioning phase and (pre-mitigation) due to the high numbers of truck drivers transiting through this area is likely to act as a pull factor for sex workers and informal traders.
Social Impact 15: Direct and indirect employment opportunities	Moderate beneficial (<i>Buliisa and Nwoya Districts</i>) Low beneficial (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality, supply chain workers, unskilled and skilled members of the workforce</i>)	Moderate beneficial	There will be a gradual build-up of workers during construction as well as an eventual reduction and stabilisation of these numbers for the remaining production cycle. During the drilling and construction phase the number of workers is expected to increase from approximately 100 to 2,000 people per month. At the peak of construction the Project will employ approximately 4,000 people per month. The Project has in place the following targets for the employment of nationals by year 5: <ul style="list-style-type: none"> - Management Staff – 45% - Technical Staff – 60% - Other staff (i.e. support and middle level staff) – 95%

Potential Impact	Potential Significance during Site Preparation Phase (pre additional mitigation)	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Comments
Social Impact 16: Increased demand for goods and services stimulating economic growth	Moderate beneficial (<i>PACs in Buliisa and Nwoya Districts</i>)	High beneficial	During the Construction and Pre-Commissioning phase the higher number of Project workers, increased demand for goods and services for the Project will further enhance this impact. During this phase there is also likely to be an increase in income generation within the Project Area due to an increase in the movement of people through the area further expanding the market for local goods and services.
	Low beneficial (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality, local business owners, national business community</i>)		
Social Impact 17: Development of more educated and skilled workforce	High beneficial (<i>PACs in Buliisa and Nwoya Districts</i>)	High beneficial	Higher levels of employment and procurement and the longer duration of this phase will lead to more opportunities for the development of a more educated and skilled workforce.
	Moderate beneficial (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality, local business community</i>)		
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Moderate adverse (<i>Buliisa and Nwoya Districts</i>)	Moderate adverse (<i>Buliisa and Nwoya Districts</i>)	As per Site Preparation and Enabling Works phase.
	Low adverse (<i>other districts</i>)	Low adverse (<i>other districts</i>)	
Social Impact 19: Local price inflation	High adverse (<i>Buliisa and Nwoya Districts</i>)	High adverse	Higher levels of in-migration and higher levels of wealth generation during the Construction and Pre-Commissioning phase are predicted to exacerbate inflationary pressures caused by increased demand for local goods and services. The Project will also place a higher level of demand on local goods and services during this phase. Any inflationary pressures on land prices linked to land acquisition for the Project are likely to be less than during the Site Preparation and Enabling Works phase, however, as the land acquisition process for the Project will be complete.
	Moderate adverse (<i>Pakwach Town Council, Hoima Municipality and Masindi Municipality</i>)		
Social Impact 20: Community empowerment and increased community participation in decision making	Moderate beneficial	Moderate beneficial	As per Site Preparation and Enabling Works phase.
Social Impact 21: Overburdening of and challenges to local government	Moderate adverse	Moderate adverse	As per Site Preparation and Enabling Works phase.
Social Impact	Moderate adverse (<i>local</i>)	Low adverse	Corruption related to the land acquisition

Potential Impact	Potential Significance during Site Preparation Phase (pre additional mitigation)	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Comments
22: Corruption within local and national government and in Project supply chain	<i>governments and businesses)</i> Low adverse (<i>national government and businesses)</i>		process will no longer be a risk but otherwise the sources and effects of this impact are as per the Site Preparation and Enabling Works phase.
Social Impact 23: Loss of tourism revenue	Moderate adverse	High adverse	A higher level of activity during this phase may place even greater pressure on the local tourism industry.
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Moderate adverse	Moderate adverse	As per Site Preparation and Enabling Works phase, though the extent of this impact may be greater due to the higher number of sub-contractors supplying goods and services to the Project.
Social Impact 25: Increased use of child labour	Moderate adverse	Moderate adverse	As per Site Preparation and Enabling Works phase, though the extent of this impact may be greater due to the higher number of sub-contractors supplying goods and services to the Project.

Additional potential impacts that could be experienced in the Construction and Pre-Commissioning phase, which were not relevant to the earlier phase of the Project, are outlined below.

16.8.4.2.1 Employment and Economic Development

Potential Social Impact 26: Widespread Job Losses Leading to Sudden Fall in Income Levels and Local Spending

As the Project transitions from construction into pre-commissioning the workforce will be gradually reduced from a peak of 4,400 people per month during peak construction to 200 in the Commissioning and Operations phase, which will lead to a fall in income for direct and indirect workers and a consequent reduction in spending in the local area, leading to loss of revenues for local providers of goods and services and therefore potentially further induced job losses. Although workers and local businesses may be no worse-off in terms of income and employment status than they were prior to the Project, sudden loss of employment and business revenue can create stress and may be perceived as a potential negative impact.

It is assumed that due to the nature of the work (construction), employees will be aware of the expected duration of employment and the size of the construction workforce will also decline steadily over a period of months.

Human Rights Implications

The following human rights are affected by this potential impact:

- Right to work;
- Right to adequate standard of living; and
- Right not to be deprived of its own means of subsistence.

All potential impacts are of moderate severity. Widespread job losses have a tangible impact on the right to work, right to adequate standard of living (including adequate food, clothing and housing and to continuous improvement of living conditions), and right not to be deprived of one's own means of subsistence. The potential impacts are all moderately irremediable.

Significance Assessment

The potential impact of job losses on the wellbeing of workers and local businesses is an indirect¹⁰³ adverse impact of low magnitude. This is based on regional extent, short term duration, reversibility in the short-term, and one-off frequency. The sensitivity of receptors (Project workforce and local business community) is medium giving an overall potential impact significance that is considered to be **Moderate Adverse**.

16.8.4.3 Additional Mitigation and Enhancement

The additional mitigation listed for the Site Preparation and Enabling Works phase (see Section 16.7.3) is considered valid for this phase of the Project and will continue to be implemented through Construction and Pre-Commissioning.

16.8.4.4 Residual Impacts - Construction and Pre-Commissioning

A summary of the residual significance of impacts following additional mitigation is given in Table 16-56.

Table 16-56: Residual Impacts during Construction and Pre-Commissioning

Potential Impact	Potential Impact Significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 8: Disruption to education facilities	High adverse	Low adverse
Social Impact 9: Disruption to road users from Project traffic	Moderate adverse	Low adverse
Social Impact 10: Social disarticulation and increased family and community conflict	High adverse	Moderate adverse
Social Impact 11: Changes to traditional way of life leading to loss of sense of place and community	High adverse	Moderate adverse
Social Impact 12: Increased crime	Moderate adverse	Low adverse

¹⁰³ Although the job losses are directly caused by the Project, the impact on employee welfare is considered indirect.

Potential Impact	Potential Impact Significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 13: Increased pressure on police	Moderate adverse	Low adverse
Social Impact 14: Increased prostitution	High adverse	Moderate adverse
Social Impact 15: Direct and indirect employment opportunities	Moderate beneficial	High beneficial
Social Impact 16: Increased demand for goods and services stimulating economic growth	High beneficial	High beneficial
Social Impact 17: Development of more educated and skilled workforce	High beneficial	High beneficial
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Moderate adverse (<i>Buliisa and Nwoya Districts</i>)	Low adverse
	Low adverse (<i>other districts</i>)	
Social Impact 19: Local price inflation	High adverse	Moderate Adverse
Social Impact 20: Community empowerment and increased community participation in decision making	Moderate beneficial	High beneficial
Social Impact 21: Overburdening of and challenges to local government	Moderate adverse	Low adverse
Social Impact 22: Corruption within local and national government and in project supply chain	Low adverse	Low adverse
Social Impact 23: Loss of tourism revenue	High adverse	Moderate adverse
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Moderate adverse	Low adverse
Social Impact 25: Increased use of child labour	Moderate adverse	Low adverse
Social Impact 26: Widespread job losses leading to sudden fall in income levels and local spending	Moderate adverse	Low adverse

16.8.5 Assessment of Impacts: Commissioning and Operations

16.8.5.1 Introduction

Several of the potential impacts likely to be experienced during earlier Project phases are no longer predicted to be a source of potentially significant social impacts by the time of commissioning and operation, i.e.:

- No further displacement will occur;
- Increased pressure on infrastructure and services due to influx is expected to have eased by the commissioning and operations phase due in part to a reduction in population following the peak of construction activity, and also due to the predicted increased investment in local infrastructure and services during preceding years to meet additional capacity demands; and
- The level of Project traffic will be far lower, likely to be limited to supply delivery, security patrols, maintenance and repairs, and transportation of operational personnel to and from site, and is not predicted to be a source of disturbance to road users.

During Commissioning and Operations the Project will begin generating revenue for the government, which will be a source of beneficial impacts.

16.8.5.2 Potential Impacts - Commissioning and Operations

The impacts listed in Table 16-54 and Table 16-55, which were assessed during the Site Preparation and Enabling Works phase or Construction and Pre-Commissioning Phase, are predicted to also occur during the Commissioning and Operations phase. The initial significance of the impacts (pre-additional mitigation) is also given in Table 16-57 with comments provided to explain the rating. The table is followed by a description of the additional impacts (benefits) expected in this phase.

Table 16-57: Commissioning and Operations Phase Impacts already described under Previous Phases

Potential Impact	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Commissioning & Operations Phase (pre additional mitigation)	Comments
Social Impact 15: Direct and indirect employment opportunities	Moderate beneficial	Low beneficial	The number of direct and indirect employment opportunities during the Commissioning and Operations phase will be far lower than during previous phases. It is envisaged that Project operations will employ approximately 200 workers (covering approximately 100 job positions) during this phase.
Social Impact 16: Increased demand for goods and services stimulating economic growth	High beneficial	Low beneficial	There will be a much lower level of demand for goods and services during the Commissioning and Operations phase due to a reduction in Project activity.

Potential Impact	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Commissioning & Operations Phase (pre additional mitigation)	Comments
Social Impact 17: Development of more educated and skilled workforce	High beneficial	Moderate beneficial	The lower number of employees during this phase means fewer people will benefit from continued learning and skills development on the Project. However, the long duration of this phase means there is a long term opportunity for people to benefit.
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Moderate adverse (<i>Buliisa and Nwoya Districts</i>)	Low adverse	There remains a risk of damage to assets or injury to livestock during this phase though the risk from Project traffic will be far lower due to a significant reduction in the number of vehicle movements.
	Low adverse (<i>other districts</i>)		
Social Impact 20: Community empowerment and increased community participation in decision making	Moderate beneficial	Moderate beneficial	There will be less need for high levels of engagement with local communities in relation to the day-to-day management and monitoring of impacts (due to fewer disturbances from Project activities in the Commissioning and Operations Phase). However, there will be a greater opportunity for local communities to engage with government around the responsible investment of revenues generated by the Project in local public services.
Social Impact 21: Overburdening of and challenges to local government	Moderate adverse	Insignificant	While there will still be increased pressure on local government during the operations phase due to requirements for them to monitor oil and gas activities, it is expected that government's capacity will have improved due to experience gained in the preceding phases and that increased revenues for local government from the Project itself will help to provide the necessary funds for additional resourcing to meet the increased demand for their services.
Social Impact 22: Corruption within local and national government and in Project supply chain	Low adverse	Moderate adverse	Significant revenues generated by the Project for local and national government may provide additional incentives for corruption.

Potential Impact	Potential Significance during Construction & Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Commissioning & Operations Phase (pre additional mitigation)	Comments
Social Impact 23: Loss of tourism revenue	High adverse	Low adverse	It is envisaged that the impact significance will be reduced during the operational phase as there will be a reduction in visual intrusion due to less infrastructure and traffic engaged in Project activities.
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Moderate adverse	Low adverse	The extent of this impact will be smaller due to the lower number of suppliers used during this phase. By this stage it is likely that suppliers who were also engaged during previous Project phases will have had time to raise their standards to meet those of the Project Proponents.
Social Impact 25: Increased use of child labour	Moderate adverse	Low adverse	The extent of this impact will be smaller due to the lower number of suppliers used during this phase. By this stage it is likely that suppliers who were also engaged during previous project phases will have had time to raise their standards to meet those of the Project Proponents.

Additional potential impacts likely to be experienced in the Commissioning and Operations phase are outlined below.

16.8.5.2.1 Employment and Economic Development

Potential Social Impact 27: Increased Revenue for Uganda Leading to National Economic Growth.

The Project will generate significant government revenues during the operations phase in the form of royalties, annual fees, the State's share of profit oil, and corporate income tax. Revenues from these licences are estimated to average about USD 1.5 billion per year for the duration of production of the licensed fields in blocks EA-1A, CA-1 and LA-2 North. For context, in 2015, Uganda's GDP was USD 27.5 billion. This revenue will make a significant contribution to government income and to the growth of Uganda's economy. Increased government revenue provides new opportunities for public expenditure which have the potential for multiple beneficial impacts. The exact allocation of increased government revenue to development locally or nationally is not known at this stage and will be decided independently by Ugandan authorities.

Significance Assessment

The predicted induced potential impact associated with increased government revenues on the national Ugandan economy will be of high magnitude (national extent, long term duration, reversibility in the long-term and constant frequency). Receptor sensitivity (national population) is medium. The overall potential impact significance is therefore considered to be **High Beneficial**.

16.8.5.3 Additional Mitigation and Enhancement

The additional mitigation listed in Table 16-53 is considered valid for this phase of the Project.

16.8.5.4 Residual Impacts during Commissioning and Operations

A summary of the residual significance of impacts following additional mitigation is given in Table 16-58.

Table 16-58: Residual Impacts during Commissioning and Operations

Potential Impact	Potential Impact significance (prior to additional mitigation)	Residual Impact Significance
Social Impact 15: Direct and indirect employment opportunities	Low beneficial	Moderate beneficial
Social Impact 16: Increased demand for goods and services stimulating economic growth	Low beneficial	Moderate beneficial
Social Impact 17: Development of more educated and skilled workforce	Moderate beneficial	Moderate beneficial
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Low adverse	Low adverse
Social Impact 20: Community empowerment and increased community participation in decision making	Moderate beneficial	Moderate beneficial
Social Impact 21: Overburdening of and challenges to local government	Insignificant	Insignificant
Social Impact 22: Corruption within local and national government and in Project supply chain	Moderate adverse	Low adverse
Social Impact 23: Loss of tourism revenue	Low adverse	Low adverse
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Low adverse	Insignificant
Social Impact 25: Increased use of child labour	Low adverse	Insignificant
Social Impact 27: Increased revenue for Uganda	High beneficial	High beneficial

16.8.6 Assessment of Impacts: Decommissioning

16.8.6.1 Introduction

The decommissioning program will be developed during the Commissioning and Operations Phase of the Project. It is likely that the technological options and preferred methods for decommissioning of such systems will be different in 25 years' time. The status of the Project at the time of decommissioning will also impact on the chosen decommissioning methods.

During the Decommissioning phase there will be an increase in the intensity of Project activities relative to the previous 25 years of production. Sources of negative social impacts are likely to include increased Project vehicle movements; influx in response to the increased workforce requirements; some temporary economic displacement due to access restrictions and removal of economic assets (crops) in places where pipeline sections are dug-up and cleaned and to gain access to sites where surface facilities are removed; widespread job losses at the end of decommissioning; and loss of revenues for local and national government. Sources of beneficial impact include creation of direct and indirect employment opportunities and increased demand for local goods and services.

16.8.6.2 Potential Impacts - Decommissioning

The potential impacts listed in Table 16-59, which were assessed during previous phases, are predicted to also occur during the Decommissioning phase. The significance of the potential impacts (pre-additional mitigation) is given in the table with comments provided to explain the rating. The same additional mitigation measures will be implemented to address these potential impacts. Section 16.8.6.2.1 describes the additional potential impacts for this phase.

It should be noted that the potential significance ratings given in this section for decommissioning impacts are provisional only as there is insufficient detail at this stage of the programme of decommissioning to make an accurate prediction of impacts and their significance. The effects of the decommissioning phase will be assessed closer to the time to confirm the impacts and appropriate mitigation measures.

Table 16-59: Decommissioning Phase impacts already described under Previous Phases

Potential Impact	Potential Significance during Construction and Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Decommissioning Phase (pre additional mitigation)	Comments
Social Impact 2: Economic Displacement	Not applicable	Low adverse	The extent and duration of economic displacement is likely to be small as it will mostly be limited to areas within the pipeline RoW where farmers are growing shallow rooted crops.
Social Impact 4: Increased impoverishment due to land speculation, indebtedness, lack of financial literacy and misuse of compensation payments	Not applicable	Low adverse	The extent and duration of economic displacement is likely to be small as it will mostly be limited to areas within the pipeline RoW where farmers are growing shallow rooted crops.

Potential Impact	Potential Significance during Construction and Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Decommissioning Phase (pre additional mitigation)	Comments
Social Impact 8: Increased pressure on education facilities	High adverse	Low adverse	There is likely to be some influx associated with decommissioning activities, which risks placing pressure on existing education facilities; however, the capacity of local educational infrastructure is expected to have improved by the time of decommissioning so will be more able to deal with increased numbers of students. The extent of the impact will be local and duration will likely be short term.
Social Impact 9: Disruption to road users from Project traffic	Moderate adverse	Low adverse	There is likely to be an increase in the level of traffic associated with Project activities as well as potential influx, which will affect road users. However, the road infrastructure in the Project Area will have improved from baseline conditions and is therefore likely to be more capable of absorbing the increase in traffic numbers.
Social Impact 12: Increased crime due to Project induced in-migration	Moderate adverse	Low adverse	There is likely to be some influx during the decommissioning phase, which risks placing additional pressure on the local police force. However, the capacity of the police force to detail with issues related to population growth is expected to have improved from baseline conditions.
Social Impact 13: Increased pressure on local police force	Moderate adverse	Low adverse	There is likely to be some influx during the decommissioning phase, with an associated risk of increase in crime. However, the level of influx during decommissioning is unlikely to be as high as that experienced during the Site Preparation and Enabling Works and Construction and Pre-Commissioning phases of the Project.

Potential Impact	Potential Significance during Construction and Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Decommissioning Phase (pre additional mitigation)	Comments
Social Impact 14: Increase in prostitution	High adverse	Low adverse	There will be some influx during the decommissioning phase, most likely made of predominantly of single males seeking to benefit from Project related economic opportunities. This brings with it a risk of increase in prostitution. However, the level of influx during decommissioning is unlikely to be as high as that experienced during the Site Preparation and Enabling Works and Construction and Pre-Commissioning phases of the Project.
Social Impact 15: Direct and indirect employment opportunities	Moderate beneficial	Moderate beneficial	The number of direct and indirect employment opportunities during the Decommissioning phase will be similar to the Construction and Pre-Commissioning Phase.
Social Impact 16: Increased demand for goods and services stimulating economic growth	High beneficial	High beneficial	There will be a similar level of demand for goods and services during the decommissioning phase due to an increase in the intensity of Project activity.
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Moderate adverse	Low adverse	There remains a risk of damage to assets or injury to livestock during this phase. The risk posed from Project traffic will be lower as there will likely be lower total traffic movements than compared to the Construction and Pre-Commissioning phase.
Social Impact 23: Loss of tourism revenue	High adverse	Moderate adverse	Level of visual intrusion due to increased level of vehicles and equipment required for decommissioning activities is expected to be less than that experienced during the Construction and Pre-Commissioning phase.

Potential Impact	Potential Significance during Construction and Pre-Commissioning Phase (pre additional mitigation)	Potential Significance during Decommissioning Phase (pre additional mitigation)	Comments
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Moderate adverse	Low adverse	By this stage it is likely that suppliers who were also engaged during previous Project phases will have had time to raise their standards to meet those of the Project Proponents.
Social Impact 25: Increased use of child labour	Moderate adverse	Low adverse	By this stage it is likely that suppliers who were also engaged during previous Project phases will have had time to raise their standards to meet those of the Project Proponents.
Social Impact 26: Widespread job losses leading to sudden fall in income levels	Moderate adverse	Moderate adverse	As per Construction and Pre-Commissioning phase.

Additional potential impacts likely to be experienced in the Decommissioning phase are outlined below.

16.8.6.2.1 Employment and Economic Development

Potential Social Impact 28: Loss in National Government Revenues at Project Closure Adversely Impacting National Economy

At Project closure, the payment of royalties and taxes will stop, leading to a decrease in government revenues and reduced expenditure in the economy. The potential impact of this will depend on how other sources of revenue have grown and the proportion provided by the Project at the time of closure. As the Project moves towards closure there will be a gradual slowdown in activity and in revenue. Therefore the loss in revenue will not be a sudden impact and government will have sufficient time to plan for it.

Significance Assessment

Loss of revenue and resultant potential adverse impacts on the national economy will be a direct adverse impact of moderate magnitude. This is based on national extent, long-term duration, reversibility in the short-term, and one-off frequency. Receptor sensitivity (national government) is low giving an overall potential impact significance that is **Moderate Adverse**.

Potential Social Impact 29: Loss in Local Government Revenues at Project Closure Adversely Impacting Local Economy

Local government revenues will also be reduced at Project closure. Again, the potential impact of this will depend on how other sources of revenue have grown over the lifetime of the Project and the proportion provided by the Project at the time of closure. Local government will also have time to plan for the reduction in revenue as there will be a gradual slowdown in Project activity and revenue.

Significance Assessment

Loss of revenue and resultant potential adverse impacts on the local economy will be a direct adverse impact of low magnitude. This is based on local extent, long-term duration, reversibility in the short-term, and one-off frequency. Receptor sensitivity (local government) is medium giving an overall potential impact significance considered to be **Moderate Adverse**.

16.8.6.3 Additional Mitigation and Enhancement

The additional mitigation presented in Table 16-53 is considered still valid in this phase and will continue to apply.

16.8.6.4 Residual Impacts during Decommissioning

A summary of the residual impacts during Decommissioning following implementation of additional mitigation is given in Table 16-60.

Table 16-60: Residual Impacts during Decommissioning

Potential Impact	Potential Impact significance (prior to additional mitigation)	Residual Impact significance
Social Impact 2: Economic Displacement	Low adverse	Low adverse
Social Impact 4: Increased impoverishment due to land speculation, indebtedness, lack of financial literacy and misuse of compensation payments	Low adverse	Insignificant
Social Impact 8: Increased pressure on education facilities	Low adverse	Insignificant
Social Impact 9: Disruption to road users from Project traffic	Low adverse	Insignificant
Social Impact 12: Increased crime due to project induced in-migration	Low adverse	Insignificant
Social Impact 13: Increased pressure on local police force	Low adverse	Insignificant
Social Impact 14: Increase in prostitution	Low adverse	Low adverse
Social Impact 15: Direct and indirect employment opportunities	Moderate beneficial	High beneficial
Social Impact 16: Increased demand for goods and services stimulating economic growth	High beneficial	High beneficial
Social Impact 18: Economic loss due to damage to assets or injury to livestock from Project activities	Low adverse	Low adverse
Social Impact 23: Loss of tourism revenue	Moderate adverse	Low adverse

Potential Impact	Potential Impact significance (prior to additional mitigation)	Residual Impact significance
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	Low adverse	Low adverse
Social Impact 25: Increased use of child labour	Low adverse	Low adverse
Social Impact 26: Widespread job losses leading to sudden fall in income levels	Moderate adverse	Low adverse
Social Impact 29: Loss in revenue for national government	Moderate adverse	Low adverse
Social Impact 30 Loss in revenue for local government	Moderate adverse	Low adverse

16.9 In-Combination Effects

As described in **Chapter 4: Project Description and Alternatives**, the Project has a number of supporting and associated facilities that are being developed separately (i.e. they are subject to separate permitting processes and separate ESIA or EIAs). These facilities include:

- Tilenga Feeder Pipeline;
- East Africa Crude Oil Export Pipeline (EACOP);
- Waste management storage and treatment facilities for the Project;
- 132 Kilovolt (kV) Transmission Line from Tilenga CPF to Kabaale Industrial Park; and
- Critical oil roads.

As these facilities are directly linked to the Project and would not be constructed or expanded if the Project did not exist, there is a need to consider the potential in-combination impacts of the Project and the supporting and associated facilities. This is distinct from the Cumulative Impact Assessment (CIA) which consider all defined major developments identified within the Project's AoI (and not just the associated facilities) following a specific methodology which is focussed on priority Valued Environmental and Social Components (VECs) (see **Chapter 21: Cumulative Impact Assessment**).

The in-combination impact assessment considers the joint potential impacts of both the Project and the supporting and associated facilities. The approach to the assessment of in-combination impacts is presented in **Chapter 3: ESIA Methodology**, Section 3.3.5.

The identified residual impacts of the Project listed in

Table 16-61 below are predicted to have the potential to be exacerbated due to in-combination effects with supporting and associated facilities. A comment is provided on the potential in-combination impacts and the need for additional collaborative mitigation between project proponents to address these impacts.

Table 16-61: In-Combination Effects

Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
Social Impact 1: Physical displacement	Displacement for supporting infrastructure and associated facilities will further reduce availability of replacement land and create increased demand for new housing or construction materials.
Social Impact 2: Economic displacement	Displacement for supporting infrastructure and associated facilities will further reduce availability of replacement land for livelihoods.
Social Impact 3: Changes to traditional land tenure system	Influx into the region will be exacerbated due to in-migration related to development of supporting infrastructure and associated facilities. This, along with the increased level of displacement, is likely to exacerbate the impact of changes to traditional land tenure system.
Social Impact 7: Improved accessibility within Project Area	<p>Oil critical roads will be upgraded for the Project including the R1 linking Buliisa to Hoima; R2 from Masindi to Bisio; R3 linking Masindi to Bugungu; R4 from Hoima to Masindi; and R5 from Kigumba to Masindi.</p> <p>The improved road network will improve access into and out of the Project Area and this could have a number of induced beneficial impacts for local communities including, potential increase in:</p> <ul style="list-style-type: none"> • Trade (increased transport of goods into and out of the area) and subsequent economic development impacts such as growth in local businesses, employment, availability of goods and services. • Visitors to the area with spending power providing a further boost to the local economy. • Retention of public servants including teachers and health care personnel who were previously reluctant to live in the area due to its perceived isolation and long travel distance to nearest towns.
Social Impact 8: Increased pressure on education facilities	<p>Influx into the region will be exacerbated due to in-migration related to development of supporting infrastructure and associated facilities. Wealth generation will also be increased due to the higher level of employment and procurement opportunities associated with other developments.</p> <p>These two factors will likely place even greater pressure on existing education facilities.</p>
Social Impact 9: Disruption to road users from Project traffic, construction and upgrading of access roads	<p>Traffic required for construction of supporting infrastructure and associated facilities will increase disruptions to road users.</p> <p>Influx into the region will be exacerbated due to in-migration related to development of supporting infrastructure and associated facilities. This will likely lead to increased traffic on roads in the region.</p>
Social Impact 10: Social disarticulation and increased family and community conflict	This potential impact is likely to be exacerbated due to the higher level of influx and displacement associated with development of supporting infrastructure and associated facilities.

Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
Social Impact 11: Changes to traditional way of life leading to loss of sense of place and community	This potential impact is likely to be exacerbated due to the higher level of influx and displacement associated with development of supporting infrastructure and associated facilities.
Social Impact 12: Increased crime	This potential impact is likely to be exacerbated due to the higher level of influx associated with development of supporting infrastructure and associated facilities.
Social Impact 13: Increased pressure on local police force	This potential impact is likely to be exacerbated due to the higher level of influx associated with development of supporting infrastructure and associated facilities.
Social Impact 14: Increased prostitution	This potential impact is likely to be exacerbated due to the higher level of influx and higher levels of employment (and disposable income, which may be spent on prostitution) associated with development of supporting infrastructure and associated facilities.
Social Impact 15: Direct and indirect employment opportunities	The high number of combined direct and indirect employment opportunities is expected to enhance this potential impact.
Social Impact 16: Increased demand for goods and services stimulating economic growth	The high number of combined direct and indirect employment opportunities is expected to enhance this potential impact.
Social Impact 17: Development of more educated and skilled workforce	The high number of combined direct and indirect employment opportunities is expected to enhance this potential impact.
Social Impact 19: Local price inflation	This potential impact is likely to be exacerbated due to the higher level of influx, higher levels of employment (and disposable income), as well as increased demand for goods and services from other developers associated with development of supporting infrastructure and associated facilities.
Social Impact 21: Overburdening of and challenges to local government	This potential impact is likely to be exacerbated due to the higher level of influx associated with development of supporting infrastructure and associated facilities.
Social Impact 24: Impact on welfare of workers in the Project supply chain due to poor enforcement of standards to uphold labour and working conditions	This potential impact is likely to be exacerbated due to the higher level of demand for work from contractors and sub-contractors associated with development of supporting infrastructure and associated facilities without a parallel increase in capacity of employment inspectors and courts to supervise workplaces.
Social Impact 25: Increased use of child labour	<p>This potential impact is likely to be exacerbated due to the higher level of demand for work from contractors and sub-contractors associated with development of supporting infrastructure and associated facilities without a parallel increase in capacity of employment inspectors and courts to supervise workplaces.</p> <p>The higher level of influx associated with development of supporting infrastructure and associated facilities are also likely to exacerbate this impact.</p>

Additional collaborative mitigation measures to help reduce any adverse in-combination effects include:

- Project Proponents will invite other developers to participate in joint planning initiatives with local government and other relevant stakeholders, and will continue to share best practices to share lessons learnt from implementation of mitigation measures addressing socio-economic impacts such as economic physical displacement, influx, prostitution, employment and procurement for the Project. Where feasible, other developers will be invited to invest expertise or resources in the joint implementation of initiatives addressing these impacts;
- The Project Proponents will invite other developers, local and national government and other relevant stakeholders to participate in joint planning initiatives to address influx. Feasibility of jointly sponsoring a regional level Influx Management Strategy will be assessed;
- Lessons learned from education and skills training and capacity building programmes will be shared with other developers. Where feasible, other developers will be invited to invest expertise or resources in the joint implementation of these programmes.
- Project Proponents will invite other developers to participate in joint planning initiatives with local government and other relevant stakeholders to (i) optimise traffic flows in consideration of required vehicle movements for all developments (ii) jointly invest expertise and/ or resources to enhance the capacity of local traffic police (iii) jointly invest expertise and/ or resources to implement a road safety campaign within local communities and (iv) provide a platform to share 'lessons learned' in relation to vehicle and traffic management.
- Lessons learned from capacity building for local police in the Project Area (undertaken as part of the Project's Community Impact Management Strategy and associated plans) will be shared with other developers. Where feasible, other developers will be invited to invest expertise or resources in the joint implementation of such capacity building programmes;
- The Project Proponents will invite other developers, local and national government and other relevant stakeholders to participate in joint planning initiatives to maximise opportunities for local communities to access employment opportunities on the various developments;
- Lessons learned from education and skills training and capacity building programmes will be shared with other developers. Where feasible, other developers will be invited to invest expertise or resources in the joint implementation of these programmes;
- The Project Proponents will invite other developers, local and national government to participate in risk assessments to identify whether demand for local goods and services for their projects will lead to inflationary pressures on those goods and services (e.g. risk of driving up local food prices);
- The Project Proponents will share lessons learned on managing labour and working conditions in their supply chain with other developers, local and national government. This may include, for example, sharing results of due diligence and audits on supply chain companies such that other developers are aware of any high risk companies; and
- The Project Proponents will also invite other developers to jointly assess the feasibility of enhancing the capacity of government employment inspectors at the district and national level.

16.10 Unplanned Events

There is the potential for unplanned events to lead to a wide range of social and socio-economic impacts. **Chapter 20: Unplanned Events** considers a number of unplanned activities that may lead to social impacts. By their very nature, these impacts are not expected to occur, however if they did occur they have the potential to constitute an emergency or lead to significant impacts on humans.

16.11 Cumulative Impact Assessment

Chapter 21: Cumulative Impact Assessment provides an assessment of the potential cumulative effects of the Project together with other defined developments in the Project Aol. The CIA focussed on VECs that were selected on the basis of set criteria including the significance of the effects of the Project, the relationship between the Project and other developments, stakeholder opinions and the status of the VEC (with priority given to those which are of regional concern because they are poor or declining condition). On the basis of the selection process, a number of relevant VEC's to the Social impact assessment were selected, and consequently included within the CIA, including:

- Access to safe drinking water resources;
- Primary and secondary school education;
- Access to land and shelter; and
- Social cohesion.

Further information on the CIA is therefore provided in **Chapter 21: Cumulative Impact Assessment**.

16.12 Conclusions

Impact assessment criteria were developed and utilised for assessing the potential social impacts from the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations; and Decommissioning phases of the Project, and include impact magnitude and receptor sensitivity. The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the four phases of the Project.

The main source of social impacts will be from Project induced in-migration, land acquisition and resettlement, employment and procurement opportunities. Additional mitigation measures outlined will help to mitigate the adverse impacts and enhance the beneficial impacts identified in this chapter. However, some moderate adverse impacts will remain despite additional mitigation. These are:

Site Preparation and Enabling Works Phase:

- Economic Displacement;
- Changes to Traditional Land Tenure System;
- Increased Pressure on Education Facilities;
- Local Price Inflation; and
- Loss of Tourism Revenue.

Construction and Pre-Commissioning Phase:

- Social Disarticulation and Increased Community and Family Conflict;
- Changes to Traditional Way of Life leading to Loss of Sense of Place and Community;
- Increase in Prostitution; and
- Loss of Tourism Revenue.

Taking into account additional mitigation measures it is not considered that there will be any residual moderate or high significance impacts during the Commissioning and Operations or Decommissioning phases.

The Project is also expected to lead to a number of residual moderate and high significance beneficial impacts that will be experienced at the local and national level:

All phases:

- Improved Accessibility within the Project Area;
- Direct and Indirect Employment Opportunities;
- Increased Demand for Goods and Services Stimulating Economic Growth;
- Development of more Educated and Skilled Workforce; and
- Community Empowerment and Increased Community Participation in Decision Making.

Commissioning and Operations Phase:

- Increased Revenue for Uganda Leading to National Economic Growth.

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17 Archaeology and Cultural Heritage

17.1 Introduction

This Environmental and Social Impact Assessment (ESIA) Chapter presents an assessment of the potential impacts on archaeology and cultural heritage associated with the plan to develop the discovered oil fields located in the Lake Albert region of Uganda.

Cultural heritage is an important component of the cultural identity of communities, groups and individuals, and of social cohesion (UNESCO 2003). Cultural heritage is defined as artefacts, monuments, buildings and sites that have a diversity of values including symbolic, historic, artistic, aesthetic, ethnological or anthropological, religious, scientific and social significance (UNESCO 1972). Cultural heritage includes tangible cultural heritage (movable and immovable cultural heritage), intangible or living cultural heritage; and natural heritage.

Cultural heritage thus includes both tangible forms of cultural heritage with archaeological (prehistoric), palaeontological, historical, cultural, artistic, and religious values, unique features or objects that embody cultural values, and intangible forms of culture such as cultural knowledge and practices of communities embodying traditional lifestyles (IFC 2012). Cultural heritage also includes archaeology, which is the scientific study of the physical evidence of past human societies recovered through artefact collection and analysis, and excavation. Physical archaeology includes portable antiquities, monuments, historic buildings, historic landscapes, cemeteries and burial areas. Archaeological sites are a finite, irreplaceable and non-renewable cultural resource and form an intrinsic part of the cultural heritage of the people of Uganda. Throughout this chapter, the term cultural heritage is used to refer to all cultural heritage (tangible and intangible), including palaeontology and archaeology. Historical monuments and objects of archaeological, palaeontological, ethnographical and traditional interest are protected under the Historical Monuments Act 1967 (Cap 46) & Historical Monuments (Amendment) Decree (No.6) of 1977.

In order to facilitate the assessment of these potential impacts, this ESIA Chapter provides a description of the legislation and policy framework, assessment methodology, baseline conditions at the site and its surroundings, assessment of the Project impacts and the mitigation measures required to avoid, reduce or offset any significant adverse effects, and the likely residual effects after these measures have been employed. The likely potential for cumulative impacts when considered along with other schemes in the surrounding area has also been discussed.

The Project has been designed to avoid impacts on cultural heritage where feasible, while balancing cultural heritage considerations with other environmental, social and engineering requirements. Where there is uncertainty and where significant cultural heritage impacts remain, this chapter also presents suitable mitigation measures which aim to minimise predicted impacts.

Other baseline sections covering aspects of relevance to the archaeology and cultural heritage baseline, referenced throughout the chapter, include:

- **Chapter 6: Air Quality and Climate;**
- **Chapter 7: Noise and Vibration;**
- **Chapter 8: Soils and Geology;**
- **Chapter 10: Surface Water;**
- **Chapter 11: Landscape and Visual;**
- **Chapter 13: Terrestrial Vegetation;**
- **Chapter 16: Social;**
- **Chapter 18: Health and Safety;**
- **Chapter 19: Ecosystem Services;** and
- **Chapter 20: Unplanned Events.**

17.2 Scoping

During the scoping phase a desktop study was conducted to compile and analyse existing baseline data available for the study area. A gap analysis was undertaken on the existing data to determine requirements for additional primary data collection needed to undertake the impact assessment.

The Scoping process identified the potential impacts to archaeology and cultural heritage that could occur as a result of the construction, operation and decommissioning of the Project. These potential impacts are summarised in Table 17-1. It is worth noting that the Project phasing and identified list of potential impacts have evolved during the completion of this ESIA and consequently build and expand on those originally identified in Table 17-1 during the Scoping phase.

Table 17-1: Potential archaeology and cultural heritage impacts

Potential Impact	Potential Cause	Potential Sensitivity	Phase
Potential direct and indirect impacts on designated and non-designated historical and heritage assets and their setting, resulting in damage and reduced aesthetic value of assets.	Site preparation and construction activities and the physical presence of the finished operational components.	Local residents within the Project Area and visitors and users of the protected areas including MFNP.	Construction Operation Decommissioning
Potential impacts on archaeological features (known and unknown).	Site preparation and construction/decommissioning activities, including in particular disturbance of previously undisturbed land.	Known and unknown archaeological features within the Project Area.	Construction / Decommissioning
Potential indirect impacts cultural sites, resulting in disturbance.	Construction/ decommissioning and operational activities with potential to cause noise and vibration, reduce visual aesthetics, restrict access for ritual ceremonies, breach traditional religious taboos, damage tangible structures and items associated with traditional religious practices, and affect the tranquillity and meaning of the site.	Cultural sites within the Project Areas and users / visitors to the sites.	Construction Operation Decommissioning

17.3 Legislative Framework

A full overview of relevant policies, laws and regulations is provided within **Chapter 2: Policy, Regulatory and Administrative Framework**. Specific policies relating to Archaeology and Cultural Heritage are outlined below.

17.3.1 National Standards

Cultural heritage is protected by the Constitution of Uganda (as amended 2005), and tangible heritage is protected by the Town and Country Planning Act 1951, the Land Acquisition Act 1965, the Historical Monuments Act 1967 and Historical Monuments (Amendment) Decree (No. 6) of 1977, the National Environment Act 1995, the Uganda Wildlife Act 1996 and the National Environment Management Act 1998. The Historic Monuments Act 1967 provides for the preservation, protection and promotion of historic monuments and objects of archaeological, palaeontological, ethnographic and traditional interest. This Act is currently being revised but is unlikely to affect the Project substantially, as the assessment method and proposed mitigation already follows Good International Industry Practice (GIIP).

Section 30 of the Electricity Act 1999 requires that before a license is issued, the developer shall provide NEMA the description of the impact of the project on various topics including cultural heritage (NEMA 2004, 15).

Intangible aspects of cultural heritage and traditional practices are protected under the Traditional Rulers (Restitution of Assets and Properties) Act 1993, the Institution of Traditional Leaders or Cultural Leaders Act 2011 and the Copyright Act and Neighbouring Rights Act 2006.

Burials are protected under the Penal Code Act 1950 (Art. 120 & 121), the Public Health Act 1935 (Part XIV, Cemeteries) and customary practice. Such sites are respected by local populations.

The government of Uganda has formulated a number of policies for cultural heritage protection and promotion. The policy instruments include the National Tourism Policy 2003, National Cultural Policy of 2006, the National Oil and Gas Policy 2008, Uganda Vision 2040 (2013) which encourages positive cultural practices and underlines the importance of cultural heritage to the tourism sector, National Tourism Policy 2014, the National Environment Management Policy 2014. The National Medicines Policy 2015 highlights the need to regulate traditional and complementary medicines; legislation is in preparation. The Uganda Wildlife Policy 2014 highlights the cultural values of wildlife and the integration of sustainable traditional cultural values into management of Protected Areas. The Museums and Monuments Policy 2015 provides a framework to preserve and protect heritage, promote sustainable heritage management through tourism sites, museums and cultural centres and promote respect for Uganda’s cultural diversity and history. Uganda Cultural Policy 2006 notes that:

‘Culture is the sum total of the ways in which a society preserves, identifies, organises, sustains and expresses itself. Uganda is endowed with a rich and diverse cultural heritage, which includes sixty-five indigenous communities with unique characteristics... Culture concerns itself with socially transmitted behaviour patterns, arts, beliefs, institutions and all other products of human work and thought. Culture includes intangible and tangible heritage, which is varied, complex, and in constant evolution. The tangible heritage includes monuments or architecture, art and crafts, sites, manuscripts, books and other objects of artistic and historical interest. The intangible heritage includes language, oral traditions, performing arts, music, festive events, rituals, social practices, traditional craftsmanship, knowledge and practices concerning nature.’

In addition, the Cross Cultural Foundation Uganda has developed Guidelines by Cultural Institutions for Oil and Gas Companies operating in the Albertine Graben (CCFU, 2017) in conjunction with the three major cultural institutions in the Albertine Graben (Acholi, Alur Kingdom and Bunyoro-Kitara Kingdom).

Table 17-2: Applicable national legislation, and national and regional policies

Instrument	Objective	Relevance to Project
National Legislation		
Constitution of Uganda (as amended 2005) (15 February 2006)	The 1995 Constitution of the Republic of Uganda (as amended) 2005 lays the premise for all the laws that have a bearing on culture by: <ul style="list-style-type: none"> – Obligating the State and citizens to preserve and protect the culture of preservation of public property and Uganda’s heritage (Principle of XXV); – Obligating the State to promote and preserve those cultural values and practices which enhance the dignity and well-being of Ugandans (Principle XXIV); – Mandating the central Government to manage national monuments, antiquities and archives as parliament shall determine 189(1) schedule 6(10); and – Requiring districts to cooperate to promote cultural and traditional lands (5th Schedule article 178). In section 13a of the same Schedule it mandates parliament to gazette National Heritage sites. – The Constitution (Amendment) Article 3 of the Constitution (Amendment) (No.2) Act, 2005 mandates Regional Assemblies under the Regional tier system of governance to handle cultural matters relating to the traditional or cultural leaders, clan and sub clan leadership, cultural and traditional practices (cultural funeral rites) and cultural institutions by establishing specialized committees for them. The Ugandan Constitution highlights the 	Informs identification of responsibilities towards heritage and cultural values, gazetted sites, and consultation regarding cultural matters.

Instrument	Objective	Relevance to Project
	<p>powers entrusted to the local governments and all stakeholders in handling cultural heritage matters.</p> <p>The Constitution also sets out cultural rights, languages, traditional and indigenous cultural interests.</p>	
Public Health Act 1935 (Cap. 281)	Cemeteries (Part XIV) sets out rules for establishing and authorising cemeteries, systems for permitting exhumation and the closure of cemeteries.	Defines responsibilities in consultation about and relocation of graves.
Penal Code Act 1950 (Cap. 120)	Sets out offences, including trespassing on burial places (Art. 120) and hindering burial (Art. 121).	Defines responsibilities in protection of graves.
Town and Country Planning Act 1951 (Cap. 246)	Provides for the preservation of buildings and objects of artistic, architectural, archaeological or historical interest.	Identifies responsibilities for the preservation of buildings and objects of artistic, architectural, archaeological or historical interest.
The Land Acquisition Act 1965	<p>This Act makes provision for the procedures and method of compulsory acquisition of land for public purposes whether for temporary or permanent use. The Minister responsible for land may authorize any person to enter upon the land and survey the land, dig or bore the subsoil or any other thing necessary for ascertaining whether the land is suitable for a public purpose. The Government of Uganda is supposed to pay compensation to any person who suffers damage as a result of any action. Any dispute as to the compensation payable is to be referred to the Attorney General or court for decision.</p> <p>The above is also supported by the Historical and Monuments Act 1968, Cap 46 which states that, the Minister may, for the purposes of preservation of any object declared under this Act, request the Minister responsible for land matters to acquire, pursuant to the Land Acquisition Act, any land which appears to the Minister to be required for the purposes of preserving or affording access to the object. Any object and any land acquired as the result of a request made under subsection (2) shall be vested in the Uganda Lands Commission (ULC).</p>	Informs procedures and method of compulsory acquisition, compensation and dispute resolution, including preservation of and access to statutorily protected heritage assets.
Historical Monuments Act 1967 (Cap 46) & Historical Monuments (Amendment) Decree (No.6) of 1977	<p>The Act makes provisions for the preservation and protection of historical monuments and objects of archaeological, palaeontological, ethnographical and traditional interest and for other matters connected therewith.</p> <p>It also elaborates that an object of archaeological, palaeontological, ethnographical or historical interest includes; any site, place, structure, erection of building, memorial, tumulus, cairn, pit dwelling, trench, fortification, irrigation work, cave, rock sculpture, inscription, monolith, fossil remains of man or animal or plant or any object which is of historical interest, or any part of such object.</p> <p>It explains that an object of traditional interest means any object made, erected or built, or formed in a traditional or localised fashion by human agency, other than an object intended for sale. Part 11 of the Act provides guidance on what should be done in case of chance finds - where by, any person who discovers any object which may reasonably be considered to be of</p>	This Act is relevant to the Project as it provides the procedure for the preservation of historical objects including the maintenance objects and the restriction of the owner's right to destroy, remove, alter or deface an object or build on or near the site of an object.

Instrument	Objective	Relevance to Project
	archaeological, palaeontological, ethnographical, historical or traditional interest shall, within fourteen days, report to the conservator of antiquities or a district commissioner or the curator of the museum.	
Traditional Rulers (Restitution of Assets and Properties) Act 1993 (Cap. 247)	To restore to traditional rulers' assets and properties previously owned by them or connected with or attached to their offices but which were confiscated by the State.	Informs procedures related to traditional rulers' assets.
National Environment Act 1995 (Cap. 153)	<p>This Act provides for sustainable management of the environment, establishment of the National Environment Management Authority (NEMA) as a coordinating, monitoring and supervisory body for that purpose. It provides provisions relevant to cultural heritage which are as follows:</p> <ul style="list-style-type: none"> - Conservation of the cultural heritage and use the environment and natural resources of Uganda for the benefit of both present and future generations as one of the principles of environmental management (Art. 2). - Protection of natural heritage sites, including elements, objects and sites in the natural environment which are of cultural importance (Art. 49) - An environmental restoration order may require the restoration of outstanding geological, archaeological or historical features of the land or the area contiguous to the land (Art. 67). <p>NEMA is required to maintain a register of all elements, objects and sites identified in consultation with the lead agency, issue guidelines and prescribe measures for the management or protection of cultural elements, objects and sites registered.</p>	This Act is relevant to the Project as it provides the procedure for the conservation, protection and restoration of cultural heritage assets and defines NEMA's role in the protection of registered cultural heritage.
Uganda Wildlife Act 1996 (Cap. 200)	Provides for the protection of objects of geomorphological, archaeological, historical, cultural or scientific interest within wildlife conservation areas (Art. 21).	Sets out protection measures for cultural heritage within wildlife conservation areas.
Local Governments Act 1997 (amended 2002) (Cap. 243)	Functions and services for which district councils are responsible include, upon delegation by the Government, identification and preservation of sites and objects or buildings of historical and architectural value.	Informs consultation processes and data-gathering.
Institution of Traditional Leaders or Cultural Leaders Act 2011 (Cap. 6)	To provide for the existence of traditional or cultural leaders, their privileges and benefits, and the resolution of issues relating to traditional or cultural leaders.	Informs consultation processes and data-gathering.
Copyright Act and Neighbouring Rights Act 2006 (Cap. 19) & Copyright and Neighbouring Rights Regulations, 2010	To provide for the protection of literary, scientific and artistic intellectual works and their neighbouring rights, including traditional folklore and knowledge, handicrafts.	Informs approaches to intangible cultural heritage.
Tourism Act 2008	To reform, consolidate and streamline the law relating to tourism; to provide for licensing, regulating and controlling of the tourism sector etc.	Informs approaches to tourism assessment, including heritage tourism. This is addressed in Chapter 16: Social.

Instrument	Objective	Relevance to Project
National Policies		
Uganda National Tourism Policy 2003	The aim of the national tourism policy is to ensure that tourism becomes a vehicle for poverty reduction in the future to the extent possible within the resource base and market limitations. It requires EIA procedures as stated in the section on the National Environment Policy above to be enhanced in respect to all developments in sensitive tourism areas within and outside protected areas. It makes the following provisions in relation to cultural resources: Uganda's rich cultural heritage will form an essential element in the promotion, marketing and product development of tourism. Cultural events, performances and festivals at the district level will be developed and incorporated into tourism products. Tourism development will be conducted with due sensitivity to local cultures and traditions.	Informs approaches to tourism assessment, including heritage tourism. This is addressed in Chapter 16: Social .
Uganda National Cultural Policy 2006	To conserve, protect and promote Uganda's tangible and intangible heritage. The aim of the Uganda National Culture policy is to promote aspects of Uganda's cultural heritage that are cherished by its people. The policy recognizes that Uganda has several cultural sites and monuments. Some of them are man-made while others are natural. These sites, monuments and antiquities are important for socio-cultural and educational purposes. The natural sites also enhance the protection of the environment. The cultural beliefs, traditions and values are core to a community's mechanism for survival. These beliefs and values enhance social cohesion and sustain an acceptable moral fabric. Interventions to enhance the appreciation of these values and to mitigate social practices that are oppressive to people shall be promoted.	Informs approaches to cultural heritage identification, assessment and proposed mitigation measures.
Uganda National Oil and Gas Policy 2008	The goal of this policy is to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society. It recognizes the need to protect the environment and health during oil activities and provides that the environment, human development and biodiversity should be properly balanced for mutual benefit and survival and that the policy should contribute to and promote, this balance to ensure sustainable development. The policy imposes responsibility on oil companies to protect the environment wherein they work or in any areas in the country impacted or affected by their operations.	Informs approaches to cultural heritage identification, assessment and proposed mitigation measures.
Uganda Vision 2040 (National Planning Authority 2013)	To encourage positive cultural practices and underline the importance of cultural heritage to the tourism sector.	Informs approaches to cultural heritage identification, assessment and proposed mitigation measures. Tourism aspects are addressed in Chapter 16: Social .
Uganda National Tourism Policy 2014 (in prep.)	To ensure the delivery of a step-change in the development and functioning of the tourism industry, in order to realise Uganda's great but unexploited potential as a major tourist destination, based on its wealth of natural assets	Informs approaches to tourism assessment, including heritage tourism. This is addressed in Chapter 16: Social .

Instrument	Objective	Relevance to Project
	and its rich cultural heritage.	
Uganda National Environment Management Policy 2014	The overall goal of this policy is the promotion of sustainable economic and social development. The policy calls for integration of environmental concerns into development policies, plans and projects at national, district and local levels. The policy requires that projects or policies likely to have significant adverse ecological or social impacts undertake an ESIA before their implementation. It emphasises ecosystem functions, community uses and cultural values associated with biodiversity, and the role of Cultural and Faith Based Institutions.	Informs approaches to cultural heritage consultation, identification, assessment and proposed mitigation measures.
Uganda National Medicines Policy 2015	Highlights the need to regulate traditional and complementary medicines.	Informs approaches identification and assessment of intangible cultural heritage, in particular, cultural uses of plants.
Uganda Wildlife Policy 2014	Highlights cultural values of wildlife and the integration of sustainable traditional cultural values into management of Protected Areas.	Informs approaches to cultural heritage consultation, identification, assessment and proposed mitigation measures.
Uganda Museums and Monuments Policy 2015	Provides a framework to preserve and protect heritage, promote sustainable heritage management through tourism sites, museums and cultural centres and promote respect for Uganda's cultural diversity and history.	Informs approaches to cultural heritage consultation and proposed mitigation measures.
Regional Policy		
Guidelines by Cultural Institutions for Oil and Gas Companies operating in the Albertine Graben 2017	<p>These Guidelines were developed by the Cross Cultural Foundation Uganda in conjunction with the three major cultural institutions in the Albertine Graben (Acholi, Alur Kingdom and Bunyoro-Kitara Kingdom). They reflect the responsibilities and aspirations of the cultural leaders and the people they represent to fully participate in the entire process of oil and gas development as partners in cultural, social and economic development.</p> <p>The guidelines were developed to:</p> <ul style="list-style-type: none"> - Protect and promote the cultural rights of the concerned communities in Bunyoro, Alur and Acholi, and to promote their cultural, economic and social wellbeing; - Guide the concerned cultural leaders to productively manage their relationship with oil and gas companies; - Commit stakeholders in the oil and gas industry to the sustainable cultural, economic, environmental and social wellbeing of the communities in the Albertine Graben; - Reflect the three cultural institutions' determination; <ul style="list-style-type: none"> ▪ to play an active role in preserving tangible and intangible cultural heritage, ▪ in managing social conflicts and issues relating to managing customary land, and ▪ in ensuring sustainable development and fostering peace amongst communities. - Ensure that the hopes of the communities to achieve social-economic development 	Informs approaches to cultural heritage consultation, identification, assessment and proposed mitigation measures.

Instrument	Objective	Relevance to Project
	<p>following the discovery of oil in the region are realized and fears of 'missing out' on the benefits of the oil are overcome.</p> <p>The guidelines to oil companies include:-</p> <ul style="list-style-type: none"> ▪ Adherence to cultural rights; ▪ Respect of cultural, historical and sacred natural sites; ▪ Respect of cultural norms, values and practices of the people; ▪ Contribution to sustainable livelihood options; ▪ Safeguarding land, environment and natural resources; ▪ Promotion of peaceful co-existence; ▪ Fulfilling corporate social responsibility, and; ▪ Ensuring transparency and accountability. 	

Source: Tilenga ESIA Team's own elaboration, 2017 & Atacama 2017.

17.3.2 International Conventions, Agreements, and Standards

17.3.2.1 International conventions and agreements

The government of Uganda has ratified a number of international conventions regarding cultural heritage including the United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Convention 1972, Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO, 2003) and the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions (UNESCO, 2005). It has also ratified a range of regional agreements which highlight cultural rights and values. International environmental and social agreements and conventions of relevance to the archaeology and cultural heritage study are presented in Table 17-3.

Table 17-3: International environmental and social agreements and conventions of relevance to the archaeology and cultural heritage study

Agreement/ Convention	Objective	Relevance to Project	Date of ratification / accession by Uganda
Universal Declaration of Human Rights (UDHR) – 1948	The UDHR establishes the concept of cultural rights and the right to participate freely in cultural life, as well as the right to own property.	Ensure appropriate treatment of local communities, including respect for cultural rights.	10/12/1948
UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (Convention on Cultural Property)	Prohibits and prevents the illicit import, export and transfer of ownership of cultural property and aims to discourage the pillage of archaeological sites and cultural heritage by controlling international trade in looted antiquities through import controls and other measures.	Ensure that Project staff do not loot objects themselves, or purchase and attempt to export any looted objects.	Not ratified by Uganda, but is internationally accepted as GIIP
UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention) – 1972	To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage on states' territories.	Ensure consideration and protection of World Heritage, including Tentative List Sites, such as Kibiro.	20/11/1987

Agreement/ Convention	Objective	Relevance to Project	Date of ratification / accession by Uganda
OAU African Cultural Charter (Organisation of African Unity) – 1976	Includes rehabilitating, restoring, preserving and promoting the African cultural heritage; asserting the dignity of the African and popular culture. Will be superseded by African Union 2006 Charter for African Cultural Renaissance.	Ensure respect for cultural rights.	10/05/1986
OAU African Charter on Human and Peoples' Rights (Banjul Charter, Organisation of African Unity) 1981	Regional human rights instrument designed to reflect the history, values, traditions, and development of Africa.	Ensure respect for cultural rights.	10/05/1986
International Covenant on Economic, Social and Cultural Rights (ICESCR) – 1987	Commits parties to work toward the granting of economic, social, and cultural rights.	Ensure respect for cultural rights.	21/04/1987
ACP (African Caribbean and Pacific Countries) group and the European Union Lomé IV Convention – 1989	Declaration XI –promotes the preservation and enhancement of the cultural heritage. Declaration XII – urges the return or restitution of cultural property.	Ensure principles of solidarity partnership in development policy. Ensure that Project staff do not attempt to loot/export cultural property.	1989
ACP Cotonou Agreement (African, Caribbean and Pacific Group of States & EU) – 2000	Integrates the cultural dimension at all levels of development cooperation. Recognises, preserves and promotes cultural values and heritage and identities; supporting capacity development; developing cultural industries, cultural goods and services.	Ensure consideration of cultural values and the participation of civil society in economic development led by the private sector.	2000
African Convention on the Conservation of Nature and Natural Resources 2003	Aims to improve environmental protection, promote the conservation and sustainable use of natural resources, and coordinate policy.	Ensure sustainable heritage protection and preservation.	2003
UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage – 2003	To safeguard and ensure respect for the world's Intangible Cultural Heritage, including raising awareness of the importance of intangible heritage and encouraging international cooperation and assistance.	Ensure consideration and protection of Intangible Cultural Heritage, including local languages, ceremonies and lifeways.	13/05/2009
UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions – 2005	Recognises the rights of states to protect and promote the diversity of cultural expressions, encompassing cultural and natural heritage, movable cultural property, intangible cultural heritage and contemporary creativity.	Ensure consideration of the local cultural expressions of the diverse range of ethnic groups in the Project area.	08/04/2015
African Union 2006 Charter for African Cultural Renaissance	Asserts the popular foundations African culture; promotes cultural democracy; preservation, restoration, rehabilitation and promotion of African cultural heritage; promoting traditional knowledge systems. Will replace OAU 1976 Cultural Charter.	Ensure heritage protection and preservation.	(not yet in force)

17.3.2.2 International Standards and Guidelines

Where Ugandan legislation does not provide standards and guidance for a given aspect, or where international criteria are more stringent than the Ugandan equivalent, international standards have been adopted. International standards and guidelines of relevance to the archaeology and cultural heritage study are outlined in Table 17-4.

Table 17-4: International standards and guidelines applicable to the cultural heritage study

Standard / Guideline	Objective	Relevance to Project
UNESCO 1956 Recommendation on International Principles Applicable to Archaeological Excavations (New Delhi)	To ensure the protection of its archaeological heritage, the provision of archaeological services, the control over accidental discoveries and the upkeep of excavation sites and monuments, the establishment of museums and public education, and the repression of clandestine excavations and of the illicit export of archaeological finds.	Informs the principles of field survey and mitigation measures.
ICOMOS 1990 Charter for the Protection and Management of the Archaeological Heritage (Lausanne Charter) (ICOMOS, 1990)	Sets out the principles relating to the different aspects of archaeological heritage management.	Informs the principles of field survey and mitigation measures.
Australia ICOMOS 1979/ rev 2013 Charter for the Conservation of Places of Cultural Significance (Burra Charter)	Provides guidance on assessing heritage significance.	Informs the methodology for assessing the sensitivity/value of heritage assets as part of impact assessment.
ICOMOS 2005 Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas (ICOMOS 2005)	Aims to define, recognise, protect and sustain adequately the meaningful presence of heritage structures, sites and areas in their settings.	Informs analysis of setting impacts in impact assessment.
ICOMOS 2011 Guidance on Heritage Impact Assessments for Cultural World Heritage properties (ICOMOS, 2011)	Provides guidance on assessing the significance of and impacts upon cultural heritage sites in appendix 3A: Example Guide for Assessing Value of Heritage Assets.	Informs basis of impact assessment.
CIfA Standard and Guidance for Historic Environment Desk-based Assessment (CIfA, 2017)	Provides guidance on desktop study methodologies.	Informs method applied to prepare the desk-based element of baseline.
CIfA Standard and Guidance for Archaeological Field Evaluation (CIfA, 2014)	Provides guidance on archaeological field reconnaissance and evaluation.	Informs method used in the field survey element of baseline.
Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments (CBD, 2004)	Provides guidance on developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.	Informs field survey methods and mitigation measures related to sacred sites.
World Archaeological Congress 1989 Vermillion Accord on Human Remains (WAC, 1989)	Outlines standards for treatment of the mortal remains of the dead. It calls for respect for the mortal remains of the dead in accordance with the wishes of the dead, relatives, and the local community as well as the value of scientific research.	Informs mitigation measures related to burial places.
http://www.icomos.org/en/charters-and-texts ; http://www.archaeologists.net/codes/ifa ; https://www.cbd.int/traditional/guidelines.shtml ;		

The Project has been undertaken according to the Chartered Institute for Archaeologists (CIfA) Code of Conduct (CIfA, 2014). Research, fieldwork and reporting has been undertaken following relevant and locally-applicable elements of the Standard and Guidance for Historic Environment Desk-based Assessment (CIfA, 2017) and Standard and Guidance for Archaeological Field Evaluation (field scanning) (CIfA, 2014).

17.3.2.3 IFC and World Bank Standards and Guidance

TEP Uganda and TUOP have committed to align the Project to the International Finance Corporation (IFC) Performance Standards (PS) (IFC, 2012), EHS guidelines (IFC, 2007) and IFC industry sector guidelines (IFC, 2007). This baseline has been undertaken with reference to IFC PS 8 Cultural Heritage (IFC, 2012) and accompanying guidance (IFC, 2012), and World Bank guidance on cultural heritage in environmental assessment (World Bank, 1994a and b), as well as World Bank Operational Manual OP 4.11 - Physical Cultural Resources (World Bank, 2013).

IFC PS 8: Cultural Heritage aims to protect cultural heritage from the adverse impacts of project activities and support its preservation. Its scope includes:

- Tangible cultural heritage with archaeological, palaeontological, historical, cultural, artistic, and religious values;
- Unique natural features or tangible objects that embody cultural values, such as sacred groves, sacred trees and rocks;
- Intangible forms of culture proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles; and
- Critical Cultural Heritage, internationally recognised or legally protected cultural heritage areas, including proposed World Heritage Sites. Heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes.

The assessment of significance of cultural heritage sites and potential impacts, mitigation measures proposed and criteria for evaluating mitigated impacts follows international good practice and national legislation. The assessment has been developed with reference to IFC PS 8 (IFC, 2012) and World Bank guidance on cultural heritage in environmental assessment (World Bank, 1994a & 1994b; World Bank, 2013). Elements of the IFC's Environmental, Health and Safety Guidelines - Industry Sector Guidelines for Onshore Oil and Gas Development are also applicable to cultural heritage, including land use and biodiversity, terrestrial habitats, dust, visual impact, environmental monitoring (IFC, 2013).

The World Bank Operational Manual (World Bank, 2013 OP 4.11) defines the bank's operational policy on safeguarding cultural properties, which aims to protect cultural assets and knowledge of communities in bank financed project areas.

Where further detailed guidance was needed and was not covered by the IFC PS or World Bank guidance, the Project has referred to UNESCO and ICOMOS guidance as appropriate.

The International Association of Oil and Gas Producers (IOPG) guidelines include advice on cultural heritage. Social and Economic Indicator 1 (SE1) addresses local community impacts. The indicator requires oil companies to: 'Describe assessment, consultation and preservation measures with regard to archaeological, historic and cultural sites of affected communities that could be impacted by the company's activities.'

17.4 Spatial and Temporal Boundaries

The Project Area is defined in **Chapter 1: Introduction** and is the same area as the overall Archaeology and Cultural Heritage Study Area, which covers CA-1, EA-1A and LA-2 North and is defined to include archaeological and cultural heritage receptors that may be impacted during the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations and Decommissioning phases associated with the Project. Within the Study Area, it is envisaged that the area of influence for potential impacts upon tangible cultural heritage will be limited to a 200m buffer zone around the key Project components described in **Chapter 4: Project Description and Alternatives**. This is the extent of the area that is likely to experience physical impacts, and includes a tolerance should project elements move slightly in the course of detailed design and micro-siting. The closest archaeological and

cultural heritage receptors to the Project Activities have been identified and used to define the spatial scope of the assessment.

The ESIA considers known palaeontological, archaeological, historical and cultural heritage assets contained within the Project Area of influence (Aol) in assessing the archaeological and historical background, context and significance of the cultural heritage within the Study Area.

The proposed timescales for the different phases of the Project are set out in **Chapter 4: Project Description and Alternatives**. A brief summary of the timescales are provided below:

- Site Preparation and Enabling Works Phase expected to take approximately 5 years;
- Construction and Pre-Commissioning is expected to take up to 7 years;
- Commissioning and Operations is expected to commence approximately 36 months after effective date of the main construction contract award. The lifetime of the Project is 25 years; and
- Decommissioning is planned for the end of the 25 year operation.

The phases overlap and in total the duration through all phases will be approximately 28 years. The duration of activities which may lead to potential archaeological or cultural heritage impacts differ between short and long term episodes, all of which are described within the assessment where necessary.

17.5 Baseline

17.5.1 Introduction

Baseline archaeology and cultural heritage conditions have been established through a review of previous reporting and publicly available information, interviews with key informants, communities and stakeholders, and walkover surveys.

Limited archaeological and cultural heritage inventory was undertaken in the Project area prior to the advent of surveys associated with oilfield development. Information from previous academic expeditions, published information and previous surveys associated with oilfield development was collated.

17.5.1.1 Data Gap Analysis

Data gap analysis was undertaken during the scoping phase of the Project which reviewed available information sources to identify any areas for which further data collection would be advantageous to characterise baseline conditions. There were particular gaps in terms of detecting heritage sites not currently listed in national databases, identifying intangible heritage and mapping sacred sites.

The data gap analysis highlighted a number of areas for which further data was to be obtained, as follows:

- Literature review, including previous studies linked to oil exploration, historic sources and academic literature;
- Predictive mapping, based on geological, topographic and satellite imagery and proposed impact areas;
- Further walkover surveys to identify readily visible archaeological sites within 200m of Project key elements;
- Further community and stakeholder consultation regarding culturally important sites, and key informant interviews regarding archaeological potential and significance;
- Characterisation of non-sacred intangible heritage, ethnography and traditional practices via key informant interviews and focus group meetings in collaboration with the Social and Socio-economic survey team; and
- Identification of critical heritage assets in line with IFC PS8 criteria.

17.5.1.2 Baseline Data Collection Methods

This section provides details of archaeology and cultural heritage surveys undertaken within the Survey Area, as well as providing data sourced from previous surveys and secondary sources. All of this information is then used to help identify the baseline conditions.

The scope of the archaeology and cultural heritage baseline studies follows the definition set out in International Finance Corporation (IFC) PS 8 Cultural Heritage (see Section 17.3.1.1). The baseline study considers palaeontological sites and archaeological and cultural heritage sites ranging in date from the prehistoric to the modern period, and considers both tangible and intangible heritage.

17.5.1.3 Previous Investigations

The project area has not undergone systematic survey and has only had limited intrusive archaeological investigation. It is likely that a number of sites have yet to be discovered. The area has potential to contain significant stratified, multi-period archaeological sites which could be important in establishing a chronology for prehistoric hunting and gathering, farming and pastoralism, as well as the development of iron-working and iron and salt trading networks, migrations and post-contact culture. Going forwards, research objectives should focus on establishing site chronologies, intangible heritage documentation, understanding palaeoclimate, investigating pottery and salt making, and landscape archaeology.

The area is referenced in overviews of Ugandan archaeology (Fagan & Lofgren, 1966; Bishop & Posnansky, 1960). Previous academic studies of the palaeontology and archaeology within and in the vicinity of areas CA-1, EA-1A, LA-2 (North) include:

- The 1963 Baker Centenary Expedition to Lake Albert and Murchison Falls (Posnansky, 1964; Bishop, 1965);
- Studies of Kibiro salt-making village and its pottery (Heirnaux & Maquet 1968);
- Small-scale excavations at Chobi as part of the Bantu Studies Programme of the British Institute (Soper, 1971; Soper, 1985);
- Investigations of Kibiro, the eastern shores of Lake Albert and the north bank of the Victoria Nile below the Murchison Falls (Connah, 1989; *ibid.* 1990, 1991, 1996, 1997); and,
- The Uganda Palaeontology Expedition, which investigated Kaiso Series fossil outcrops in the Albertine Rift Basin between 1987 and 1992 (Senut et al. 1987; Pickford et al. 1989; Pickford et al. 1993; Van Damme & Pickford 1994; Senut & Pickford 1994; Pickford & Senut, 1998) and in 2013 (Pickford, 2013).

The National Environment Management Authority's *Environmental Sensitivity Atlas for the Albertine Graben* (NEMA 2009; NEMA 2010) provides a high-level overview of archaeology in the area. A further overview is provided in the National Association of Professional Environmentalists (NAPE) and Bunyoro Kingdom's *Review of Action Oriented Research to Strengthen Bunyoro Kingdom to Defend her Cultural Heritage from Negative Impacts of Oil and Gas Industry Development in Uganda* (NAPE, 2012). This information is also presented in the *Environmental Monitoring Plan for the Albertine Graben 2012-2017* (Republic of Uganda, 2012) and the *Strategic Environmental Assessment (SEA) of Oil and Gas Activities in the Albertine Graben, Uganda* (Republic of Uganda, 2013).

Two particularly relevant synthetic studies have been undertaken in association with oil field development. The first is the EA-2 Archaeological, Historical, and Cultural Baseline Study (Atacama Consulting/ Ecology & Environment, Inc. 2014). This focussed on ground-truthing and condition assessment of known sites, involved extensive consultation and recorded a small number of previously unknown sites. The second is the social baseline assessment and household studies undertaken in 2012, reported in the Lake Albert Regional Socio-Economic Baseline Assessment (Worley Parsons 2013) and EA-1/EA-1A Social and Health Baseline Survey (ARTELIA 2015). These map sacred sites across the study area. The Well Pads Geophysical and Geotechnical Surveys Report mapped archaeological and cultural heritage finds recorded across areas of proposed geophysical and geotechnical surveys in the villages of Avogera, Kisomere, Uduk I, Uduk II and Kasenyi, Ngwedo Sub-county, Buliisa District (Eco & Partner Consult 2014).

Cultural heritage studies have been undertaken on specific drill sites and wellpads in Exploration Areas 1 and 1A (CA-1/EA-1A) and North of Exploration Area 2 (LA-2), within Murchison Falls National Park (MFNP) and in the wider Albertine Graben to inform previous EIAs, ESISs and ESIAAs. A summary of previous studies

that contain specific information on cultural heritage within the study area is presented in Table 17-5. References to all reports consulted to obtain information on the results of previous archaeology and cultural heritage surveys are contained in Section 17.12 of this chapter.

Table 17-5: Summary of previous cultural heritage studies in the Project area

Date	Study	Overview	Reference
2009	Awaka-1: Drill Site EIA	Archaeological walkover survey	BIMCO 2009
2009	Kasamene-2: Drill Site EIA	Palaeontological and ethnographic overview Known palaeontological sites Archaeological and cultural heritage walkover survey Procedures for grave and ritual site relocation	BIMCO 2009
2009	Environmental Sensitivity Atlas for the Albertine Graben (1 st ed)	High-level overview of archaeology in the area and map of known sites	NEMA 2009
2010	Environmental Sensitivity Atlas for the Albertine Graben (2 nd ed)	High-level overview of archaeology in the area and map of known sites	NEMA 2010
2011	MFNP	Palaeontological study	TEP Uganda 2011
2011-2012	Jobi Rii 3D seismic survey/ East Nile 3D Seismic Survey programme	Anthropology and cultural heritage study	Eco and Partner/ERM 2012
2011-2012	Jobi East 3D seismic survey/ East Nile 3D Seismic Survey programme	Anthropology and cultural heritage study	ERM 2012
2011-2012	Mpyo-Bbegeri 3D seismic survey area/ East Nile 3D Seismic Survey programme	Anthropology and cultural heritage study	ERM 2012
2012	Community-led survey within the Bunyoro Kitara Kingdom	Broad mapping of sacred cultural sites	NAPE 2012
2012	Environmental Monitoring Plan for the Albertine Graben 2012-2017	Monitoring plan highlighting environmental issues	NEMA 2012
2012	Raa-A: Proposed Exploration Drilling ESIA	Overview of ethnographic heritage of MFNP area	Atacama / Ecology & Environment Inc. 2012
2012	Ngiri-G: Proposed Appraisal Drilling Project Brief	Walkover survey noted two cemeteries	Atacama consulting 2012
2012	Mpyo-1: Proposed well testing Project Brief	Archaeological walkover survey	BIMCO 2012
2013	Strategic Environmental Assessment (SEA) of Oil and Gas Activities in the Albertine Graben, Uganda	High-level overview of archaeology and cultural heritage	Republic of Uganda 2013
2013	Lake Albert Regional Socio-Economic Baseline Assessment	Overview of ethnographic statistics and traditional sites	Worley Parsons 2013
2013	Proposed Nile Crossing Geotechnical Survey ESIA	Archaeological walkover survey	Eco & Partner Consult 2013
2013	Jobi East Field: Proposed Appraisal Drilling ESIA	Palaeontological and ethnographic overview.	Atacama / Ecology & Environment Inc. 2013
2013	North Nile area chance find sites	Archaeological walkover survey	Department of Museums and Monuments, MTWA, 2013
2014	Draft Albertine Graben Physical Development Plan	Cultural heritage strategic policy	CPCS 2014
2014	EA-2 Health Baseline	Overview of ethnography and traditional medicine	SEDIC/ NCG 2014
2014	EA-2 Archaeological, Historical, and Cultural Baseline Study (Phase I)	Archaeology and cultural heritage background Archaeological walkover survey	Atacama Consulting 2014
2014	EA-1/ EA-1A Well Pads Geophysical and Geotechnical	Archaeological and cultural heritage walkover survey	Eco & Partner 2014

Date	Study	Overview	Reference
	Surveys. Appendix F: Detailed Results of Archaeological and Cultural Heritage Survey		
2014	Gunya-F: Proposed Well Project Brief Appraisal.	Archaeological walkover survey	Eco & Partner Consult 2014
2015	EA-1/EA-1A Social and Health Baseline Survey	Summary socio-economic data.	Artelia 2015
2017	Social & Resettlement Baseline Survey - RAP 1 - proposed Industrial Area and N1 Access Road	Archaeological and cultural heritage walkover survey	Atacama 2017
2017	Cultural Heritage Management Plan - RAP 1 - proposed Industrial Area and N1 Access Road	Cultural Heritage Management Plan	Atacama 2017
2017	Early Works Baseline Study	Archaeological and cultural heritage walkover survey	AWE 2017

This ESIA draws on the inventories of archaeological sites, monuments and findspots, knowledge of historic landscapes and the wider archaeological and cultural heritage context established in the course of both previous studies and the field surveys undertaken in December 2016 and June-July 2017.

17.5.1.4 Primary Data - 2017 Early Works Baseline Study

As part of the Early Works Project Brief (PB) (September 2017), AWE conducted a cultural heritage and archaeology study which comprised a desktop study of the history of the Project Area and the customs and history of the inhabitants, and a field study to investigate the presence of cultural resources such as historic buildings, cultural sites, sacred traditional religion sites and the presence of archaeological resources.

Meetings were held with District leaders, Local Council (LC) Chairpersons, and Cultural Leaders/ Priests. The field surveys conducted in July 2017 targeted the Industrial Area, new roads, upgrade roads, proposed Bugungu airstrip extension, and material sourcing sites, and were conducted with a Cultural Leader/ Priest for guidance in understanding the significance of the identified cultural resources (AWE 2017, 78 – 79).

Field verification of reported cultural sites was undertaken to distinguish clan sites from family shrines. The verification of Cultural sites along the routes was overseen by Mr. Alex Wakitinti, Chairman of the Cultural Leaders (priests) in Buliisa District. In addition, inspection of family graveyards in the Industrial Area and along the road corridors, specifically road A1, was undertaken. A copy of the Executive Summary of the Early Works PB is contained within Appendix C.

17.5.1.5 Desktop study

The aim of the desk-based assessment is to determine, as far as is reasonably possible from existing records, the nature, extent and significance of the archaeological, historic and cultural heritage within the Study Area.

The desk-based assessment describes the historical development of the Study Area and the wider area, placing it in context in order to predict its archaeological and cultural heritage potential; anticipate the type, date, and character of remains; and broadly indicate areas with higher archaeological potential based on factors such as geology, topography, past and present land use, known archaeological remains and vegetation cover.

Relevant national heritage data and information on recent fieldwork and chance finds was provided by the client, and by the Uganda Department of Museums and Monuments (Ministry of Tourism, Wildlife and Antiquities (MTWA) and Uganda Museum.

A number of previous cultural heritage studies have been undertaken in Exploration Areas 1 and 1A (CA-1/EA-1A) and North of Exploration Area 2 (LA-2), within Murchison Falls National Park (MFNP) and in the wider Albertine Graben. These are summarised in Table 17-5 above and data from these studies is incorporated in this report. Available archaeological excavation and survey records were consulted, including regional atlases, academic studies, studies undertaken in association with environmental or development

projects, relevant regional and period archaeological and landscape studies, dissertations and readily accessible historical evidence. Details are contained in the References section.

Key secondary data sources include papers on archaeology, anthropology and history. General topic reviews are contained in the *UNESCO General History of Africa* (Moktar (ed), 1981); the *Encyclopaedia of African History* (Shillington (ed), 1995), and the *Encyclopaedia of Precolonial Africa* (Vogel (ed), 1997). Papers on archaeology, anthropology and history in a range of journals were consulted, including *Journal of African Archaeology*, *African Archaeological Review*, *History in Africa*, *Journal of African History*, *Uganda Journal*, *Journal of World Prehistory*, *Nyame Akuma*, *Antiquity*, *American Antiquity*, *Azania*, *Journal of Anthropological Archaeology*, *Journal of Archaeological Science*, *East African Geographical Review* and *Quaternary Science Review*.

In addition, some European travel journals and geographical papers dating to the mid- to late-19th century provide insights into the populations and cultural practices within the study area before the area was evacuated in the early 20th century and MFNP was established in 1952. Many have been digitised and are available online. These include Speke and Grant's journey to the source of the Nile in 1862 (Speke, 1863); the journey of Sir Samuel and Lady Florence Baker between Masindi, Karuma Falls and Gulu in 1863-4 (Baker, 1866), and the diaries of Emin Pasha of the 1870s and 1880s (Dunbar, 1959, *ibid.* 1960a & 1960b; Gray, 1961).

17.5.1.5.1 Cartographic and Satellite Imagery

Historical and modern mapping, aerial and satellite imagery was assessed (ESRI World Imagery - Harvard AfricaMap) and on the Project-specific webGIS portal (Google and Bing satellite imagery), as well as topographic survey data and geological maps. Historic mapping consulted includes relevant digitised historical mapping available from the online Perry-Castañeda Library Map Collection (University of Texas), the Bibliothèque Nationale de France's Gallica collection, the Stanford Collection (Stanford University), the Afriterrra Foundation (Boston University) and the online David Rumsey Historical Map Collection. Section 17-12, References, lists the historic cartographic sources consulted.

Geological mapping assisted in understanding the wider topographical context of the development area (see **Chapter 8: Geology and Soils**).

IKONOS 2004-2008 satellite imagery (1 m resolution) was used in planning field surveys, identifying areas of topographic interest, modelling areas of archaeological potential and anticipating areas of complex archaeology.

17.5.1.5.2 Predictive Modelling

Archaeological predictive models are formulated to assess where sites are most likely to be located, what types they are liable to be, and what they are most likely to contain, based on observed patterns in field survey results and assumptions about past human behaviour (Kohler & Parker 1986). Basic modelling was undertaken prior to field surveys, to better understand the terrain and plan fieldwork logistics. This considered key environmental predictive factors including:

- Geology, topography, soils and soil fertility;
- Current and past land use, including vegetational indicators of past settlement, agriculture and ground disturbance;
- Proximity to water sources. Present-day seasonal watercourses were considered as they have strong cultural significance to communities and often delineate village and clan borders.
- Fishing resources;
- Proximity to raw materials and natural resources, including riverside clay deposits and sources of tool-making stone;
- Proximity to present-day settlement foci outside MFNP;
- Strategic positions and vantage points;
- Degree of slope of hillside, aspect of hillside, shelter, shade;

- Landscape characterisation and climate data; and
- Locations and interconnections of any known archaeological occupation and burial sites.

Fieldwork/survey has been based on the results of the modelling and adapted on site based on the ground conditions. The model involved GIS-based analysis of known archaeological and cultural sites in TEPU and TUOP GIS databases recorded in previous surveys related to oil exploration and wellpad development.

Field walkover surveys indicated that the largely uninhabited areas within MFNP provided a good source of archaeological deposits *in situ* as they did not appear to have suffered later disturbance from 20th century farming and development. Results were particularly good in areas of erosion caused by animal activity – such areas of erosions could not be identified in advance from aerial photographs.

Walkover surveys outside of the MFNP recorded relatively extensive settlement activity throughout the Study Areas. In many cases a pattern of dispersed settlements or hut groupings, occupied largely by extended family groups, was observed throughout the Study Area. These structures were often surrounded by land improved for either arable or pastoral agriculture, and as a result archaeological deposits were often mixed/contaminated with more recent material (pottery and other waste) in the areas around the settlements.

17.5.1.6 Site Reconnaissance Methods

17.5.1.6.1 Archaeology and cultural heritage field walkover surveys

Where data gaps were evident, specific areas in in CA-1/ EA-1A and LA-2 were subject to targeted walkover survey in December 2016 and June-July 2017 to complement existing baseline datasets. Archaeology and cultural heritage walkover surveys aimed to:

- Locate, identify and characterise readily visible heritage assets within the Industrial Area (CPF), representative sample of wellpads, and Victoria Nile Ferry Crossing (VNFC) locations;
- Assess how current and former land use may have affected the archaeological potential of the locations;
- Identify the potential for further heritage assets to survive within the targeted walkover areas;
- Record current land use, ground conditions and any constraints or factors to take into account when planning further evaluation and mitigation fieldwork;
- Assess the significance of known and predicted heritage assets (ICOMOS 2011, appendix 3A);
- Assess the impact of proposed development on the significance of heritage assets; and
- Develop avoidance, control and mitigation strategies to conserve the significance of heritage assets.

Targeted field surveys were undertaken in order to inform the ESIA and Environmental and Social Management Plan (ESMP). These comprise a survey undertaken from 3 to 8 December 2016, and a further survey undertaken from 26 June to 6 July 2017.

The archaeology and cultural heritage field survey comprised a targeted field walkover survey of areas which had not previously been subject to archaeological or cultural heritage survey, as indicated by desktop study. No ground-truthing or condition assessment was undertaken for known sites recorded in third-party studies.

The purposive archaeological site prospection method was adapted to the terrain of the Study Area, and involved the visual observation of exposed ground, sections and upcast soil, to identify any surface/buried archaeological remains such as areas of former settlements, and pottery or finds scatters. Target areas included natural open areas (e.g. fallow fields, recently-tilled soils, clearings, tree-stump holes, termite mounds, charcoal-burning clamps, stream- and river-banks, gullies, tracks, eroded areas and disturbed ground) and artificial open areas (e.g. animal paths, road cuttings, ditches, quarries).

Areas adjacent to Victoria Nile and the coastline of Lake Albert have high archaeological potential due to the presence of a perennial water sources for farming, fishing and watering livestock.

Following initial visual identification, Geographical Positioning System (GPS) point or polygons was recorded and photographs were taken. Sites and findspots are mapped on Figure 17-1 to Figure 17-54. Coordinate data for identified sites and findspots will be provided to NEMA, the MTWA (Department of Museums and

Monuments), Ministry of Gender, Labour and Social Development (MGLSD) and Uganda Museum on request. Information and metadata on all sites identified in the course of the survey, including null sites, modern receptors and medicinal plants, is contained in the Project GIS, which will be provided to the national heritage authorities. Photographs have been integrated into the Project GIS, with selected photographs reproduced in this chapter. Pro-forma recording sheets were completed as a backup to the handheld device, and rapid sketches were made where appropriate.

Each identified palaeontological, archaeological or cultural heritage site has been assigned a unique reference number, to overcome historical issues of multiple numbering of sites and duplication of UIDs in legacy databases. Unique references follow this sequence:

- ACH-00-001 (surveys prior to 2016);
- ACH-01-001 (Tilenga ESIA December 2016 survey);
- ACH-01-002 (Tilenga ESIA June/July 2016 survey);
- ACH-S-TEMP-002 (Tilenga ESIA December 2017 Social survey); and
- ACH-RAP-001 (Tilenga RAP1 survey, April 2017).

The field surveys were undertaken by a team of local Ugandan archaeologists working in partnership with a qualified international archaeologist. Village chairpersons, local council executive members, village elders, graveyard caretakers and community members accompanied the survey team and helped to identify historical, cultural and spiritual sites and medicinal plants.

Archaeological material was collected during the June-July 2017 survey, to provide the basis of a local pottery type series. The survey team had a fieldwork permit issued by the MTWA on 17 March 2017. All significant recovered materials will be deposited with the Uganda Museum, Kampala, following analysis. They will be labelled and boxed in accordance with Uganda Museum guidelines. All coordinates of the sites and findspots identified during baseline data collection will be forwarded to the Department of Museums and Monuments to enable them to update their databases. This will be undertaken as part of the Cultural Heritage Management Plan. Further baseline information on the baseline surveys of the ESIA are contained with Appendix R (Annex B and C).

Due to the constraints of the size of the area and time available, it is recommended that a detailed walkover and test pit evaluation of the final project locations be undertaken as part of a post-ESIA Setting Out/ Pre-Construction Ground Clearance Survey. Additional avoidance, control and mitigation measures will be agreed with the Uganda Department of Museums and Monuments and will include, as appropriate, archaeological/ cultural heritage migration works, the implementation of a Chance Find Procedure and appropriate Project staff cultural heritage awareness training. The locations, working methods and schedule of this work will be set out in the Cultural Heritage Management Plan (see Section 17.7.8.1.2, Systematic stewardship of archaeology and cultural heritage).

17.5.1.6.2 Cultural heritage focus group discussions

In the course of the Social survey in December 2016, the socio-economic team led cultural heritage focus group discussions with local populations and representatives. These involved community meetings, interviews and focus groups. Social survey questionnaires included questions on sacred sites, oral history, cultural geography, resource use, landmarks, and etymological/place-name evidence. The interviews aimed to identify the existence of and access to cultural heritage sites (former villages, abandoned cemeteries, sacred trees, rock shelters, old ritual areas, forbidden forest etc.) and/ or prehistoric sites.

Further consultation regarding cultural heritage was undertaken with community representatives in the course of the archaeology and cultural heritage field walkover surveys in December 2016 and June-July 2017.

Relevant available data on ecology, including cultural uses of plants and animals (food, religion, artisanal craft, trade etc.) has also been considered in this assessment.

17.5.2 Consultation

Detailed minutes of consultations are contained in Appendix R (annex A), Stakeholder Consultation (Archaeology and Cultural Heritage).

17.5.2.1 Key Informant Interviews

Consultation has been undertaken with representatives of a range of governmental, academic and civic organisations regarding a range of issues including:

- Known and potential cultural heritage of the Study Area;
- Local heritage organisations and community-based heritage initiatives;
- Community resources, intangible heritage inventories, indigenous resource knowledge, ecosystems and medicinal plants;
- Community engagement, indigenous populations and minority groups and the involvement of traditional institutions, religious and clan leaders;
- Ceremonies related to the relocation of ritual areas and burial places; and
- Potential mitigation measures and archaeological and cultural heritage research objectives.

Organisations consulted comprise:

- Uganda Department of Museums and Monuments, Uganda National Museum;
- National Environment Management Authority;
- MGLSD, Directorate Social Protection;
- UNESCO National Commission, Ministry of Education & Sports (MoES);
- Cross-Cultural Foundation of Uganda (CCFU); and
- Department of Languages and Communication (Kyambogo University).

Semi-structured interviews were held with traditional authorities and religious leaders including the Bunyoro Inter-Religious Council (BIRC), Acholi Chiefdom cultural leaders and representatives of the Bunyoro Kitara Kingdom as detailed in Section 17.5.2.3. These interviews discussed tangible and intangible cultural heritage, cultural traditions, recent changes in the area, vulnerable and minority groups, in-migration, mediation and arbitration systems, and project perceptions.

17.5.2.2 Focus Group Discussions (FGD)

Cultural heritage was discussed in Focus Group Discussions in the villages of Kirama, Kibambura, Ngwedo Farm, Bikongoro and Te Ogot, and in the towns of Hoima, Biiso and Pakwach (see Figures 16-4 Administrative boundaries in Buliisa District & Figure 16-5, Administrative boundaries in Nwoya District). Extensive information regarding knowledge of archaeological and cultural heritage sites and traditional cultural heritage practices of the Bagungu and Alur was provided in Focus Group Discussions with Kirama Village Elders and Pakwach Elders respectively.

Focus group discussions were also conducted with Project Affects Persons in Kasinyi village and inhabitants of the neighbouring villages of Kibambura, Kisomere and Uduk 2 in April and May 2017. The discussions served to gather community views on a number of topics including the identification of important cultural sites within the Proposed Industrial Area and N1 Access Road locations. This provided information on the perception and attitudes of the stakeholders as to the proper procedures in the conduct of the resettlement operations impacting cultural heritage and the actions to be taken wherever cultural property is encountered (Atacama RAP1 2017, CHMP).

Matters discussed include foundation stories, traditional arbitration systems, place-name origins, religious practices and sacred natural cultural heritage, including watercourses, medicinal plants and sacred trees.

Further information on FGD is presented in **Chapter 5: Stakeholder Engagement** and **Chapter 16: Social**.

17.5.2.3 Local Cultural Heritage Leaders

Elders and/or local cultural heritage leaders accompanied surveyors during the archaeology and cultural heritage field surveys in June-July 2017. Graveyard caretakers were also consulted. The information and advice provided by the elders is contained in Section 17.6.5, Baseline.

Summaries of the semi-structured interviews undertaken with key informants are presented in Table 17-6.

17.5.2.4 Overview of Cultural Heritage Consultation Meetings

Table 17-6 provides an overview of the cultural heritage consultation meetings.

Table 17-6: Summary of cultural heritage consultation meetings

Stakeholder	Consultees	Topics Discussed
Uganda Department of Museums and Monuments, Uganda National Museum	Sara Musalizi, Curator of Palaeontology Charles Okeny Kinyera, Curator of Archaeology Nelson Abiti, Curator of Anthropology	Palaeontological sites including Kaiso and Nkondo; archaeological sites include stone tools recorded near Pakuba airstrip; seemingly abandoned intangible heritage in MFNP ¹ include Acholi places of worship; and potential remains associated with a former slave market once located near Tangi Gate. Regional research objectives include establishing site chronologies; intangible heritage documentation; palaeoclimate; pottery and salt making and landscape archaeology. Other topics discussed include mitigation measures and the deposition of survey and fieldwork data and finds assemblage with Uganda Museum. Information was obtained including maps of archaeological sites and information from the palaeontology database.
National Environmental Management Authority	Arnold Waiswa-Ayazika, Director Compliance	Reliance of NEMA on Department of Museums and Monuments (DoMM) for information and other existing publications.
MGLSD, Directorate Social Protection	Juliana Naumo Akoryo, Commissioner Culture and Family Affairs Cecilia Ajom, Principal Cultural Officer	Indigenous resource knowledge and transmission of knowledge; community resources, tangible and intangible cultural heritage; requirement to consult the MTWA for physical cultural heritage and the Directorate Social Protection of the MGLSD regarding intangible heritage. Requirement for consultation with traditional cultural and religious leaders. Cultural heritage in Buliisa and Nwoya districts including sacred natural heritage; cultural norms, values and practices; fairness, inclusion and participation in community consultation and involvement; leadership system; traditional institutions, clan leaders, cultural custodians and elders; traditional foods; clan cultural spaces; livelihoods; cultural identity; minority groups; language loss; cumulative impact of ongoing regional projects; socio-cultural change; baseline survey and mitigation measures.
Ministry of Education & Sports (UNESCO National Commission)	Daniel Kaweesi, Intangible Heritage Cultural Programme Specialist, Programme Officer, Cultural Section, UNATCOM	Intangible heritage; ethnic groups; dependency on ecosystems; medicinal plants; mitigation measures including compensation, relocation of graves and ritual areas and rededication ceremonies.
The Cross-Cultural Foundation of Uganda – CCFU, Kampala	Nsibambi Frederick, Heritage programmes Manager	Regional heritage projects; draft guidelines for oil companies' interaction and preservation of cultural heritage in project areas; cultural heritage clubs at schools; Bugungu Heritage and Information Centre collection of ethnographic artefacts;

¹ The Acholi consider the MFNP area, their traditional homeland, as being spiritually significant. A number of places (known by their placenames only) were mentioned in consultation and are noted in stories. Given that there is restricted access to the MFNP, the exact location of these places is not well remembered, and ceremonies are not formally undertaken at these places.

Stakeholder	Consultees	Topics Discussed
	Mr. Aliguma Alabyona A., Heritage Programs Officer	Kakindo women's group in Buliisa; active heritage NGOs; dissemination of fieldwork results; mitigation and offset measures.
Department of Languages and Communication (Kyambogo University)	John Kintu, Department of African Languages	Significance of fishing; empaako naming tradition; Kibiro salt-making and hot springs; local languages and dialects; minority groups; cultural norms, values and practices; mitigation and offset measures.
Bunyoro Cultural leaders	Yolamu Nsamba, Omukama's Principal Private Secretary and cultural historian Hajji Bruhan Kyokuhaire, Bunyoro Kingdom Education Minister	Traditional systems of leadership, history, sacred and cultural natural sites.
Acholi Cultural leaders	Lawirwodi Acholi Rwot David Onen Acana II, Acholi Paramount Chief and Prime Minister of the Acholi Kingdom	Foundation legends; social structure; traditional lands; traditional arbitration systems; sacred and cultural natural sites; shrines; medicinal plants and trees; clan-specific responsibilities and rituals.
Pakwach Elders	-	Traditional arbitration systems; place-name origins; ethnic groups; foundation legends; religious practices and cultural heritage sites.
Kirama Village Elders	-	Importance of sacred natural cultural heritage, including swamps/streams and trees, as well as shrines.
Kizongi Village Mapping	-	Importance of medicinal and sacred trees, including two <i>Mpuluma</i> cultural sites (Basiimo and Babezuwa).

Additionally, RAP surveys for the Proposed Industrial Area and N1 Access Road (CPF / Industrial Area) included consultation with the Hon. Ochaya Orach Vincent (Alur Kingdom Prime Minister), Dr. Wathum (former Alur Kingdom Prime Minister), Hon. Norman Lukumu (Bunyoro Kingdom Prime Minister), Hajji Bruhan Kyakuhaire (Bunyoro Kingdom Minister of Culture), Mr. Geoffrey Matongo, (Buliisa District LC5 Vice Chairman), Buliisa Chief Administration Officer, Buliisa District Planning Officer, Buliisa District Community Development Officer, Bugungu Cultural Heritage Information Center, Hon. Blasio Mugasa (former Bunyoro Kingdom Deputy), Hon. Margret Byarufu, Mr. Alex Wakitinti (Chairman Cultural leaders (priests) Buliisa), Mr. Richard Kajura (Hereditary Priest of the Babukwa Clan), Mr. Mwikali Johnathan (Hereditary Priest of the Balima Clan) and Mr. Kaliisa Stephen Munange (LC1 Chairman Kasinyi) on cultural heritage within the area (Atacama RAP1 2017, CHMP).

17.5.3 Data Assumptions and Limitations

Limited archaeological field survey of areas has been undertaken in areas CA-1, EA-1A and LA-2. Much previous reporting focuses on known archaeological and historical sites, rather than sites identified in the course of field survey. Although a number of ESIA reports have been prepared for drilling sites, not all areas have been subject to appropriate field walkover survey by a professional archaeologist, and many reports repeat generic information about the background archaeology and cultural heritage of the area.

Within the MFNP the survey method was limited by the requirement to follow paths and be guided by a ranger. Outside the MFNP, survey was also purposive and opportunistic, focusing on exposed ground surfaces.

Visibility of surface archaeological sites has been limited by high grass, undergrowth, leaf litter and vegetation, which also prevented surveying in systematic linear transects. Surface vegetation tends to mask

low-lying archaeological features, earthworks and surface/near-surface sites such as finds scatters. Small features located in topographical dips were sometimes hard to distinguish from the surrounding landscape. Occasionally, strong light also made photography challenging.

Anthropological interviews with traditional authorities and local populations provided information on specific cultural heritage sites (sacred trees, traditional shrines, cemeteries etc.). Information on traditional religious sites may be limited or imprecise due to the confidentiality of traditional practices. This is further complicated as adherence to Christianity may have prevented people from revealing traditional cultural sites. There is some evidence of new sacred sites being established in areas which are proposed for development and compensation. This practice was observed along the route of a proposed road widening scheme with shrines established and sacred/medicinal plants planted after the road corridor had been marked out. This emergence of new sacred sites has the potential to affect future surveys in the area.

Although land snail shell (e.g. *Limicolaria*) and faunal remains were noted in the course of the walkover survey, these are uncontexted surface finds and there is no evidence that they are of any antiquity, so they have not been carried through to impact assessment. Similarly, clearly modern artefacts have not been carried through.

There is a strong degree of continuity in local pottery production methods and clay sources (Connah, 1996, 182), and there is the potential that some relatively fresh decorated and undecorated pottery sherds are of recent origin. Known local sources of potters' clay include Bugana and Kasinyi (Bugungu Heritage and Information Center). Equally, it is important to note that the presence of pottery does not necessarily indicate an archaeological settlement, as pottery is readily transported in, for example, the manuring of agricultural fields.

Despite the fact that the survey team had a Community Liaison Officer, sometimes they were not competent in both Alur and Lugungu or other local languages. The language issue also led to taking note of multiple names for medicinal plants in different languages, which may result in repetition within the reporting.

It has proved difficult to tally vernacular names in Runyoro, Acholi and Luo and other local languages and dialects with the scientific names of species; dictionaries have been used to assist in identification of species and to ensure consistency of spellings (e.g. Businge Makolome & Diprose (eds) 2012). The list of vernacular names in Schedule 8 of the Forestry and Tree Planting Regulations 2016 has also been consulted. Names may be shared in different dialects but used to refer to different species of plants. In a given dialect, a single local name may be used to refer to more than one species – and a single species of plant may be referred to by more than one local name.

No seasonal or climatic constraints impeded the survey work, although high heat and rains slowed progress on occasion.

It is important to note that certain categories of archaeological site are difficult to recognise via non-intrusive field survey, in particular, artefact scatters and dispersed occupation areas. It is only rarely possible to identify buried archaeological sites based on surface traces, particularly in vegetated areas with deep soils. Given the nature of the terrain and the scale of the Study Area, it is likely that archaeological and cultural heritage sites may remain undetected at reconnaissance stage and will only be discovered in the course of test pit investigations and watching briefs on ground clearance works. The locations of test pit investigations will be determined at a later stage, in the course of the development of the Cultural Heritage Management Plan (CHMP). For further information on the CHMP, please see Section 17.7.8.1.2 Systematic stewardship of archaeology and cultural heritage.

17.6 Baseline Characteristics

This section draws on Primary and Secondary sources to provide an overview of the baseline conditions at the Project Area.

This section provides a broad chronology (Section 17.6.1), considers geology, palaeontology and palaeoclimate (Section 17.6.2) and presents a chronological overview of known tangible cultural heritage in the Project area (Section 17.6.3). Intangible cultural heritage is considered (Section 17.6.4), including living cultural heritage, ethnography, languages, traditional governance structures, religious practices and cultural uses of natural resources. The archaeology and cultural heritage identified to date within each Project wellpad area, the Victoria Nile Ferry Crossing point, and the CPF/Industrial Area are presented (Section 17.6.5), accompanied by mapping (Figure 17-2 to Figure 17-53).

17.6.1 Chronological Development

Table 17-7 presents a broad overview of archaeological and historical periods in northwestern Uganda.

Table 17-7: Broad archaeological and historical periods in north western Uganda

Date		Period	Key site types and cultural aspects
Early Stone Age	Oldowan	c. 2.6 Ma – c. 1.7 Ma	Stone tools ('pebble tools') made by hominins, flakes and choppers.
	Acheulian	1.8 Ma – 50,000 years Before Present (BP)	Oval and pear-shaped hand-axes made by <i>Homo ergaster/Homo erectus</i> . Hand axes, scatters of stone tools and tool-making debris are known from the Mweya Peninsula, near Paraa and at Chobi (100,000-50,000 BP), in middle Pleistocene Semliki Series sediments.
Sangoan		130,000 – 10,000 BP	<i>Levallois</i> scrapers, picks, backed pieces (Ssemulende, 2017). Sangoan Culture stone tool industries (c. 130,000 – 10,000 BP).
Middle Stone Age		Middle Stone Age <c. 70,000 – 45,000 BP	Increasingly refined stone tool industries, often found in Upper Semliki terraces. Magosian Culture stone tool industries (c. 7,000 – 5,000 BP).
Late Stone Age		c. 45,000 BP – AD 800 +	Hunting, gathering and fishing - stone tool scatters. Occupation focussed on lakeside terraces and cave systems. Early Kanyore ceramics, from c.6000-5000 BC. Microlithic stone industries.
Kanyore period		c.8000 BP	Dotted wavy lines, Early Kanyore ceramics, from c.6000-5000 BC. Early Neolithic hunting, gathering, small-scale sedentary agriculture and pot manufacturing technology. Late/Terminal Kanyore ceramics, from c. 1000 BC – AD500.
Early Iron Age		Dating uncertain in Western Uganda	Development of iron smelting and metalworking, ?c. AD 250-400 + Urewe Ware pottery, c. 500BC – 600 AD. Villages, agriculture and animal husbandry. Bantu expansion to end of 6th century AD.
Late Iron Age		Dating uncertain in Western Uganda	Widespread introduction of iron-working. Pastoral revolution - cattle introduced to grasslands after AD 800. Chobi Ware pottery, roulette-decorated and mammilated pottery. Kibiro salt production and trading, c. 1000 AD+.
Contact Period		1840 – 1890	Muslim traders from the Indian Ocean trade firearms, cloth, and other items for ivory and slaves.
Search for source of Nile		1860s – 1870s	Explorers and missionaries.
British Protectorate		1894 – 1962	Colonial administration, conflicts and construction of forts.
Independence		1962 – present	Ugandan independence.
Oil exploration		Late 1990s	Oil exploration began in the late 1990s, escalating in 2003-4. Major onshore and offshore discoveries were confirmed in 2006 and 2007.

Date	Period	Key site types and cultural aspects
Traditional and sacred sites		May include natural landscape features - large trees, tree groves, watercourses, marshes, caves, locations where traditional rituals are undertaken by local communities, graves and cemeteries.

17.6.2 Geology, Palaeontology and Palaeoclimate

17.6.2.1 Geology, Topography and Soils

The Albertine Graben forms the northern part of the western arm of the Cenozoic East African Rift System. The stratigraphy of the study area largely comprises fluvial-deltaic and lacustrine shales and mudstones. Surface geology comprises Tertiary deposits (including fossiliferous Kaiso and Epi-Kaiso Group) across most of the Project Area. These are overlain by papyrus swamp and Quaternary alluvial deposits along river valleys and on the shores of Lake Albert. Lake deposits also include ironstones.

Soils in the Study Area are predominantly yellowish-red clay loams, with some areas of peaty sands and clays as well as reddish brown clay loams overlying murrum and ironstone within river valleys. This ironstone has been exploited for millennia, and the area contains extensive evidence for early ironworking.

The region is prone to soil erosion and landslides due to the combination of high intensity rainfall, sandy soils with high rates of water infiltration and a relatively impervious underlying clay layer, which is exacerbated by animal grazing. Soils throughout were found to be slightly acidic (pH 5.5 to 6.8). Such sandy and acidic soils can inhibit the preservation of archaeological bone.

Further information is contained in **Chapter 8: Soils and Geology**.

17.6.2.2 Palaeontology

The fossil remains of Pleistocene mammals have been recovered from Kaiso Formation deposits in the course of the Uganda Palaeontology Expedition (Cooke & Coryndon, 1970; Pickford & Senut, 1998).

The Uganda Palaeontology Expedition investigated areas of the Albertine Rift Basin between 1987 and 1992 (Pickford & Senut, 1998). The expedition focussed on fossil outcrops, in particular fossil mollusca, fish and mammals of the Kaiso Series of central Lake Albert. These are found in Plio-Pleistocene boundary sediments dating to c. 2.5 million years ago. Fossiliferous strata are between 8 and 1 million years old and indicate that the western rift was a freshwater area.

There is limited evidence for Miocene hominids in Uganda. The possible remains of hominoid *Ugandapithecus* are known from volcanic-sedimentary deposits from Napak District in Northern Uganda (Pickford et al. 2009) (20-19 Ma). Remains of *Afropithecus* (*Morotopithecus* or *Ugandapithecus*) were recovered from the Moroto District in the Northern Region of Uganda by the Uganda Palaeontology Expedition (Gebo et al., 1997; Gommery et al., 2002) (22 Ma). A cemented block of cranial fragments and a worn molar was recovered from Nyabusosi (Toro) in Western Uganda, possibly of Lower or possibly early Middle Pleistocene age, has been provisionally attributed to *Homo cf. erectus* (2.3 Ma and 1.5 Ma) (Pickford et al., 1993; Senut et al., 1987). The oldest known human remains from the Kikorongo Crater (Lake George, Kasese District, Western Region) only date to c. 8000 to 10,000 years before present (DaSilva, 2006).

There is presently no firm evidence of hominin fossils from the Albertine branch of the Rift Valley in Uganda. The remains of hominin fossils are known from the Albertine branch of the Rift Valley, from Ishango (Democratic Republic of Congo; Crevecoeur et al., 2014) and there is some evidence for Lower Pleistocene occupation of the Ugandan part of the Western Rift Valley (Pickford, Senut & Hadoto, 1993). However, the stratigraphic context of the finds from the Semliki Valley has been questioned (de Heinzelin & Verniers, 1996).

The lower reaches of the Victoria Nile, at Paraa and from Murchison Falls to Lake Albert, contain fluvial middle Pleistocene Semliki Series sediments. Their palaeontological content is poor but Acheulian stone tools are known from Semliki terraces, with Levallois worked stone tool-making flakes in the Upper Semliki terraces. There is potential for fossiliferous outcrops and hominin fossils to be present in this Western Rift Valley environment (Atacama 2013, 3-8). However, the preliminary results of a palaeontological study

commissioned by TEP Uganda in EA-2 indicate that the fossil sites are relatively recent (2 mya) (Atacama Consulting/ Ecology & Environment, Inc. 2014).

Areas CA-1, EA-1A and LA-2 have relatively poor palaeontological potential except in any areas of Semliki terrace geology. More information on the geology of the site is contained within **Chapter 8: Soils & Geology** and **Chapter 9: Hydrogeology**.

17.6.2.3 Palaeoclimatic Context

The region has complex natural climatic variability which, combined with human impacts on ecosystems, have been important to archaeological and historical developments, such as food production and the development of social hierarchies, in the Iron Age Great Lakes region.

Lake sediment records spanning the last 200 to ~1000 years indicate that the lakes are particularly sensitive to short-term rainfall variability (de Heinzelin, 2004; Ssemmanda et al., 2005; Russell et al., 2007; Bessems et al., 2008). During the early prehistoric period, the region experienced alternating stages of humid and arid climatic conditions, which in turn affected environmental conditions and patterns of human occupation. Interpretation sediment cores from Lake Albert suggests that there were low water periods between 18,000 and 12,500 ¹⁴C yr BP and 8,000 and 3,400 ¹⁴C yr BP (Beuning, Talbot & Kelts, 1997), with an abrupt wet phase c. 15,000 BP (Williams et al., 2006). Pollen records document an abrupt shift to arid conditions around Lake Albert from 11,400 to 9,900 ¹⁴C yr BP (Beuning, Kelts & Stager, 1998), as the savanna expanded and forest receded, with a brief moist phase between c. 10,900 to 10,400 ¹⁴C yr BP.

During the Iron Age, climatic changes may have led to the development of pastoral and an agricultural specialisation around AD 800 to 1000 (Robertshaw & Taylor, 2000). In the East African 'Little Ice Age' (c. AD1270 to 1870), the climate was cool and moist, with three prolonged dry episodes. These dry episodes resulted in crop failures, famine, social and political unrest; it has been suggested that the Kingdom of Bunyoro was founded in the 16th century when the Biito dynasty was established by the invading Luo people from the north, overturning an earlier Bachwezi dynasty (Verschuren, Laird & Cumming, 2000; Robertshaw et al., 2004; Russell & Johnson 2007; Schoenbrun, 2013).

17.6.3 Tangible Cultural Heritage

Tangible cultural heritage has archaeological, palaeontological, historical, cultural, artistic, and religious values (IFC, 2012). This Section covers archaeological, palaeontological and historical heritage, and sacred spaces. Sacred heritage, including religious buildings, sacred trees and watercourses, and graves, is also addressed in **Chapter 16: Social**.

The study area contains a number of archaeological, cultural and historic sites. These are an important research resource, and some also have the potential for education and tourism alongside the natural attractions of the Rift Valley, Rwenzori Mountains, lakes and the Murchison Falls National Park itself (NEMA 2009). Tourism initiatives in the area are largely associated with wildlife and natural heritage assets. However, there are initiatives to develop cultural performances and trails at cultural sites including Purongo Cultural Centre, Pakwach and Wangelei Cultural sites (Artelia 2015).

17.6.3.1 Internationally Recognised Cultural Heritage

There are no internationally recognised or designated tangible cultural heritage features or areas, or proposed critical cultural heritage features or areas, within the Project Area. The Project Area does not contain any World Heritage Sites or Tentative List World Heritage Sites.

Murchison Falls was proposed to be included on the World Heritage List for natural criteria in 1994, but it was not inscribed.

The nearest Tentative List World Heritage Site is the Kibiro salt producing village on the eastern shore of Lake Albert, approximately 50 km away from the closest part of the Project Area. Kibiro was placed on Uganda's Tentative List of World Heritage Sites in 1997. The Tentative List is an inventory of those properties which a country intends to consider for nomination to the World Heritage List.

The list description (UNESCO 1997) notes that: 'Kibiro salt producing village demonstrates a unique example of an industry which has sustained its people for eight to nine hundred years ago and continues to do so perhaps for posterity from fishing on Lake Albert, the people of Kibiro have depended on the production of

ash salt which is obtained by recycling residual earth with fresh soil which is spread on salt gardens for the salty water to get absorbed by capillary system. Through repeated scraping, spreading and heaping of the salty soil over a seven day period, it is leached and the scam is boiled to crystallisation point to produce the ash salt. The residual soil from leaching is then mixed with fresh soil to repeat the salt production process. Salt production was and is a female hereditary occupation. Before the introduction of metal vessels, pottery ware was used during the leaching and boiling processes and this is evidenced by the rich archaeological depositions of potsherds throughout the village going as deep as 4 metres and dating to between eight and nine hundred years to the present. Kibiro village is a sandy beach along Lake Albert where food does not grow. The Bakibiro population therefore have depended for its livelihood on the exchange of salt and fish for food through time with farming communities on the plateau above the Ugandan side of the Western Rift Valley. The village therefore forms an important cultural site which has combined both archaeology and ethnography through time in the production of ash salt.'

Archaeological evidence suggests that salt-making at Kibiro, which was first reported over a century ago, has probably been practised for 700–800 years. It seems likely that it was an important economic factor in the development of the former Kingdom of Bunyoro (Connah, Kamuhangire & Piper 1990). The salty water from the Kibiro Hot Springs is used for traditional processing of salt.

17.6.3.2 Nationally Protected Areas

The wider Albertine Graben area has a number of archaeological and historic sites of national heritage importance (NEMA, 2009). These comprise the Nkondo and Kaiso palaeontological sites on the eastern shores of Lake Albert, historical forts at East Wadelai, Magungu and Fajao, and earlier Stone Age sites at Paraa and near Pakuba Airport.

There is only one nationally designated site located in the vicinity of Project components. It is designated under the Historical Monuments Act 1967 and the Historical Monuments (Amendment) Decree (No.6) of 1977. This is the Stone Age site at Paraa (ACH-00-300), located c. 250m northeast of the Victoria Nile Ferry Crossing North survey area boundary.

17.6.3.3 Stone Age

17.6.3.3.1 Old Stone Age (c. 2.6 Ma – c. 70,000 years Before Present (BP))

Oldowan stone tools (c. 2.6 Ma (Million years ago) - 1.7 Ma) were made by hominids striking flakes from pebbles to make core-artefacts and sharp flakes which were used as scrapers and points. Artefacts such as hammerstones and stone tool-making debris are also found. Oldowan lithics dated to 1.5 to 1.8 Ma were discovered in the Nkondo and Warwire Formations near Lake Albert (Pickford et al., 1988, 1990). A significant Oldowan assemblage was recorded at the southern end of Lake Albert, in the Kisegei-Nyabusosi area in the course of the Uganda Palaeontology Expedition (Pickford et al., 1989; Texier, 1995). This in situ assemblage was recovered from fluvio-lacustrine sediments, and may indicate the co-occurrence of Oldowan and Acheulian sites in East Africa between 1.6 Ma and 1.4 Ma.

No Old Stone Age artefacts have been identified within the Project Area.

17.6.3.3.2 Middle Stone Age (<c. 70,000 – c. 45,000 BP)

The Acheulian period (c. 1.8 Ma – c. 50,000 BP (Before Present)) which followed was characterised by distinctive oval and pear-shaped hand-axes made by *Homo ergaster/ Homo erectus*. Acheulian hand axes, scatters of stone tools and tool-making debris have been recorded in middle Pleistocene Semliki Series sediments in the course of small-scale excavations were undertaken at Chobi, within MFNP (Soper, 1971). Sites along the Victoria Nile and Lake Albert have produced numerous stone artifacts that indicate the presence of hunter gatherers in the area during the later Pleistocene and early Holocene (Connah, 1997).

Studies of the Jobi East Field and the Mpyo Field (South Area) noted that in Paraa formation exposures in the Pakwach Basin, several stone flakes could be seen scattered on the surface, as well as bifaces, and bolas stones have also been discovered in the area. The location in the Paraa formation suggests an Acheulian date for the horizon (Atacama / Ecology & Environment Inc. 2013). Acheulian hand axes have been recorded at Ngiri-C, Mweya Peninsula and Paraa (Atacama Consulting 2012 – Ngiri-C).

Early and Middle Stone Age sites in the area are frequently lacustrine, and are particularly associated with strand flats, terraces and caves of formerly more extensive lakes, as well as river systems.

Middle Stone Age struck stone tools and tool-making waste have been identified within the Project Area in the form of surface finds, including in situ scatters of tool-making waste. These have been recorded in the vicinity of wellpads JBR-06, GNA-02, NSO-04, KGG-03, NGR-03 and NGR-04.

17.6.3.3.3 Late Stone Age

Middle or Late Stone Age (45,000 – 1,000 BP) flaked white quartz debitage, a few microliths and a scraper, and Late Stone Age stone tools and tool-making debris have been identified at Chobi, within MFNP (Soper, 1971). Kanyore-style pottery was also recorded at Chobi. Early Kanyore ceramics were used by hunter-gatherers (c. 6000 – 5000 cal. BC), while Late/Terminal Kanyore (c. 1000 cal. BC – cal. AD 500) were used by settled Neolithic populations; the pottery type continued to be used into the Iron Age (Dale & Ashley, 2010; Ashley & Grillo, 2015).

From c. 4,500 BP, Saharan herders and hunters spread southwards to eastern Africa. During the Neolithic (c. <5,000 – c. 1,300 BP), populations were engaged in hunting medium and large game, fishing, gathering, herding livestock (primarily cattle, as well as goats and sheep) and manufacturing stone tools and pottery.

The shift from hunting and gathering to food production is not clear, and the extent of nomadic pastoralism, sedentary agriculture and mixed economies at this time are debated (Clark & Brandt, 1984; Bower, 1991; Gifford-Gonzalez, 1998; Karega-Münene, 2003). It is important to note that cultivation and pastoralism are occupations, rather than ethnic terms, and that changes of occupation may have been continually occurring both at the levels of both the individual and the group (Ogot, 1984, 499).

It is possible that some grains, such as millet, sorghum, eleusine (savanna grass/ goosegrass), and other domesticated plants were cultivated. Environmental factors, such as the presence of tsetse flies, which carry sleeping sickness (African trypanosomiasis), around the Lake Albert area may have constrained herding and led to the development of settled agriculture in the Lake Albert area (see also Chritza et al., 2014). However, little is known of the area's past ecosystems, and it is not known whether the environment at this time would have been prone to zoonotic diseases.

The sites of early settled open-air farming communities are characterised by plain pottery, grain/food grindstones, a wide range of finely manufactured stone tools including microliths, bladelets and polished stone axes, and tool-making waste (debitage). River craft may have been used for trading and fishing.

Late Stone Age artefacts identified within the Project Area include struck stone tools and tool-making waste, including surface scatters of lithic cores and flakes of quartz, black chert and volcanic material, and tools such as scrapers. Highly abraded cores were present in some areas, possibly indicating redeposition. Lithic material was recovered from land in the vicinity of wellpads JBR-01, JBR-02, JBR-03, JBR-04, JBR-07, JBR-08, JBR-09, JBR-10, GNA-01, GNA-02, NSO-06, NGR-04 and NGR-05. Kanyore pottery was noted at JBR-04 and KW-01. Possible Neolithic pottery was recovered in the vicinity of wellpad JBR-02. A Neolithic fishing weight was recorded near NGR-04.

17.6.3.3.4 Uncertain date

Stone tools of uncertain date have been reported at Kaiso (Wayland, 1934; O'Brien, 1939; Bishop & Posnansky, 1960). Bishop et al., during their 1965 expedition to MFNP found a good assemblage of stone artefacts on a site near Paraa Lodge. The Paraa area also yielded a large assemblage of archaeological material varying from hand axes to lances and other smaller tools (Atacama 2014, Victoria Nile). Land in the vicinity of Pakuba Airstrip has also yielded concentrations of stone tools (NEMA 2009, 23). Lithic artefacts have also been found in the Wanseko area, north of Buliisa and south of the mouth of the Victoria Nile (Uganda Museum).

17.6.3.4 Iron Age

The Iron Age Urewe culture (c. 550 BC – AD 650) was characterised by the development of quite large open-air village communities as well as rock shelter and cave-based settlements, the introduction of agriculture (millet and sorghum) and small-scale cattle rearing and poultry-keeping and sophisticated iron working techniques. Iron ore was derived from local laterite. The use of iron tools may have facilitated slash-and-burn agriculture, altering the environment and resulting in forest clearings. Historical linguists believe that Early Iron Age communities introduced Eastern Bantu languages to east-central Africa.

Metalworking was introduced inland in northwestern Uganda from c. 450 BC. This development has been ascribed to the migration of Bantu populations from West Africa to the Congo/ Rwanda area (Hiernaux & Maquet 1954; *ibid.*, 1960) and the Great Lakes region c. 500 BC (Humphris & Iles, 2013; Humphris et al., 2009; Schmidt, 1977; Schmidt & Childs, 1995). Sites of early iron-using communities are distributed along rivers, perhaps indicating that technology spread via river networks. However, the scale and intensity of early iron production is not well understood. It is not known how it developed or what its impact was upon the local environment. The Iron Age period is characterised by finds of iron slag, furnaces, burnt clay and tuyères from smelting furnaces, and iron objects as well as distinctive pottery types (Lanning, 1957; Posnansky, 1961; Soper, 1985; Desmedt, 1991; Stewart, 1993; Robertshaw, 1994; Ashley, 2010).

Distinctive dimple-based Early Iron Age Urewe Ware is well attested in the lake region (Kenya, Uganda, Rwanda, Burundi, Tanzania) and also in Zaire. Urewe Ware pottery with incised decoration is known from the Victoria Nile at Chobi (Soper, 1971) and Paraa (Connah, 1997), and from east of Lake Albert, near Tonya and Butiaba (Connah, 1997). Clay from the banks of the Nile may have been used to make pots and to construct furnaces. The main distribution of Urewe Ware in Uganda is in southwestern Uganda, in riverine or lacustrine environments. The balance and development of the mosaic of hunter-gatherers, livestock herders and settled communities in the Lake Albert area is not yet fully understood (Ehret, 1998).

Chobi, within Murchison Falls National Park, is known for a middle Iron Age pottery tradition known as Chobe Ware (Soper, 1971) or Boudiné Ware (Hiernaux & Maquet, 1960), which is spread as far as Rwanda and Burundi. Excavations at Chobi recorded an assemblage of Urewe Ware, Chobe Ware and Late Iron Age roulette-decorated pottery (7th century AD onwards), along with iron objects (spear- and arrow-heads, knives, hoes, a chisel and tweezers), quernstones and the remains of iron-smelting furnaces. Extensive Iron Age remains included former settlement areas, pottery scatters (c. 1000-1250 AD) and ironworking sites characterised by the presence of slag and tuyères (Soper, 1971; Kyazike, 2004).

The Bantu expansion came to an end in about the sixth century (Eggert, 2005). After c. 1000 AD, the region underwent a major change as the first wave of Bantu migrants continued south as pastoralists. Small pockets of Nilotic and Cushitic pastoralists entered the region, bringing with them herds of cattle. The Cushites spoke Afro-Asiatic languages in contrast with the Bantu, who spoke Niger-Congo languages. By the Late Iron Age, new iron reduction techniques were in use in the central forest area. In the later Iron Age, there may have been an increase in hunting and fishing perhaps due to the diminishing quality of soils or changes in population and economy.

Iron Age material recovered from the Project Area includes characteristic decorated Chobe Ware pottery, and evidence of metalworking including slag and tuyères. It is important to note that some pottery styles established in the Iron Age are still in use today. Iron Age material was recovered from the vicinity of wellpads. Early Iron Age Urewe pottery with punctuated decoration was noted at NSO-05 and possible Urewe Ware at KW-02. Middle to Late Iron Age roulette-decorated Chobe Ware pottery was recovered from the vicinity of wellpads JBR-01, JBR-02, VNFC, GNA-03, NSO-05, NSO-06 and KGG-05. Ironworking tuyères were noted at the VNFC, NSO-04, NSO-06 and within the CPF / industrial Area.

17.6.3.5 Pre-Colonial Period

17.6.3.5.1 History

Area CA-1 and LA-2, south of the Victoria Nile, lies within the Bunyoro Kingdom. The documented pre-colonial history of the area is mostly from oral traditions and revolves around the activities of three successive dynasties of traditional monarchs: Batembuzi, the Bacwezi and the Babiito (Posnansky, 1966; Farelius, 2012). Historically, the Bunyoro Kingdom controlled the salt springs of Kibiro and Lake Katwe as well as iron ore mining and iron production in Masindi district around Kisanja, and in Kibale district at the Munsa site. Emergence of states and the history and ethnography of the Bunyoro Kingdom (Nyoro, Bakitara, Banyoro, Bunyoro, Gungu, Kitara, Kyopi, Nyoros, Ouanyoro, Runyoro, Vouanyoro, Wanyoro) are addressed by a number of studies (e.g. Roscoe, 1923; Baker, 1954; Apuuli, 1994; Cox, 1950; Doyle, 2005 & 2006; Dunbar, 1969; Kiwanuka, 1968; Mugagga, 1991; Nyakatura, 1947; Reid, 2005; Schoenbrun, 1998 & 1999; Steinhart, 1967 & 1981; Tantala, 1989).

It is important to note that although oral tradition is an invaluable resource, they should be treated with caution (Usoigwe 1973). The historical accuracy and chronologies of genealogies may not be reliable (Henige, 1974a & Henige, 1974b; Schmidt, 1990) or refer to historical persons (Vansina, 1985), and that foundation myths do not necessarily contain valid historical information regarding the early history of the

region (Wrigley, 1958). Likewise, oral traditions associated with court traditions may not reflect the lives of ordinary people (Ogot, 1984, 499).

17.6.3.5.2 The First Dynasty (Batembuzi)

During the First Dynasty, which, according to tradition, lasted through nineteen *Abakama* (kings), Bunyoro was called Kitara. This Batembuzi dynasty (meaning 'harbingers' or 'pioneers') was established by members of the Abagabu clan and controlled much of southern Uganda from Bunyoro. It became the most powerful kingdom of the region, so that all neighbouring tribal states were brought under its control. Isaza Waraga, a king of this dynasty is credited with dividing his kingdom into territorial units called '*Amasaza*,' or counties. The names of rulers he assigned to rule distant parts of his kingdom, such as Ntembe of Busoga in eastern Uganda or Machumulinda of Ankole, still form part of the oral history of those areas even though they are no longer part of Bunyoro.

This is evidence of Kitara having ruled much of southern Uganda as an empire, since so many of the people ruled came from different tribes. Some of the early kings of the Batembuzi dynasty like Kazooba and Muwanga (Nyamuhanga) were deified as gods and are worshiped in various areas of southern Uganda. The Batembuzi dynasty collapsed and the Bagabu retreated from the centre of the kingdom to the Busongora area north of Lake Edward as ordinary pastoralists around AD 1300 (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-8)

17.6.3.5.3 The Second Dynasty (Bachewzi)

The second dynasty replaced the collapsed Batembuzi, and was established by the Bachewzi (Oliver, 1957; Wrigley, 1958; Kigaya-Muldinwa, 2005). They are claimed to have introduced coffee, bark cloth and earthwork fortifications (Robertshaw, 2001 & 2002). Each Cwezi polity was centred on a ritual site, generally situated on a prominent hill (Tantala, 1989).

Like the Batembuzi, the Bachewzi are credited with performing supernatural deeds and were worshipped as deities by a number of clans. Notable among these are Kagoro, the god of thunder and lightning; Wamala, a king who is said to have created Lake Wamala; and Mukasa, the god of Lake Victoria. Until today, Bachwezi deities continue to be worshipped in the traditional religion of the people in southern Uganda. One Muchwezi deity whose fame has increased is the wife of Ndahura, the first king of the Bachwezi dynasty, who is credited with founding the Cwezi 'Empire' (Oliver, 1953). Called Nakayima by the Baganda and Nyakahuma by the Banyoro, her shrine is at Mubende near a giant tree said to have been planted by her husband.

The Bachwezi retained the administrative structure of the Batembuzi, but one consequence of their rule was the stratification of the population into three classes: the Bairu who were the agricultural peasants, the Bahima/ Bahuma pastoralists, and the ruling clan members (princes and princesses) referred to as the Babiito and Babiitokati. In addition, there were specialists such as counsellors (*bahanuuzi*) and diviner doctors (*bafumu*), with knowledge of dynastic, lineage, and family histories who performed stories about dynastic events, accompanied by music and dance (Schoenbrun, 2013, 641).

The Bachwezi are said to have been light-skinned, originating from outside the kingdom of Bunyoro. Some historians believe they may have been Cushitic people descending from present day Ethiopia, since they introduced coffee to Uganda, and because coffee drinking originated in Ethiopia before spreading across the globe. History records three rulers of the Bachwezi dynasty. The first was Ndahura who established his capital at Mubende, a site where rituals are still undertaken; followed by the regent Mulindwa who also ruled from Mubende; and Wamala, the last king who ruled from Bwera. (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-8).

Salt was probably the most common trading commodity during the Cwezi era, on which tax may have been levied. Cwezi shrines are located at two major salt sites, Katwe and Kibiro, and on trade routes towards Kibiro and the trade routes from the north (Tantala, 1989; Bimco Consult Ltd., 2009).

The Bachwezi Kingdom collapsed around AD 1400 and was precipitated by a major event: the Babito or Luo migration from the north. Traditions concerning gods and heroes, and the continuing popular Cwezi cults (Beattie, 1957 & 1964; Berger & Buchanan, 1976; Berger, 1980), illustrate the changes and may also echo the cultural and economic importance of iron and its working among agricultural populations from before the pastoral revolution of the Luo migration (Sutton, 1993).

17.6.3.5.4 The Babiito

The Bito clan of the Luo people migrated into Bunyoro-Kitara from the north and found the Kingdom in turmoil with the population having revolted against the Bachwezi. The Babiito took over the kingdom and learned Bantu customs and the traditional ways of ruling. Eventually most of the Babiito lost their language and adopted Runyoro. Those Luo who entered into Bunyoro, and did not abandon the Luo language or their Luo identity, are known as the Chohe. Calling themselves the Palwo/Paluo, they now live in the present day Kiryandongo district.

Some of the Luo who settled on the shores of Lake Albert shores in to the north of Bunyoro mixed with the Banyoro, resulting in the Bagungu sub-tribe within the Bunyoro Kingdom. They owe their allegiance to the *Omukama* of Bunyoro, but their language, while predominantly Bantu, contains many Luo words (Sutton, 1993; Vansina, 1995). The same holds true for the Bakobya who live on the southern shore of Lake Albert in the south. These people still regard themselves as Banyoro, but have retained a lot of Luo vocabulary in their dialect of Runyoro which is called Rukobya. Due to the ruling house of Bunyoro kingdom having blood links with the Nilotic people of northern Uganda, there was no recorded history of warfare between the Bunyoro Kingdom and the Nilotic north from the time the Babiito established their rule in Bunyoro. Instead the Luo people used to refer to the *Omukama* of Bunyoro for arbitration of disputes between various chiefdoms as well as to provide soldiers for the Bunyoro Kingdom armies. Before the arrival of the colonialists, the Bunyoro Kingdom fought with the fellow Bantu kingdoms of Buganda, Ankole and Toro. (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-9).

It is worth noting however, that Kihumuro (1994) in "A Thousand Years of Bunyoro-Kitara Kingdom, The People and the Rulers" writes that, Bugungu County was among the original counties of Bunyoro Kitara Kingdom which were created by the Batembuzi dynasty King Isaza Waraga Rugambanabato. This potentially implies that Bagungu were in their land for generations before the coming of Babiito into Bunyoro Kingdom or perhaps before the kingdom was made centralized.

17.6.3.5.5 Archaeological evidence

Key archaeological features of the Bunyoro Kingdom are earthworks, with major sites at Bigo, Kibengo, Ntusi and Munsa dating to between the 9th to 16th centuries (Lanning, 1953; Robertshaw, 1994). Finds of glass and cowrie shell beads at Ntusi, ivory beads at Mubende Hill, imported glass beads and a copper ring at Kibiro (Connah 1997), indicate long-distance exchange networks reaching to the East African coast by about the 13th century AD (Bimco Consult Ltd. 2009).

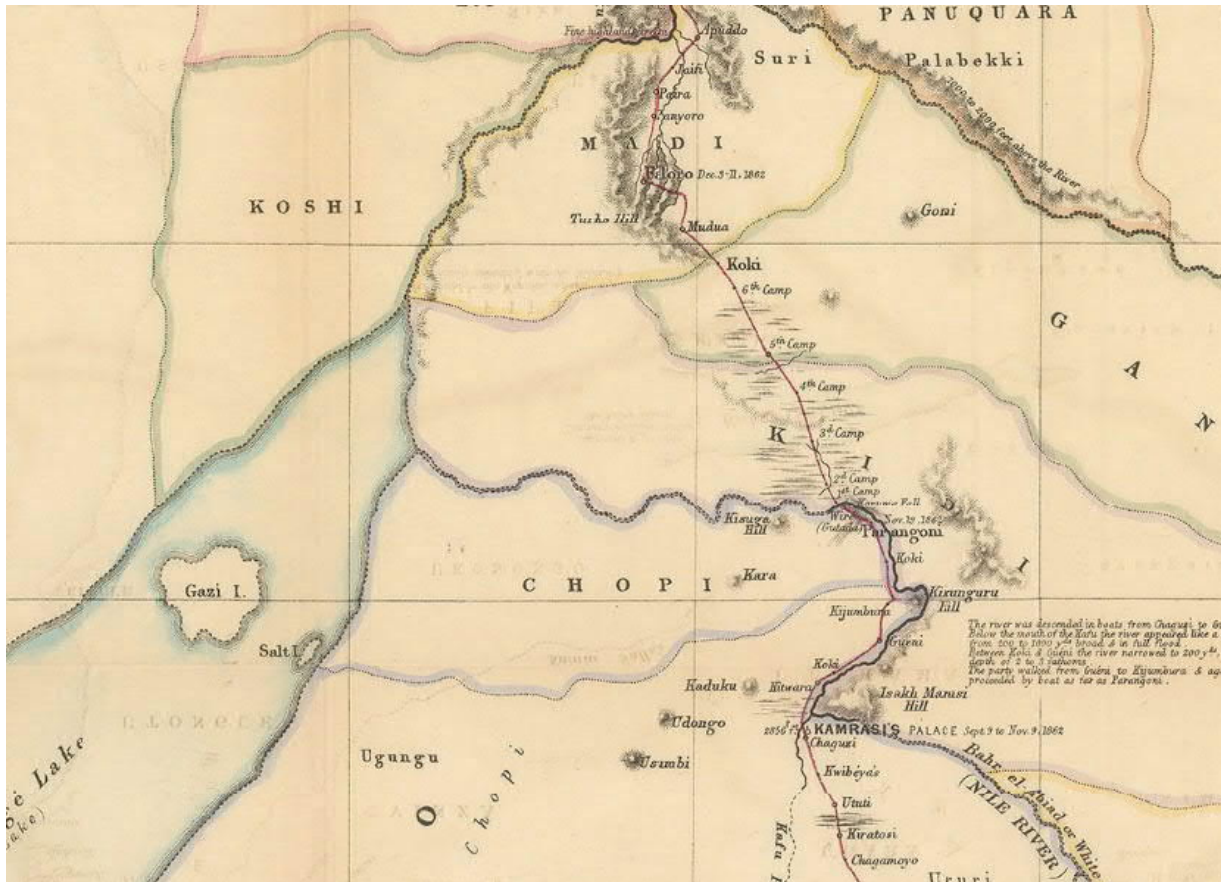
The Kibiro salt processing village and hot springs is a Tentative List World Heritage Site (mixed natural & cultural) located on the eastern shore of Lake Albert, south of the Project area. Salt production at Kibiro involves an elaborate boiling and filtration process, and dates from c.1000 AD to present (Connah, 1966, *ibid.*, 1989, 1991, 1996 & 1997; Hiernaux & Maquet, 1968; Connah, Kamuhangire & Piper, 1990; Reid, 2005). Salt is produced by traditional methods in salt gardens fed by geothermal hot springs, and is exclusively carried out by women. The salt itself is believed to have curative properties and is preferred to industrial salt; it gives the area a lot of respect and importance among the Banyoro (Bimco, 2009).

Extensive later Iron Age remains have been identified within the Project Area. Former settlement areas, pottery scatters (c. 1000-1250 AD) and ironworking sites characterised by the presence of slag and tuyères were recorded at Chobi (Soper, 1971). These fit into a wider regional pattern of ironworking and trading in salt (Kigaya-Muldinwa, 2005).

17.6.3.6 International Trade, Colonial Incursions, Resistance and the Anglo-Ganda War (1852 – 1899)

Omukama Kyebambe IV Kamurasi (1852–1869) quelled rebellion and attempted to consolidate his authority throughout the kingdom. He admitted Arab trade from the north and Swahili-Arab traders from the East African Coast, exchanging iron hoes, spearheads and Kibiro salt for guns and other manufactured products. Arab slave traders established a trading station on the Nile at Faloro, north of Gulu [approx. UTM 36N 369680 356095]. There was a slave holding-post at Fort Wadelai in Nebbi district [approx. UTM 36N 342530 313260] and there was a slave market east of Pakwach, near the present MFNP Tangi Gate [approx. UTM 36N 334207 271430] (Alpers, 2009). Pakuba and Wangkwar are key points on the slave trade routes. The Nile became an important slave trade route, along which slaves were trafficked to the Red Sea ports of Sudan and Ethiopia, and onwards to Al-Hijaz, along the western coast of Arabia (Ewald, 1988).

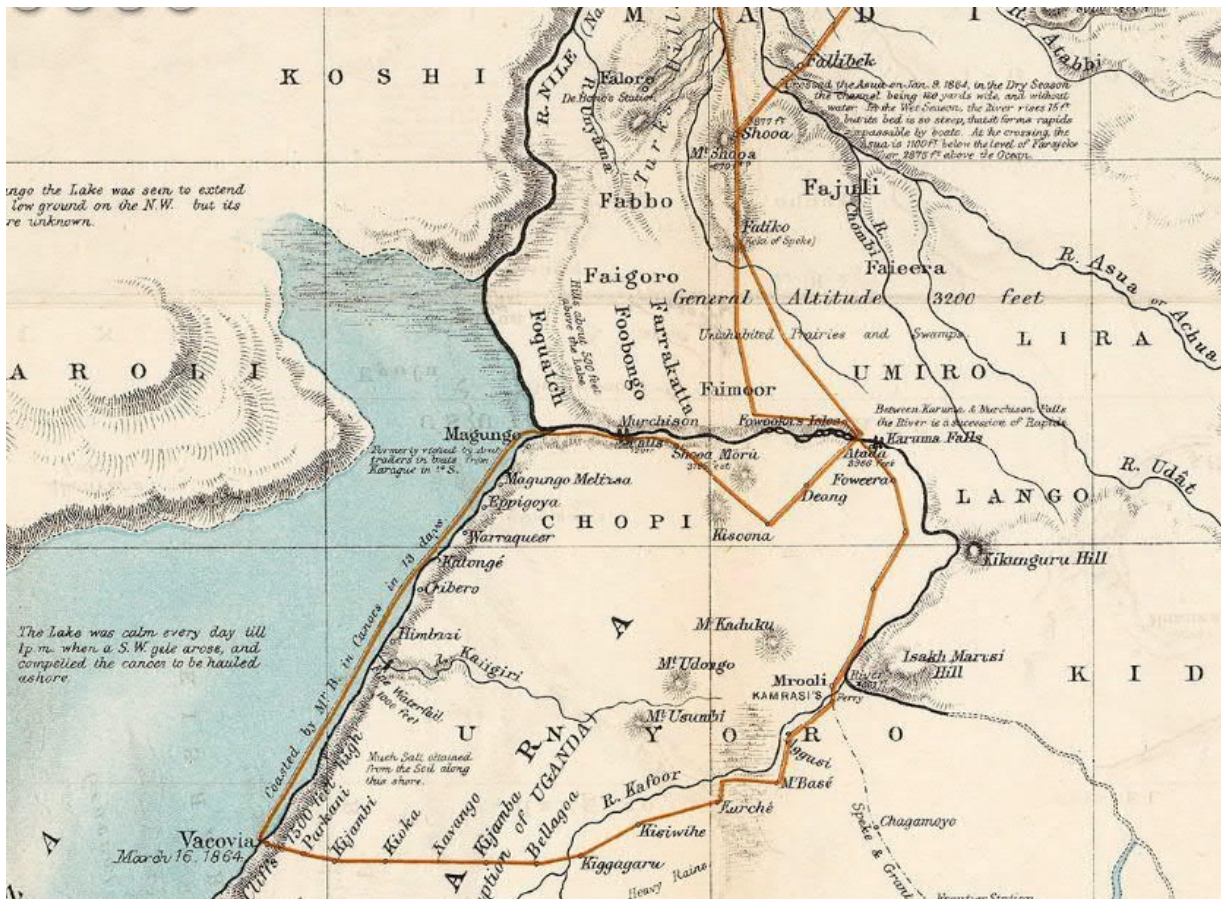
In 1862, Omukama Kamurasi welcomed the explorers John Hanning Speke (1827–1864) and James Grant (1827–1892), the first European visitors to Bunyoro. The explorer Samuel Baker (1821–1893) and his wife stayed in Bunyoro for a year in 1864 (Baker, 1866; Apuuli, 1994).



Historical Map 17-1: 1864. John Speke, Map of the Routes in Eastern Africa between Zanzibar, the Lakes and the Nile. Royal Geographical Society

Following Omukama Kamurasi's death, Omukama Chwa II Kabalega (1870–1899) won a bitter war of succession and imposed a centralised political and military system, weakening the power of the rebellious aristocracy (Nyakatura, 1947). Salt and iron exports were revived, and the old slave trade was replaced by the ivory trade (Apuuli, 1994).

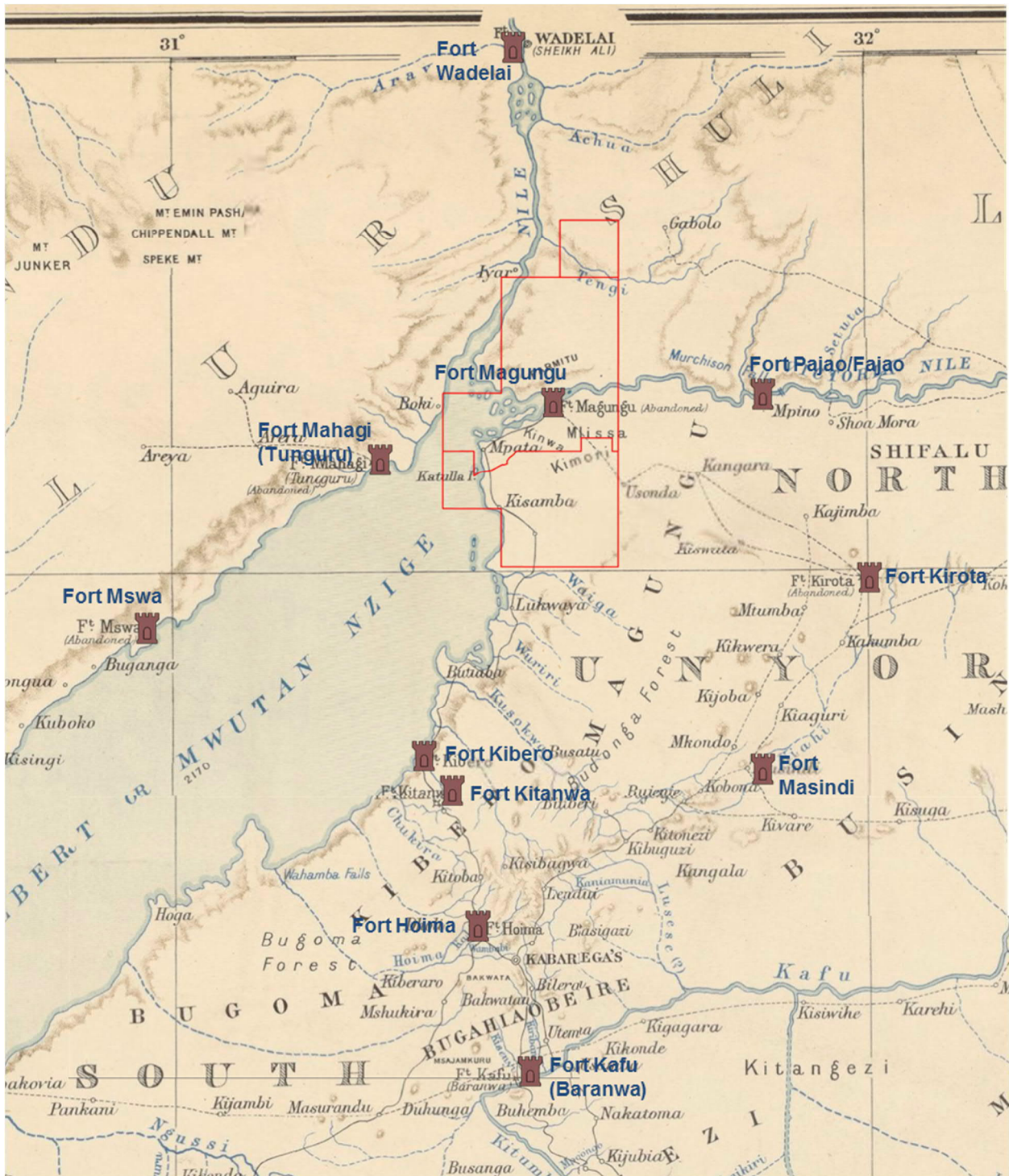
Baker returned in 1872 as the Governor General of the Egyptian Equatorial Province, appointed by Khedive Ismail of Egypt to extend his empire in the Sudan and northern Uganda. Baker formally annexed Kabalega's country to the Egyptian Empire, so Omukama Kabalega attacked Baker's garrison at Masindi. Baker was forced to retreat across the Victoria Nile and established a fort at Gulu. Colonel Charles George Gordon (1833–1885) replaced Baker as Governor of the Egyptian Equatorial Province in 1876, and established forts at Bugungu, Kibyama and Kisuga near Masindi, but Kabalega chose not to attack them. Emin Pasha (1840–1892) replaced Gordon in 1878 and maintained more cordial relations with Kabalega. Following the fall of Khartoum to the Mahdists in 1885, Emin and most of his forces withdrew further south, to Wadelai near Lake Albert. The Emin Pasha Relief Expedition, led by Henry Morton Stanley (1841–1904), undertook to rescue Emin via the Congo River and overland, reaching him in 1888. Emin Pasha and Stanley's Expedition comprised long trains of baggage and livestock which travelled vast distances. These expeditions may have introduced sleeping sickness to Uganda by importing tsetse flies from the Congo.



Historical Map 17-2: 1866. A Map of The Albert N'Yanza and of the routes leading to its discovery in 1864. Samuel White Baker, Esq. Royal Geographical Society.

There are a number of pre-colonial and colonial period fort sites in the wider area (Boul & Askwith, 1897). These are illustrated on Historical Map 17-3. Only the site of Fort Magungu is located within the Project area. Forts include:

- Fort Magungu, where the Victoria Nile meets Lake Albert and Fort at Pajao/Fajao on the Victoria Nile, with a telegraph office;
- Baker's forts at Masindi, south of the Project area and Baker's fort at Gulu, far northeast of the Project area (not illustrated);
- Gordon's forts at Bugungu, Kibyama and Kisuga (Mruli) near Masindi, south of the Project Area;
- Emin Pasha's forts Wadelai and East Wadelai on the Nile to the north of the Project Area, and Fort Foweira (east of Karuma; not illustrated);
- Fort Kitanwa and Fort Kibero, on the shores of Lake Albert; and
- Fort Hoima, Fort Kirota, inland and south of Kajimba, and Kafu (Baranwa) fort, south of Hoima at the Kafu River crossing.



Historical Map 17-3: Forts in the vicinity of the Project Area. Based on Map of Uganda and Adjoining Territories, compiled for the Intelligence Division War Office by Captain J. R. L. Macdonald, August 1894. Bibliothèque nationale de France, GE C-2291. Location of exploration areas approximate due to projection of historical map base.

Contemporary European travel journals and geographical papers provide insights into the populations and cultural practices within the study area (Dunbar, 1959). Although these explorers published accounts of their travels extensively, they are of limited use in interpreting archaeological, cultural and ethnographic aspects due to their Eurocentric and contemporary colonial bias. These include Speke and Grant's journey to the source of the Nile in 1862 (Speke, 1863); the journey of Sir Samuel and Lady Florence Baker, 1863-4 (Baker, 1866), the diaries of Emin Pasha of the 1870s and 1880s (Thruston, 1890; Casati, 1891; Felkin, 1892; Boul & Askwith, 1897; Dunbar, 1960; Gray, 1961) and other contemporary accounts (Wilson & Felkin 1882; Macdonald 1897; Ashe 1894 & 1899; Austin 1903; Gray, 1948 & 1951).

Captain Fredrick Lugard (1858–1945) was appointed Military Administrator of Uganda and arrived in Buganda in 1890, to extend the territorial claims of the Imperial British East Africa Company. Omukama Kabalega resisted British rule. Lugard's forces obliged Kabalega to retreat to the northwest of Bunyoro. In 1893, Bunyoro was invaded by Colonel Colville, supported by Sudanese and Baganda troops. Kabalega retreated to the Budongo forest and started a guerrilla war attacking British forts. In 1895, Kabalega attacked the British at Kijunjubwa near Masindi, forcing them to retreat to Hoima. He suffered a defeat at the battle of Harukungu. In 1898, he returned to Northern Bunyoro and destroyed the British post at Hoima. In 1898 the British re-occupied the forts at Fajao and Foweira. Kitahimbwa, son of Kabalega, was imposed as a new Omukama by the British. Following a series of skirmishes in 1899, Kabalega was captured and exiled.

A number of caves in the wider area, such as Katasiha fort or cave and cultural site, Hoima, were used by the Bunyoro resistance to the British colonial forces (Colville, 1895; Dunbar, 1960a). Many historical sites in Bunyoro have a connection to Kabalega and colonial activities in Bunyoro. Kabalega's legacy is traced through sign posts for schools, hotels, or streets named after Kabalega in Hoima, Masindi, and Buliisa (Atacama Consulting/ Ecology & Environment, Inc. 2014, 4-1).

There are no forts located within the proposed Project activity areas, nor any documented sites associated with the anti-colonial resistance. The nearest fort is Fort Magungu.

The site of Fort Magungu where the Victoria Nile meets Lake Albert, established by Governor General Charles Gordon in 1876, is located northeast of wellpad GNA-01. There are no forts located within the Project Area, nor any documented sites associated with the anti-colonial resistance. There is, however, the potential for stray finds of cultural material associated with colonial trade and the Anglo-Ganda War.

17.6.3.7 British Protectorate (1894 – 1962)

The Uganda Protectorate was declared in 1894 after the Imperial British East Africa Company transferred its administration rights to the British Government. Its territory was extended beyond the borders of Buganda to annexe Bunyoro lands in 1896.

The population of northern Bunyoro, including MFNP, was largely evacuated from 1907 to 1912 due to an epidemic of sleeping sickness (African trypanosomiasis) which occurred between 1896 and 1906, resulting in the depopulation of large tracts of farming and grazing lands and fishing grounds along the Victoria Nile. After the settlements were abandoned, British officials burned homes and destroyed crops to discourage repopulation. The evacuation is documented in government and medical reports (e.g. Bell, 1909) and European travellers described the ravages of sleeping sickness and evacuation in their diaries (Lloyd, 1906; Churchill, 1908). The colonial government evacuated the Bagungu people to present-day Kigoroby, Hoima District.

Historic mapping of the MFNP area indicates past settlement areas noted by European explorers, although place-names are spelled phonetically and may not match up with current place-names:

- A map of 1864 indicates settlements at Faloro, Mudua, Koki (1864. John Speke, Map of the Routes in Eastern Africa between Zanzibar, the Lakes and the Nile. Royal Geographical Society).
- A map of 1866 indicates a series of groups living in the area, labelled Foquatch (Pakwach), Foobongo, Farrakatta (Parraketto), Faimoor, Faigoro, Fabbo. It indicates Fatiko (Patiko), Mount Shooa, and Faloro Station. The northeastern part of MFNP is labelled 'uninhabited prairies and swamps' (1866 A Map of The Albert N'Yanza and of the routes leading to its discovery in 1864. Samuel White Baker, Esq. Royal Geographical Society).
- A military map of 1905, prior to the evacuation of the MFNP area, shows settlements including: Pangamur in the southwest, between the Victoria Nile and White Nile; Otiak on the east bank of the

White Nile, Patirra – inland and up a tributary of the White Nile; Parraketto on the east bank of the White Nile, south of the River Tangi; Fobungu on the east bank of the Nile, north of the River Tangi; and Fokwach (Pakwach), east of the White Nile. This map notes the river crossing at Fajao, west of Murchison Falls, and a track leading north towards Fokwach (Pakwach), running close to the settlements of Paillem and Pajju, west of Mount Oguen; Pakeo, Babir, Koyo and Pabit, south of Mount Kadanyeko (1905, Bahr el Ghazal, Extract of Africa 1:1 million series; Sheet 86. General Staff Topographical Section, War Office, London, British Library GSGS.2012).

The Banyoro rose in the Nyangire Rebellion of 1907, and Baganda administrators were withdrawn. The anti-colonial Nyangire resistance waned after clans were displaced (Hoppe, 1997, 92–93; Musere, 1990; Robertson & Bernacca, 1958). The Bunyoro Game Reserve was established in 1910 and extended in 1928 to include a block on the north bank of the Victoria Nile; the area later became the MFNP, gazetted in 1952 following the National Park Act. Historical Map 17-4 below indicates the locations of settlements and names places, including topographic features, within MFNP prior to the evacuation.



Historical Map 17-4: Historic map dated 1905, Bahr el Ghazal, Extract of Africa 1:1 million series; Sheet 86. General Staff Topographical Section, War Office, London, British Library

The population of the area was much depleted, due to warfare, colonial reprisals and looting, epidemics, evacuation, emigration and recurring famines, such as the Kiromere Famine (1907), the Zimyaetara Famine (1914), and the Kabakuli Famine (1917-18) (Doyle, 2006 & 2009; Apuuli 1994). The first family to return to the area in 1920s after it was declared to be free of sleeping sickness and smallpox was that of Yubu "Kyamukatuka" Katogole. His canoe is now displayed in the town of Buliisa.

The Bunyoro Agreement was signed in 1933, which gave the region more autonomy. It also increased formal contact between Bunyoro-Kitara Kingdom and colonial government. During the 1930s, a network of roads was constructed, facilitating agriculture, fishing and exports of cash crops such as cotton. From the 1940s onwards, the Alur people began to settle in Bunyoro along the shores of Lake Albert and later moved inland. The Alur are part of the Luo who migrated from the southern part of Sudan initially and moved along the Nile and settled in other parts of East and Central Africa. The Alur in the project area are said to have migrated mainly from Congo and west Nile. As a result, a sizable proportion of the population in the project area is composed of the Alur people (Atacama 2017, 105).

A system of indirect rule was instituted, whereby the traditional ruler was allowed to rule on behalf of the British administration and report to the resident commissioner. The kingdom was divided into counties, sub-counties, parishes and villages. Each of these units had an appointed administrative chief to administer the units. In addition, the prime minister now governed with a council of ministers as well as the kingdom parliament. (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-5).

No cultural heritage assets of the British Protectorate period have been identified within the Project Area. However, there is the potential for stray finds of cultural material associated with this period. There is also potential that abandoned settlement areas may be present, particularly within MFNP, which may be unusually well-preserved 'time capsules'.

17.6.3.8 Independence Period (c.1962-present)

The area remained sparsely populated until the 1960s. At this time, the key population centres were at Butiaba and Biiso, and there was a Catholic mission at Ndandamire.

The SS Robert Coryndon, a British passenger and cargo steamship built in 1930, sank in Lake Albert in 1962. The wreck has been partly salvaged, and remaining partly submerged elements are located at Butiaba Port, south of and beyond the Project Area.

'In 1967 Uganda was declared a republic and all kingdoms were abolished. In 1993, the National Resistance Movement government restored traditional and cultural institutions thereby leading to the revival of the Bunyoro Kingdom. The present Omukama heads the Bunyoro-Kitara Kingdom which is now a cultural organisation. It functions for the people in Bunyoro as a welfare body without political or administrative powers, but has final say in the cultural matters of the region. Hierarchically, the Omukama remains the chief cultural symbol and leader of the Bunyoro Kingdom and society. Below him are the Prime Minister, and cabinet members of the kingdom, then the Babiito royal clan members and the general population. The kingdom controls the cultural and historical sites in the region such as the palace, royal burial sites and other historical places, which mark the kingdom's history. Many people in Bunyoro, both native and migrant, acknowledge the Omukama of Bunyoro as the cultural leader of the area.' (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-5).

Historical cultural displacement is echoed in more recent land conflicts and the disruption and uprooting of Acholi culture caused by the evacuation of parts of the West Nile and the Northern area in the 1980s and 1990s due to the insurgency led by Lakwena Alice and the Lord's Resistance Army, which forced many to move into displacement camps.

'Additional communities have developed through migration from outside Uganda, such as by Congolese and Sudanese war refugees as well as citizens of Rwanda and Kenya. Recent events, notably the discovery of oil have led to conflicts between the indigenous communities and the migrants. Notable among these has been the conflict between the Balalo pastoralists and the resident Bagungu, where issues of land ownership developed as the Balalo claim to have bought communal land in Buliisa District and turned it into private property. Land is communally owned and the Bagungu people were never informed that Balalo were registering sections of Bagungu traditional land as individual private properties. In this case, a High Court decision reinstated the Bagungu as the rightful owners, but other cases remain unresolved.' (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-8). Another 'conflict is between the Bagungu and Alur fishermen over unacceptable fishing practices such as using small-mesh nets which capture immature fish. This had led to declining fish stocks, and unacceptable risk for the welfare of fishing communities.' (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-10).

'Migrants now comprise of 40 percent of the population in the Bunyoro-Kitara Kingdom. At the Lake Albert eastern shore fishing communities between Nkondo and Kibiro, the indigenous population is a minority ranging from 30% in the north to 10 percent in the south. It is estimated by District planners that in the next

twenty years, migrants will equal the number of indigenous communities.'(Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-10/11).

17.6.3.9 Contemporary Tangible Cultural Heritage

The archaeology and cultural heritage surveys carried out in December 2016 and June-July 2017 noted a range of traditional craft practices, including charcoal burning, boatmaking, daubing homesteads, clay extraction for pottery and brickmaking, small-scale bird hunting, and food processing and cookery. Traditional cultivation, gardening and livestock herding features such as kraals and cattle corridors were noted.

17.6.3.10 Uncertain Date

It is important to note that artisanal pottery types have changed little in centuries, and it is likely that a good proportion of the fresher pottery sherds recorded during the surveys are of relatively recent date. It is notable that the quantities of pottery sherds recorded in wellpad survey areas in the vicinity of present-day settlements was much greater than that recovered from grazing or cultivation areas. However, concentrations of pottery sherds from uninhabited places, such as MFNP, are significant and may indicate former settlement areas.

17.6.3.11 Unique Natural Features Embodying Cultural Values

Unique natural features or tangible objects that embody cultural values, such as sacred groves, sacred trees, rocks, lakes, and waterfalls can form significant aspects of the cultural landscape. Specific natural features embodying cultural values were identified in the course of baseline research and survey work include:

- Some water sources, seasonal rivers, perennial rivers and marshy areas with spiritual attributes and associated ceremonies;
- Rock formations and caves which are the focus of traditional religious ceremonies as well as being places of memory and identity related to the struggle against colonial forces;
- Cultural values associated with places, including tribe, clan and family ancestry legends;
- Sacred trees and shrubs, which are integral to traditional shrines and sacrificial places; and
- Medicinal plants and plants used in rituals at traditional shrines and sacrificial places (There is further information on these in Section 17.6.4.8, Cultural Uses of Natural Resources).

Natural features may be associated with complex and interlinked beliefs, ritual activities and taboos. For example, consultation with the Elders of Kirama Village (Wellpad NGR-03) noted the importance of natural cultural heritage, including the Kanyuri swamp, which is associated with stories of strange people dressed in white appearing at different hours of the day. People are barred from visiting the stream at dawn, noon, and late in the evenings. The elders of the area use the tamarind tree (*Tamarindus indica*) at Kabarwa for rain making during droughts. A number of large trees such as tamarind and *muteete* (*Balanites aegyptiaca*) are used for worship in the Huhwe area. They noted there is a forested area within Kirama where there was a ritual ban on collecting firewood, and that although the prohibition was still respected, it had declined since the 1970s and little emphasis is put on such heritage. The elders consider all trees to be medicinal. Shrines are present in the region, and are either clan-owned shrines, or shrines set up for profit. There are a number of trees that people don't tamper with near the Bakindwa clan shrine at Bukidwa (ACH-00-375; e.g. tamarind, *mukwakwa* (*Strychnos innocua*), *ndendemule*, *musingabakazi*).

Further details regarding sacred trees and medicinal plants are noted in Section 17.6.4.6 Cultural uses of natural resources. Figure 17-55 provides an overview of traditional cultural sites and cultural sites are mapped in Figure 17-1 to Figure 17-52.

17.6.4 Intangible Cultural Heritage

Intangible cultural heritage is defined as the practices, representations, expressions, as well as the knowledge and skills (including instruments, objects, artefacts, cultural spaces), that communities, groups and, in some cases, individuals recognised as part of their cultural heritage. It is sometimes called living cultural heritage and includes oral traditions and expressions, including language; performing arts; social practices, rituals and festive events; knowledge and practices concerning nature and the universe; and

traditional craftsmanship (UNESCO, 2003). The living cultural heritage and religious practices of communities involve extensive elements of intangible knowledge, including mythological, theological, liturgical and symbolic concepts.

17.6.4.1 Living Cultural Heritage

Uganda's National Culture Policy defines indigenous knowledge as the 'traditional local knowledge existing within and developed around the specific conditions of a community indigenous to a particular geographical area'. It is commonly applied in agriculture, traditional medicine, health care, food preparation, education and natural resource management in rural communities. The Policy highlights the relevance of indigenous knowledge for women because they use it to perform their traditional roles and responsibilities. The Project does not propose to use any intangible forms of culture for commercial purposes (IFC, 2012).

A documentary study has been undertaken at this stage to inform this ESIA, building on previous studies and data obtained in the Socio-economic consultations undertaken in the context of the present study, in order to identify key features of intangible cultural heritage.

Living cultural heritage practiced within the Project Areas include living languages and dialects; social structures and lifeways; poetry and songs; formal and popular instrumental and sung music; dances; traditional games (e.g. the *omweso* board game – Plate 17-13); popular wisdom, proverbs, stories and legends; traditional science and technology including plant medicine; religious cosmology, popular beliefs and esoteric religious symbolism. Modern forms of cultural expression include drumming (e.g. the Acholi drum used for communication) folklore, drama, dance, storytelling and music (e.g. harps; horn blowing; singing). Ceremonies are frequently associated with birth, marriage, planting, harvest and death.

Other elements of intangible cultural heritage include the knowledge involved in:

- Food production, preparation, conservation and consumption (culinary arts – fish smoking and preservation; smoking beef; drying root crops such as cassava and potatoes; food storage and use of granaries);
- Craftwork;
- Agriculture and animal husbandry;
- Hunting (use of nets – traditionally knitted out of sisal; excavation of deep pit traps; use of slingshot for hunting birds; construction and use of fish traps; skills of artisanal fishing (Sarnowski, 2004); making and using the bow and arrow);
- Traditional costumes, hairstyles and adornment;
- Oral culture and education;
- Land tenure and social structures;
- Preventive health and curative methods (traditional therapies and medicines); and
- Housing (traditional construction techniques).

Cultural heritage is linked to economic development through cultural tourism initiatives, the maintenance of traditional lifeways, artisanal crafts and cultural industries. Cultural industries involve the manufacture and sale of products which carry cultural ideas, symbols, information and moral and aesthetic values, such as pottery, basketwork, Kibiro salt, printed and dyed fabrics etc. The community at the Kibiro complex of hot springs and salt-making is visited by tourists and have established a tour office to collect dues from tourists visiting the village (Atacama Consulting/ Ecology & Environment, Inc. 2014). Consultation with the Uganda Department of Museums and Monuments has noted the potential for tourism activities within the Project Area related to the Nile slave trade routes.

17.6.4.2 Inscribed Intangible Cultural Heritage

Uganda's cultural practices are inscribed on the Representative List of the Intangible Cultural Heritage of Humanity, the List of Intangible Cultural Heritage in Need of Urgent Safeguarding (UNESCO Lists of Intangible Cultural Heritage). The tradition practiced in the Study Area is the *Empaako* tradition of the Batooro, Banyoro, Batuku, Batagwenda and Banyabindi of western Uganda (2013). *Empaako* is a naming

system practised by the Batooro, Banyoro, Batuku, Batagwenda and Banyabindi, whereby children are given one of twelve names shared across the communities in addition to their given and family names. Addressing a person by her or his *Empaako* name is a positive affirmation of social ties. It can be used as a greeting or a declaration of affection, respect, honour or love. Use of *Empaako* can defuse tension or anger and sends a strong message about social identity and unity, peace and reconciliation. *Empaako* is given at a naming ceremony performed in the home and presided over by the clan head. The paternal aunts receive the baby and examine its features. Any resemblance to existing relatives forms the basis of the choice of name. The clan head then declares the name to the child. A shared meal of millet and smoked beef follows, gifts are presented to the baby and a tree is planted in its honour. The transmission of *Empaako* through naming rituals has dropped dramatically due to a general decline in appreciation of traditional culture and the diminishing use of the language associated with the element.

It is not anticipated that the proposed development would impact upon this practice or its transmission.

17.6.4.3 Non-designated Local Intangible Heritage

Regional intangible heritage promoted by UNESCO's Intangible Cultural Heritage Fund in Uganda include:

- Inventorying the intangible cultural heritage of four communities in Uganda – the Acholi, the Alur, the Basongora and the Ik communities (2013 – 2015). The Acholi and Alur community live within the Project Area;
- Revitalization of bark cloth making in Uganda (2006 – 2009);
- Safeguarding and promotion of *bigwala*, gourd trumpet music and dance of Busoga Kingdom in Uganda (2015 – 2017); and
- A series of pilot projects in community-based intangible heritage inventorying on a grassroots-level in six selected countries in Sub-Saharan Africa – Botswana, Lesotho, Malawi, Uganda, Swaziland, Zambia (2009 – 2011).

The Bunyoro Kingdom's policies aim to promote culture, including supporting musicians and folklore writers and artists. Traditional Banyoro heritage includes traditions and customs, regalia, rituals and etiquette associated with the court, and the *amakondere*, *runyege* and *entongoro* (courtship) dances. Culture and heritage is promoted in the Bunyoro Sub-Region through weekly cultural talk shows hosted on local radio and occasional sports galas and cultural exhibitions hosted by different clans.

The Acholi praise culture is praised through recitation of their *Mwoch* lineage praise call, which is different for each clan. Cultural identity and history is transmitted down the generations by song and dance, such as the *Gwech Nyanderere* (Acholi Cultural Leaders Consultation, 2016), the *Larakaraka* Acholi courtship dance, the *Otole* war dance, the *Bwola* dance and the *Myel Awal* (*Winyela* funeral dance), *Apiti*, *Ladongo* dance following a successful hunt, *Myel Wanga* and the superseded *Atira* battle dance (pa' Lukobo, 1971). Acholi music and dance festivals are held annually during the dry season (late November to January (USAID 2011)). The Alur are known for the *Otwenge* or elbow dance.

In Buliisa District, the Bugungu Heritage and Information Centre (BHIC) was set up to promote Bugungu culture and heritage. BHIC has set up a semi-museum, promotes the Lugungu language and Bagungu as an ethnic group, documents the history and culture of the Bagungu, and works with communities on land rights issues (FGDs, Hoima and Buliisa November – December 2016, Tilenga ESIA SBS). The Bugungu Heritage and Information Centre's website highlights a range of activities promoting the transmission of local intangible heritage, including:

- Teaching Lugungu reading, writing literature;
- Teaching and demonstrating the four dances of the Bagungu people: *gwada*, *muzenyo*, *kaluba* and *bikwele*;
- Continuing to make and use rattles (*binyege*) tied around the legs while dancing the traditional kinyenge dance;
- *Kigungu* traditional dance, riddles and storytelling and art and craft making;

- Teaching and demonstrating traditional craft skills related to hunting, trapping, fishing and shooting birds; and,
- Transmitting the cultural uses of plants and natural resources.

Other heritage organisations working in the area include the Cross-Cultural Foundation of Uganda, the National Association of Professional Environmentalists (NAPE), Kaiso Tonya Museum and Bunyoro Community Museum Associates. The Kakindo Women's Group in Buliisa also has links with heritage conservation.

Intangible cultural heritage activities in the area are assessed as being of local significance; no particular elements are designated or registered, and consultation has not indicated any associations with particular innovations, technical or scientific developments, movements or specific individuals of regional or national significance (ICOMOS 2011).

17.6.4.4 Ethnography

Ethnographically, the Victoria Nile forms the boundary between the pastoral Kushites and Nilotes to the north, and northerly Bantu groups to the south. It splits the present-day areas of the Bunyoro-Kitara Kingdom to the south and the Acholi to the north.

By the beginning of the twentieth century, the resident tribes of Bunyoro Kingdom were the Banyoro, the Bagungu, the Bakobyia and the Bachope (Palwo). Into the 20th century, the migration into Bunyoro continued with the Alur (West Nile region and Congo) fishermen, and other Uganda communities, principally the Lugbara (West Nile region), Acholi (Northern region), Langi (Northern region), Madi (West Nile region), Lendu (West Nile region), Bakiga (Southwest Uganda), Balalo (Western Uganda), Bagisu (Eastern Uganda) and Baganda (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-9).

The northern region of the Albertine Graben is home to a number of ethnic groups including the Lugbara, Alur, Madi, Acholi and Kakwa (CPCS 2014). Dominant populations living in the area include members of the Banyoro, Acholi, Bangungu, Lango, Alur, and the Baluli/Balalo tribes. Populations living in the wider area today include members of the Langi, Acholi, Alur, Chope, Palwo/Paluo and Lugbara tribes; there are also populations of a wide range of migrants and refugees from the Congo wars and northern insurgency, and economic migrants.

It is recognised that there are a number of minority and distinct ethnic groups within the Primary Study Area. However, based on stakeholder consultation and review of existing reports, the classification of any group as Indigenous Peoples in the context of IFC PS 7 was not considered applicable in the local context.

Further details on ethnography are contained in **Chapter 16: Social**.

17.6.4.5 Languages

The official languages of Uganda are English and Kiswahili. According to the Constitution, 'any other language may be used as a medium of instruction in schools or other educational institutions or for legislative, administrative or judicial purposes as may be prescribed by law'. Uganda has four broad indigenous linguistic groups, the Bantu, Eastern Nilotic, Western Nilotic and Sudanic.

The principal indigenous languages spoken in the study area belong to the Bantu (Runyoro, Lugungu, Ruuli), Nilotic Luo (Acholi, Lango, Alur) or Central Sudanic (Ma'di, Kakwa, Lugbara) language groups. A standardized form of the western languages (Nyankore-Chiga and Nyoro-Tooro) is called Runyakitara. Lugungu and Runyoro are taught in schools within the Bunyoro Sub-region.

Further details on languages and ethnic identity are contained in **Chapter 16: Social**.

17.6.4.6 Traditional governance structures and key cultural sites

The Project falls within the Acholi Chieftdom and the Bunyoro-Kitara Kingdom. Detailed information on customary governance structures and processes, including traditional kingdoms (Bunyoro-Kitara Kingdom, the Acholi Kingdom, the Alur Kingdom); the role of elders and clan leaders; justice, conflict resolution and arbitration systems is contained in **Chapter 16: Social**.

17.6.4.6.1 Bunyoro Kingdom (Bunyoro-Kitara Kingdom)

The Bunyoro Kingdom dates to the 16th century; its history is outlined in Section 17.6.3, Tangible Cultural Heritage. The Kingdom covers the districts of Buliisa, Hoima, Kibaale, Kakumiro, Kagadi, Kiryandongo and Masindi.

The Bunyoro Kingdom is led by the *Omukama* (King), Rukirabasaija Agutamba Solomon Gafabusa Iguru I. The Omukama remains the titular head of the Bunyoro regional government. The main *Bujwahya Karuzika* (Palace) is located in Hoima. The Kihande Palace, located in Masindi, is over 100 years old and was built by Omukama Andereya Duhaga. There are further minor palaces at Kibanda (Masindi), Bugungu (Buliisa), Karuguza (Kibaale) and Kyangwali (Hoima) (Bunyoro-Kitara Kingdom, 2010).

Historically, the Bunyoro Kingdom exported salt and iron hoes to the neighbouring communities (Tosh, 1970; Usoigwe, 1972). The *Omukama* led the kingdom and was commander in chief of the army. Provincial chiefs, the prime minister, and other notables at the court assisted in ruling the kingdom.

Traditionally, families were ruled by the eldest male (*Nyineka*), and villages were led by an elected elder, chosen by all the elders in the village (*Bakuru b'emigongo*). The elected elder held informal courts which settled any village disputes. Representatives of the Bunyoro Kingdom include Sub-Parish Chiefs (*Abatongole*), Parish Chiefs (*Abemiruka*), Sub-County Chiefs (*Abagomborizi*) and County Chiefs (*Abamasaza*). Traditionally, the King was assisted by a council of advisors known as the *Bajwara Nkondo*. The Prime Minister (*Omuhikirwa/Katiikiro*) reports to the King (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-5).

Key cultural sites in the Bunyoro Kingdom include:

- The Mparo Kabalega Gasani (tombs), burial place of royalty including Omukama Chwa II Kabalega and his son, Sir Tito Winyi Gafabusa, located on the Hoima-Masindi road. Many people pay visits to this site to perform rituals and also to pay homage or seek inspiration from Omukama Kabalega, located on the former site of Kabalega's palace (Hoima District; Western Region);
- Mpumudde (mpumwire) Kabalega death site (Wakiso District; Central Region);
- Dokolo-Apac Kabalega capture site, Kangai (Dokolo District, Northern Region); and,
- The Biito dynasty birth place (Bunyoro-Kitara Kingdom 2010).

Consultations with Kingdom officials indicated that the Kingdom had sites within the MFNP that they would not want destroyed. It was also revealed that the Kingdom had been undertaking an exercise with an archaeologist at the museum to document the locations of their cultural sites. However, no coordinate inventory data was made available.

Further cultural sites include ritual areas at fish landing sites on the eastern shores of Lake Albert, outside the MFNP. These include Wanseko, Kigwera, Kisansya, Katala, Karakaba, Kagolwa, Bgeygo, Niamakuta, Wanakuba, Butiaba, Waki, and Amur. No cultural heritage surveys were undertaken in these areas due to distance from the targeted wellpad areas. Further information on fishing practices and fish landing sites is contained in **Chapter 16, Social**.

17.6.4.6.2 Acholi Kingdom

The Acholi (Acoli) is a Luo Nilotic ethnic group. The Luo migration is claimed to have peopled most parts of Northern Uganda. The Luo migrated from southern Sudan at Bahr el Ghazel and entered Uganda at Pubungu, present-day Pakwach/Latong, c. 1000 AD. From Pakwach the Acholi split. One group, the Kenya Luo, went to Nyanza province in southwestern Uganda. Others intermarried with the Lendu and Okebu groups northwest of Lake Albert, giving birth to the Alur. The Lango people are also descendants, living in Northern Uganda. Some Acholi went westwards and took over the Chwezi Empire and established the Biito dynasty in Bunyoro and later Buganda, under Kabaka Kato Kimera, c.1374 – 1404 (Girling, 1960; Atkinson, 1994 & 1989; Laruni, 2015).

The Alur and Acholi share a common ancestry. Legend suggests that Tiful and Nyipir separated from their brother Labongo at Pubungu/Puvugu (usually identified as present-day Pakwach; Atkinson 1994, 106) or Wangelei following the killing of Labongo's son by Nyipir. This historical event occurred when Labongo's son had swallowed a bead that Nyipir was given by an old lady. Nyipir asked to open the stomach of Labongo's

son in order to get the bead. Nyipir lost Labongo's spear which he had borrowed to kill an elephant; the wounded elephant ran away with it. In an act of revenge, Nyipir demanded the replacement of the spear and killed Labongo's infant son. Following this event, Tiful and Nyipir moved with their followers including Lendu and Okebu to the highlands in the west, and their descendants are said to comprise the Alur and Jonam. Labongo remained on the eastern bank of the Nile, and is the ancestral father of the Acholi (WCTI, 2014). During consultation in December 2016, the Pakwach Elders noted that the original inhabitants of the area are the Kebu and Madi people who had to migrate, leaving behind the Jonam (Alur) people, who are currently settled there.

This legend is common to many Western Nilotic peoples, and 'the Alur and Acholi, like many other Luo groups, have used the tale to account for the separation of recognizably kindred peoples, converting a didactic anecdote into an etiological one and giving it a geographical location' ... 'At various stages in this circular tour groups of fellow travellers branched off, among them the Alur, who crossed the Albert Nile at Pakwach, and the Palwo, who decided to move into Bunyoro – a magician holding up the Victoria Nile while they crossed it at Atura. It is unlikely that there is more to this than a recent speculation designed to link the Pa-Geen with other Lwo-speaking groups of whom they are aware now' (Wrigley 1981). A further river crossing is noted in the ethnographic work of Crazzolaro, who stated that one of the Lwo clans, the Jo-Bito, took over Bunyoro 'Oluum led the bulk of the Lwo hordes who were, for the time being, still in favour of proceeding on their southward march, towards Bunyoro. After a march of about thirty miles they reached the shore of Lake Albert (in Lwo Onekbonyo, i.e. it may kill the locusts) and the Somerset Nile. They searched for a ford and found Fajao; where they crossed according to common tradition [...] So the Lwo had invaded Northern Bunyoro' (Crazzolaro, 1951-5).

In the later 17th century, chiefdoms formed, led by *Rwodi* (rulers), chiefs who traditionally came from one clan. Traditionally, communities were organised into small villages of circular huts. Men traditionally hunted and kept livestock, while women tended agricultural plants. Women also decorated huts walls with daub and in geometrical designs.

The cultural leader is the *Lawirwodi* (Head of the Chiefs). Acholi clan names are prefixed with 'Pa' e.g. Palayira, Palamogi, Pa Nyadi etc. The structure of Acholi society comprises God, the Ancestors who mediate between God and the living, the King (*Kae*), priests, the *Kaka* (clan leaders), *Dogolo* (extended families), *Oti* (nuclear family) and lastly the individual (Acholi Cultural Leaders Consultation, 2016; Amone & Muura, 2014; Davenport, 2011; Laruni, 2015).

The Acholi culture has a strong sense of stewardship – all land is for the Acholi and kept in trust. This has been eroded by individual land ownership of Mailo land, customary ownership, freehold and leasehold (Acholi Cultural Leaders Consultation, 2016). This issue is exacerbated as the MFNP now largely occupies land that was traditionally Acholi. Cultural heritage within MFNP is said to include burial sites of the Acholi chiefs and kings, wild plants and animals (totems) and sacred trees, to which both the Acholi and the Bagungu have cultural attachments. The Acholi have traditional guidelines for protection. (Consultation with the Cross-Cultural Foundation of Uganda, March 2017).

According to legend, Luo was the first man, and lived at Bukoba (Pakuba), near Pakwach. He possessed an axe which he is said to have driven in the ground and out came the chiefs of many Luo groups. Labongo became the first in the line of the *Rwots* (chiefs) of Payera. The same Labongo, whose full title was Isingoma Labongo Rukidi, is also remembered as being the first in the line of the Babiito Kings of Bunyoro-Kitara. He is said to have been the twin brother of Kato-Kimera who is remembered in some quarters as the first in the line of the Kings of Buganda. The first Namuyongo of northern Bugerere is also said to have been a son of Labongo.

Regard for the natural world is also reflected in place names, e.g. Paraa, which means 'the place of hippos'. In Acholi culture, some animals are regarded as a sacred – elephants are considered an emblem of strength, unity and peace. The place name Pakwach means 'home of leopards' (Pakwach Elders Consultation, December 2016).

Traditionally, all the grievances in the Acholi Chiefdom were addressed around a table (Ochola II 2009). The culprit compensated the victim for the crime committed, focussing on reconciliation. The gods were called upon to oblige people to reveal the truth. Sites where people were murdered or buried carried a lot of significance; they should not be used as this will disrespect their rights. Cultural ceremonies had to be carried out so as to shift the spirit of the dead to the free world. They could ask the gods to bring misfortune, and there is a place for calling the gods to intervene (Acholi Cultural Leaders Consultation, 2016). *Mato oput*

(drinking the bitter herbs of the *oput* tree) is an important part of the traditional justice and reconciliation system. Elders handle traditional justice and arbitration, have the right to punish the guilty persons through fines or excommunication from the family or clan, and are believed to be custodians of knowledge (Pakwach Elders Consultation, December 2016).

The evacuation of Acholi and Bagungu people from land east of the Nile due to sleeping sickness in 1910 and the gazetting of the MFNP resulted in communities being excluded from their ancestral lands for most of a century. This cultural displacement is echoed in more recent land conflicts and the disruption and uprooting of Acholi culture caused by the evacuation of parts of the West Nile and Northern area in the 1980s and 1990s due to the insurgency led by Lakwena Alice and the Lord's Resistance Army, which forced Acholis to move into displacement camps.

A number of key Acholi cultural sites were noted in consultation with Acholi Cultural Leaders, although exact locations were not indicated by the Elders. These comprised:

- Tumpadwa – a naturally protected site which is a place of security and prayer for basic human rights. 'Tum' means sacrifice in Acholi;
- The Lantanya hills – where the Acholi ancestor Lagoro was buried. In the hills, one can get lost if the spirits are offended; and
- In general, African Mahogany/ Tido trees (*Khaya* spp.) are considered to be the home of gods. Rituals were conducted there.

Consultation with the Pakwach Elders also revealed a number of Acholi cultural sites, although exact locations were not indicated by the Elders. These comprised:

- Pakuba meeting site (MFNP) – close to Kuba Lodge (Safari Lodge), where the first missionaries including Father Eldrine met Jonam chief Kuba. The missionaries were received by Rwot Macha of Paloketo (Paroketto) across the Nile;
- Paraa-Bito (MFNP) – legendary home of Gipiir (Nyipir) and Labongo, ancestors of the Acholi and Jonam people respectively;
- Pan-kele (MFNP) – meaning people settled near the place of food;
- Wangelei-Puvugu Site (Nebbi District) – according to the myth, it is where the two brothers Gipiir (Nyipir) and Labongo separated from after a misunderstanding about a spear and a bead. Located next to Pakwach Bridge, west bank of the White Nile;
- Wadelai Station (Nebbi District) – the final headquarters of Emin Pasha when Governor of Equatoria. The place has his monument;
- Jakolo – a cultural site for the Wangelei people (Nebbi District); and
- Ahibye – a cultural site where sacrifices are done for rainfall, hunting etc. when there is need.

This lack of positive identification means that all or part of their limits may fall within the Project Area. Additional cultural sites noted in the literature search include:

- Pakuba (Bukoba), near Pakwach (MFNP) – the place where Luo, the first man, lived.
- Pakuba (Bukoba), near Pakwach (MFNP) – the home of Labongo Rukidi, first in the line of the *Rwots* (chiefs) of Payera (the dominant Acholi clan), first in the line of the Babiito Kings of Bunyoro-Kitara and twin brother of Kato-Kimera, first in the line of the Kings of Buganda. The first Namuyongo of northern Bugerere is also said to have been a son of Labongo;

The place name Paraa means 'the place of hippos' in Acholi and the place name Pakwach means 'home of leopards' in Acholi. These reflect the attachment of Acholi ancestors to wildlife, hunting and totem animals.

17.6.4.7 Religious Practices

The living cultural heritage and religious practices of communities can involve extensive elements of intangible knowledge, including mythological, theological, liturgical and symbolic concepts. Rituals are accompanied by an extensive range of cultural practices as well as craft knowledge associated with making ritual objects.

17.6.4.7.1 Traditional Religions and Beliefs

Nationally, less than 20% of the population of Uganda claim to adhere solely to traditional African religions. Historically, the influence of traditional religions has been weakened by Christian missionaries (Boahen, 1990). Elements of imported and traditional religions are often combined, forming a syncretic mix.

Traditional African religions are practiced in the Project Area. Such religions are characterised by belief in spirits, supernatural forces, gods and cults, witchcraft and sorcery, sacrifices, taboos, rituals and rite of passage ceremonies. Beliefs and traditions are rooted in the worship of ancestors and spirits representing natural elements. Traditional customs include rituals, ceremonies, divination and prophecy using sacred sites, which are mostly connected to natural landscape features: large trees, tree groves, sacred springs or streams (Ngomlokojo, 1985; Gomnya-Sembajjwe, 1998; Robertshaw & Kamuhangire, 1996). Rituals (*okubandwa*) are performed for a wide range of purposes – such as seeking to avert disasters and droughts, to appease the gods and spirits, prevent deaths in childbirth, bless hunting and fishing, ensure good crops, prevent mosquito invasion, cure sickness, prevent boats capsizing, to find the lost bodies of drowned people and to stop children being eaten by crocodiles (Agena, 2012). There is a new modern African faith openly practiced by the Alur people known as “Lam Takwal” (Atacama 2017 CHMP, 26).

Clan cultural sites

Cultural sites belong to clans. Each clan amongst the Bagungu and Banyoro has a cultural site where rituals are performed by clan members. Clan cultural sites are usually marked by large trees where the prayers and sacrifice rituals are conducted.

Each clan has a supernatural being that is consulted whenever a clan member seeks spiritual intervention. Some of these supernatural beings are only found at particular sites. The Bagungu consider that rivers including the Albert and Victoria Nile, the Sambye River, the Waiga River and the Waisoke River have many spirits attached to them. Each village has a sacred site, and numerous sacred and cultural sites were reported during consultations with traditional kingdoms and local communities. The supernatural beings specific to the site is called a *Mbandwa* (Beattie, 1964). There are a number of taboos surrounding cultural sites – for example, they should not be visited in the early morning or at noon (Agena, 2012).

Clans shrines/cultural sites are called *Mpuluma*. Prayers at these locations are conducted by the clan priests (*Balamansi*) for the clan members and all the people living on the clan land. Clan elders are responsible for cultural rituals and knowledge of sacred sites is generally held with the elders. *Mbandwa* are particular people responsible for performing rituals at cultural sites. The *Balamansi* Priests collect offerings to be made at these cultural sites from all members of the community in the area. Originally, each of the Clans of the Bagungu had a designated territory under the protection of the respective clan's *mpoluma*. Members of other clans who settled in the respective area and other tribes would also pray for protection and good fortune from the *Mpoluma* of the territorial clan. Prayers at the sites are made for the whole community such as praying for good fish catches or praying for rainfall in the area.

In addition, each *mpoluma* has several lesser shrines at a distance which cater for single issues e.g. protection from diseases such as malaria epidemics which strike from time to time or snakebites. These are called *ihongo*. If a village was suffering from a malaria epidemic, the priests would collect offerings from the community and make sacrifices to protect the village at a *Ihingo* (singular form for *ihongo*) to protect the community from the epidemic.

Cultural sites may not be immediately recognisable as such, and may look like a tree or a bush to an uninitiated person or an outsider. No part of a cultural site, or offerings at a cultural site, should be disturbed. For example, the village of Kizongi (Kisiabi Parish, Buliisa) has two *mpuluma* cultural sites, Basiimo and Babezuwa, which are so secret that only responsible clan members perform rituals there on behalf of the rest of the community. *‘If any part of the cultural site is mishandled, the Mpuluma will move to a different location and the seasonal river Sambye will flood to cover the whole area. The responsible clan member has to perform some rituals to appease the gods. In the 1990s when a member cut a tree in Basiimo Mpuluma at it*

flooded again. If firewood is taken from Mpuluma, mosquitoes will cover your homestead until it is returned.' (Kizongi Village Mapping, 2016).

The Acholi consider that land, water, rivers, animals, forests, mountains, rocks and trees have much significance to their lives and creates a divine bond between people. Acholi *jok* (divine spirit) shrines are looked after by holders of ritual office. *Jok* and the spirits of dead ancestors (*kwaro*) guide the moral order – when wrong is committed, they are believed to send misfortune and illness until appropriate action is taken by elders and offenders. Fertility of the soil was traditionally ensured by a rainmaker (*Rwot hot*), a figure closely connected with the chiefly clan (Allen, 1991; Okot p'Bitek, 1971). There are many Acholi myths and legends and each clan has its own responsibilities, rituals and rites.

Caves such as those in the Gugure Hills were used for protection, and the Acholi hid in them during the war with the British; today these are shrines for the gods. Some rocks are sacred and are shrines. The true gods are embedded in the true intrinsic values of the Acholi culture. Issues of dishonouring cultural rights have reportedly led to gender-based violence, conflicts and murders (Acholi Cultural Leaders Consultation, 2016).

The Bagungu have traditionally regarded Lake Albert (*mwitazinge*, meaning 'locust killer') as both economically and spiritually important. The Bagungu had traditional custodians of sacred places (*balamansi*) who offered sacrifices to the deity of lake, Lubanga (Bugungu Heritage and Information Centre). The dwindling of fish stocks in Lake Albert is being blamed on the destruction of a cultural ground for the Bayaga community that had been used to consult the spirits for big fish catches. This place was demolished following the oil exploration. The people relate the low catch to unhappy spirits and also the burning of flames from the oil wells on the lake (Ssebuyira, 2011).

Family cultural sites

Many of the families who still follow traditional religions also have shrines in their homes. Most of the family households have one family shrine called *kibira* in Lugungu (the language of the Bagungu) and *abila* in the Alur language. Family members make supplications to ancestors at these locations before undertaking long journeys and for the protection of the household from time to time. They are believed to offer protection to a home. They are shrines for different gods, at which offerings are made. Shrines may be in the form of a small hut with a grassed roof, a table, or stones, which are sometimes associated with branches, poles or sacred trees (*kac*); however, the form of shrine may vary in shape and size.

In traditional Acholi culture, '*When the one who has built the abila changes place and goes to a new village, he abandons the first one and takes with him a branch or two of the sacred tree in order to plant it near the new abila, at the time when the new ceremonies are conducted*' (Malandra 1939, 27). Traditionally, *abila* are constructed on the advice of, and to specifications by, *ajwaka* or spirit medium-traditional healers. The *ajwaka* communicates with the ancestors, who indicate their wishes. The master of the *abila* (*won abila*) provides the offerings, and the rituals are performed by the elders (Malandra 1939, 35).

Clan totems

Various clans have clan totems - objects, plants and/or animals - which they are not allowed to eat or use. Animal totems include elephant, buffalo, buck, cockerel, leopard, fish, monkey, hippo, grasshopper and various birds. Plant totems include millet, *Mbumbuula* and *Sagalamusansi*. Objects include raindrops and papyrus mats. Those who shared the totem were not allowed to marry each other since they were believed to share the same ancestry. Given that the MFNP has not been developed and farmed over the past century, it contains a wide range of wild plants and animals, many of which are also clan totems. Groups such as the Bugungu Heritage and Information Centre (Buliisa) arrange visits so that children can learn about and witness their totems.

Witchcraft and spirit possession

Belief in witchcraft and spirit possession is still very common in the Study Area. Most individuals branded and victimised as witches are women, especially older women and widows. Someone branded as a witch can be expelled from their village by the elders. Fear of witchcraft is strong - during community consultations, stakeholders claimed that there had been an increase in witchcraft practices during previous phases of oil activities and expressed concerns that witchcraft would increase again with the next phase of oil activities (FGD Got Apwoyo and KII Kampala, Tilenga ESIA Social Baseline Survey, December 2016). In some parts of the Study Area, surveyors learned that dogs are kept as they are believed to ward off 'dream catchers' (witches/evil spirits) that come at night.

Cultural sites, traditional shrines and sacred trees recorded within or in the immediate vicinity of wellpad areas are listed in Section 17.6.5, Archaeology and Cultural Heritage Baseline for Wellpads and CPF / Industrial Area and are mapped in Figure 17-15 to Figure 17-53.

17.6.4.7.2 Imported Religions

Over 80% of the population of Uganda adheres to imported monotheistic religions. Religious affiliations in the Study Area reflect the national profile and include Roman Catholic, Protestant (including the Anglican Church of Uganda, Pentecostal Protestants, Seventh Day Adventists, Full Gospel Church and others) and Muslim. Further information regarding religious affiliation is contained in **Chapter 16: Social**.

Surveys were conducted within the proposed wellpad areas, and also within two buffer zones of 200 m and 1 km of the wellpad areas respectively. Places of worship within the survey areas were recorded as listed in Table 17-8. An overview map is provided in Figure 17-56 and they are mapped in detail in Figure 17-13 to Figure 17-52.

Table 17-8: Places of Worship Identified within Wellpad Study Areas

Heritage UID	Wellpad Area	Description
ACH-00-068	GNA-01	Alleluyah Church. This was started in 2002 and serves approximately 50 people in the community.
ACH-00-069	GNA-01	Kisomere Church of Uganda.
ACH-00-354	GNA-01	Kisomere Mosque. This was started in 1998 by the community and serves this village and all the neighbouring ones.
ACH-00-362	GNA-01	Kasinyi Church of God. This was started by the community in 2003.
ACH-00-366	GNA-01	Kisomere Lamtekwaro church. This was started by Oreyamar based in Panyimur. It serves approximately 100 people in this village.
ACH-00-074	GNA-02	Kilyango Church of Uganda. Started under a tree in 1970 by the community and serves approximately 100 people in the community and neighbouring areas.
ACH-00-075	GNA-02	Kilyango Pentecostal Church. Started in 2007 by the community and serves approximately 50 people in the community.
ACH-00-076	GNA-02	Kilyango Full Gospel Church. It was started in 1984 by the community and serves approximately 50people in the village and the neighbouring ones.
ACH-00-077	GNA-02	Kilyango St. Kizito chapel. Started in the 1970s by the community and serves more than 200 people in the village and the surrounding.
ACH-00-078	GNA-02	Kilyango Church of God, 2014.
ACH-00-090	GNA-03	Uduk II Church of God. This Church is affiliated to Church of Uganda. It's a semi-permanent structure.
ACH-00-091	GNA-03	Uduk II Pentecostal Church.
ACH-00-381	GNA-03	Akichira Catholic Church. The church was built in 1972 by the community and serves approximately 200 people in the village and the neighbouring ones.
ACH-00-094	GNA-04	Avogera Catholic Church. It is a semi-permanent structure located near Avogera Primary school. This church was built by the community. Started in 1956 by the community and serves between 100 in the community.
ACH-00-095	GNA-04	Avogera Open Heaven Church. For this church, there is no physical building. It is housed under a big tree with a good shade.
ACH-00-367	GNA-04	Avogera Miracle Church. Started in 2012 by the community. Has one service a week and serves approximately 40 people in the village.
ACH-00-378	GNA-04	Avogera Church of Uganda. This also a semi-permanent structure constructed by the community.
ACH-01-106	GNA-04	Avogera Catholic Church.
ACH-00-200	KGG-01	Itambiro Church, Uribo.
ACH-00-201	KGG-01	Church of Uganda, Uribo.
ACH-00-202	KGG-01	Penta coastal Church of God, Uribo.
ACH-00-203	KGG-01	Charismatic Episcopal Church, Uribo.

Heritage UID	Wellpad Area	Description
ACH-00-204	KGG-01	Church of God, Uribo.
ACH-00-489	KGG-01	Full Gospel Church, Uribo.
ACH-00-497	KGG-01	Kijumbya Catholic Church, started In 1972 by the community.
ACH-02-618	KGG-01	Uribo Catholic Church.
ACH-00-505	KGG-03	Ugonio Beroya Church, in a settlement.
ACH-00-510	KGG-03	Kakoora Catholic Church. Built in 1994.
ACH-00-205	KGG-04	Kijumbya Church of Uganda.
ACH-00-206	KGG-05	Ngwedo Farm church.
ACH-01-165	KW-01	Kalolo Catholic Church and School.
ACH-S-TEMP-009	KW-01	Covenant Pentecost Church.
ACH-S-TEMP-011	KW-01	Full Gospel Church. They have a new church under construction.
ACH-S-TEMP-015	KW-01	Seventh Day Adventist Church, Kizongi.
ACH-01-049	KW-02	Kakindo Miracle church.
ACH-00-028	NGR-03	Bukindwa Church of God. This is a semi-permanent Pentecostal church constructed in 2006.
ACH-00-422	NGR-03	Kirama Catholic Church.
ACH-00-424	NGR-03 & NSO-06	Uduk I Aljazeera Mosque. Built in 1980 by Kanuto and serves approximately 20 families in the village; currently being renovated.
ACH-00-035	NGR-04	Ndandamire Church. Kilyambwa church, born again Christians.
ACH-00-036	NGR-04	Kiyere St Mary Ndandamire Catholic Church. Built in 1947.
ACH-00-425	NGR-04	Kichoke Church of Uganda.
ACH-00-429	NGR-04	Katodio Roman Catholic Church. This was started in 1996 by the community and it also serves the neighbouring villages of Kichoke and Ndandamire.
ACH-00-437	NGR-04	Katodio Holy Power Spirit Church. This started in 2012 and serves the entire village and those of Wanseko, Kirama and Ndandamire.
ACH-00-438	NGR-04	St Paul's Catholic Church Katodio.
ACH-00-182	NSO-04	Kibamura Church of Uganda. This structure was constructed in 2000 and there are plans to construct a much bigger church.
ACH-00-183	NSO-04	Kibamura Church. Church of Uganda.
ACH-00-467	NSO-04	Kisansya East Town Church. Charismatic, started in 2012.
ACH-00-457	NSO-05	Ngwedo Catholic Church.
ACH-00-458	NSO-05	Ngwedo Christian Fellowship Uganda.
ACH-00-459	NSO-05	Ngwedo Church of Uganda.
ACH-00-461	NSO-05	Ngwedo Mosque.
ACH-00-185	NSO-06	Uduk I Burranam Tabernacle Church. Started in 2013 by the community.
ACH-00-186	NSO-06	Uduk I Pentecostal Church of Uganda. It was started in 2005 by the community and serves approximately 28 families in the village.
ACH-00-189	NSO-06	Uduk I End of Time Message Church (Parnam).
ACH-00-448	NSO-06	Uduk I Shongambe Church Of Uganda. Established in 1990 by the community and also houses a nursery school.
ACH-00-449	NSO-06	Uduk I Shongambe Church of Uganda. It is a Protestant church; started in 1989; many used by elders.
ACH-00-452	NSO-06	Ngwedo Farm St. Charles Lwanga Ngwedo farm Catholic Church. Started in 1972 by the missionaries. Has two services in a week. One charismatic renewal on Friday and general Sunday service. Serves approximately 80 people in one service.

17.6.4.8 Cultural Uses of Natural Resources

Ecosystem resources such as lakes and rivers, wild plants used in traditional medicines, and community hunting and fishing grounds are important cultural resources. The Project may impact upon both sacred natural sites and plant, animal and mineral resources. These may be used by the local communities as firewood, timber, foods, crafts, fodder, charcoal and sources of herbal medicines.

A number of plants are used by the local population for cultural, medicinal and craft purposes and for food. Some plants have multiple uses.

Water sources are valued and may have associated rituals, beliefs and values. Wells, perennial and seasonal rivers, swamps and hot springs are spiritually significant. For example, Amuru hot springs are reputed to have significant healing powers. Wang Amuru, is 'female' hot spring (Amuru District) and Wang Alero is the 'male' one (Nwoya District). Residents believe the hot springs are a source of food, rain and fertility (Anena 2013). There are further hot springs at Panyimur (Nebbi District), west of the White Nile (Dear 2013). These springs are all located beyond the Project Area.

Further details on plant ecology, traditional medicine, and economic uses of plants are contained in **Chapter 13: Terrestrial Vegetation**, **Chapter 16: Social**, **Chapter 18: Health and Safety** and **Chapter 19: Ecosystem Services**.

17.6.4.8.1 Sacred Plants and Trees

Trees and shrubs noted at sacred sites in the Study Area include:

- African Mahogany/ *Tido* tree (Kyaha spp.) – the home of gods. Rituals conducted;
- *Marula* tree (*Sclerocarya birrea*) – cultural site;
- *Bibaale* tree – the site of traditional prayers and sacrifices;
- *Lenga* tree – cultural sites, family shrines;
- *Mbumbuula* (*Osman oppositor*) – clan plant;
- *Mudendemule* – used for building shrine structures (kibila). Some rituals also started at these trees;
- *Mukwakwa* (*Strychnos innocua*) – used to treat broken bones;
- *Mukeeku* tree – shady tree often used as community tree and meeting point;
- *Munonde/ mukoge/ Uganda Mulberry* (*Morus lactea*) – cultural site;
- *Munongo* tree – cultural site;
- *Musingabakazi/ Achogal/ Uduk* tree – sacred tree. Often a tree where rituals take place;
- *Musonge* – cultural site;
- *Mutomal mutooma* tree / barkcloth tree (*Ficus natalensis*) – Bark cloth is important in some ritual ceremonies. Used to mark burial places. Traditionally used to mark the burials of victims of drowning whose bodies could not be recovered;
- *Ndendemule* – cultural site;
- *Musisiye/ Red Nnongo* (*Albizia* spp.) – associated with traditional sites of worship;
- *Mulolo/ Yago/ Sausage tree* (*Kigelia africana*) – if a person drowned or was eaten by wild animals, and the body was not recovered, a seed of this tree was buried instead;
- *Sagalamusansi* – totem plant; and
- Tamarind or *Chaw* (*Cwaa*) tree (*Tamarindus indica*) – due to the cool shade and lack of parasites, large tamarind trees are favourite venues for village meetings, markets and places of worship. Large tamarind trees are used as polling stations during elections. Due to their longevity, tamarind trees serve as key landmarks and are often used as reference points and boundary markers during land demarcation between neighbours.

Historically, trees including the *Mulembe*, *Olwedo*, *Boni*, *Olu* and *Akwo* were associated with Acholi *abila*, with *Okango* trees used for chiefs (Malandra 1939).

17.6.4.8.2 Medicinal Uses of Plants

A number of plant species, including wild plants, semi-wild plants and traditional vegetables, are used by the local population for medicinal purposes. Traditional plant uses are described in a number of sources (Prelude Medicinal Plants Database; Kew Herbarium Catalogue; Burkil, 1985-2004; Useful Tropical Plants Database). There are a number of studies on the use of medicinal plants in Uganda (Agea, 2011; Bukuluki et al., 2014; Wanakwakwa et al., 2013; Namukobe et al., 2011; Mubiru et al., 2011; Kakooko & Kerwagi, 1996; Sofowora, 1993; Kokwaro, 1993). Indigenous technical knowledge of medicinal plants is also used to treat livestock (e.g. Nabukenya et al., 2014). According to the Bunyoro Cultural Leaders consulted in December 2016, over 300 medicinal plants are known within the Bunyoro Kitara Kingdom.

Traditional healers (*bafumu*) and diviners (*babandwa*) have also been recorded in the study area. Further details regarding the practice of traditional medicine are contained in **Chapter 18: Health**.

Specific plants noted by local populations as being used for medicinal purposes are listed in **Chapter 19: Ecosystem Services**. Further details on plant ecology and traditional medicine are also contained in **Chapter 13: Terrestrial Vegetation** and **Chapter 16: Social**.

Plants used for medicinal purposes in the Study Area include²:

- *Acuga/ Crisia (Carissa edulis (Forssk) Vahl.)* – treatment of general body swellings. Said to treat headache, chest complaints, rheumatism, gonorrhoea, syphilis, rabies, herpes, malaria, sickle-cell anaemia, abdominal pains, hernia, oedema, toothache, cough, ulcer, worm infestation, infertility, rabies, typhoid fever, jaundice, hypertension, eye cataracts, gastric ulcers, polio, diabetes, asthma, cancer, AIDS and as a diuretic. Traditional birth attendants use it to increase labour and bring about quick child delivery especially during difficult labour;
- *Abongband/ Lima Beans (Phaseolus lunatus)* – treatment of fevers; narcotic;
- *Amuko* – treatment of syphilis;
- *Amuramura* – used for healing epilepsy and for cleansing and mediating. People are washed with the leaves of Amuramura by a healing man as part of a ritual to get a good harvest;
- Cactus – treatment of *makebe*, a disease of calves;
- *Doodo / Ododo (Amaranthus dubius)* – stomach complaints;
- *Ebbuga Ezuungu (Amaranthus hybridus subsp. incurvatus)* – anaemia, red dye;
- *Enderema (Basella alba)* – comfort in pregnancy;
- *Kabombo* – medicinal plant;
- *Kadaali* – medicinal plant;
- *Kamunye* – medicinal plant;
- *Kisookiiso/ Nkokoyarutanga (Aloe vera)* – emollient, treatment for stomach complaints. Aloe vera brings all other herbs together and can be used for multiple purposes. *Nkokoyarutanga* means to protect and it is used when one wants to protect their child or a grown-up;
- *Kulumbero/ Kulumbeero/ Bukulumbeero* – treatment for eyes and stomach;
- *Lenga* – used for increased yields and protection, and is often found at family shrines;

² The list of vernacular names in Schedule 8 of the Forestry and Tree Planting Regulations 2016 has been consulted. Names may be shared in different dialects but used to refer to different species of plants. In a given dialect, a single local name may be used to refer to more than one species – and a single species of plant may be referred to by more than one local name.

- *Lubeeral Nyarogena (Hibiscus cannabinus)* – used for urine frequency, mild antiseptic, nerves and heart diseases, high blood pressure, calcified arteries;
- *Lukoni/ Kikoni (Euphorbia tirucalli)* – latex is poisonous, piscicidal and insecticidal, cocarcinogen, highly toxic to the parasitic nematodes. Treatment of sore throat, emetic in cases of snake bite, sterility in women, broken bones;
- *Loofah Gourd/Ekyangwe (Luffa cylindrica)* – stimulating milk in mothers; chest complaints; increase urine, purgative, cause vomiting; skin infections;
- *Mabaale* (means infection/swollen in Lugungu) – treating swollen legs;
- *Mahogany (Khaya nyasica)* – bark infusions containing a bitter substance are drunk to treat colds and oil from the seeds is rubbed into the hair to kill lice;
- *Malakwang* – to treat anaemia;
- *Marula tree (Sclerocarya birrea)* – used to treat fever, boils and diarrhoea, eye disorders, infections, laxative, snakebite, toothache;
- *Mbumbuula* – medicinal plant;
- *Mikoge* – for cough, malaria, stomach ache;
- *Moringa/ horse-radish tree/ 'miracle tree' (Moringa oleifera)* – gum used to treat stomach and bladder ailments and asthma; seeds are effective against skin-infecting bacteria. Oil of Ben is used for hysteria, scurvy, prostate problems and bladder troubles. Bark used as appetizer and digestive. Roots and bark are used for cardiac and circulatory problems, as a tonic and for inflammation;
- *Mudidiyo* – for the treatment of the flu. The roots are also used for treating the eyes;
- *Mugangu* – used for treating people who have been struck by lightning;
- *Mukaasya* (Acacia) – treatment of athlete's foot;
- *Mukabyakabya* – the leaves are squeezed and the water drops from the leaves are used as eye drops;
- *Mukeeku* – medicinal plant;
- *Mukono tree (Solanecio manni)* – roots and leaves;
- *Mukodoyi* – Leaves should be crushed and mixed with water. The liquid is then used to treat eye problems;
- *Mukolyo/ Nsoga* – for treating swellings on the body;
- *Mukondwe* – roots used for back pain and the roots and bark are pounded for the eyes;
- *Mukwakwa (Strychnos innocua)* – insect repellent, used to rectify dislocation of bones;
- *Mukubyakubya/ Candaba*;
- *Mulaleki* – Used for the treatment of headaches;
- *Mulolol/ Yago/ Sausage tree (Kigelia africana)* – used in the treatment of malaria, worms, measles, syphilis. Bladder trouble/kidney disease, diarrhoea and dysentery, piles; wounds, sores and cuts, antidotes for snakebite, postpartum haemorrhage, spleen infection, gonorrhoea. The unripe fruits are said to be poisonous but are taken as a remedy for syphilis and rheumatism, and boiled fruit is massaged into the body for lumbago. A cream made from fruit extract is used to remove sunspots. Used locally to treat high blood pressure;
- *Musingabakazi/ Achogal/ Uduk tree* – sacred tree. 'Women's tree'. Can also be used for snake bites, getting rid of curses, stopping itching, helping men to maintain an erection and helping women to conceive;

- *Musizi, Musinde, Muside, Muhongera* (umbrella tree) (*Maesopsis eminii*) – a strong purgative and diuretic, also used to treat gonorrhoea;
- *Musomo* – medicinal plant;
- *Muteete/ Mutete* tree (*Balanites aegyptiaca*) – can be used to make a poison toxic to freshwater snails and fish, saponin. Decoction of root is used to treat malaria. Used to treat oedema and stomach pains, chest pains, heartburn, and as an emetic. Used to treat coughs and breathing difficulties;
- *Mutetemu* – medicinal plant;
- *Mutomal Mutooma* tree/ Barkcloth tree (*Ficus natalensis*) – leaves used to treat dysentery and tonsillitis;
- *Mutoola* – medicinal plant;
- *Mutungotungo* – used for the treatment of syphilis, *mabaale* or boils;
- *Mutwa* – medicinal plant;
- *Muyembe/ Moyeme/ Mango* tree (*Mangifera*) – dried flowers are of medicinal value and used for curing coughs, dysentery and catarrh of the bladder. Mango is a cure for wasp sting, rubbed between the hands and left to dry;
- *Muzoloobi/ Cactus* (*Euphorbia scarlatina*) – medicinal plant exudes a milky substance. Used for a disease in cows called makebe;
- *Nnanda ennene/ day flower* (*Commelina benghalensis*) – used to treat leprosy, eyes, colds, earache;
- *Niimul Nyakanyaka/ Neem* tree (*Azadirachta indica*) – used to treat diarrhoea, broken limbs, sores in the mouth and gums, stomach pains, fever, sore throat. Bark used in malaria treatment. Insecticide (azadirachtin in leaves, etc.). Insect repellent, skin care product. Neem leaves are used as hair products, tooth paste and as shampoo;
- *Ntale Ya Ddungu* (*Zanthoxylum chalybeum*) – bark extracts are said to cure malaria;
- *Ntobotobo* (*Hibiscus calyphyllus*) – the leaves are crushed and applied externally as a treatment for sores and wounds. The roots are boiled and used in a steam bath, and the liquid also drunk, as a remedy for pneumonia;
- *Nyakatiga* plant – used for control of high blood pressure and to increase milk production in animals;
- *Olwedo* tree – used for treating dislocation where leaves are warmed and then used to massage;
- *Oyomo* tree – used to bar sickness from a home;
- *Palm Tree* (*Elaeis guineensis*) – oil supposed to have antimicrobial effects;
- *Pedo* – for treatment of gonorrhoea;
- *Pot-ecok/ Sweet potatoes* (*Lpomoea eriocarpa*) – enema;
- *Scamoa* – used for treating wounds;
- *Sere/ Black Jack* (*Bidens pilosa*) – leaves: wounds; boils; juice; eyes, ears; decoction: rheumatism, stomach disorders; intestinal worms; roots: malaria;
- *Tamarind or Chaw* (*Cwaa*) tree (*Tamarindus indica*) – used to treat smallpox, digestive problems, stress, constipation, haemorrhoids, diabetes, sore throat, respiratory illness, asthma, leprosy, dysentery, fevers and angina, wounds, ulcers, boils, bilharzia. Antiseptic. Seed pods used to suck poison from bites and sting of animals. Ends of small branches are cut and the ends chewed to make durable toothbrushes;
- *Tribulus cystoides* – diuretic, tonic, aphrodisiac, bladder stones, stomach cramps, laxative;
- *Tungotungo* – medicinal plant;
- *Uduk* – used for the treatment of worms where the barks of the roots are utilised; and

- *Urweti* plant – used for correcting hearing impairment.

17.6.4.8.3 Craftworking and Natural Resources

Most household structures are made of traditional building materials, using local materials such as spear grass, trees and mud from selected areas or ant hills. Some homesteads have cattle kraal within their living area (BIMCO 2009). Most natural resources are harvested within the village or in direct proximity to the village, notably firewood, wild fruit and vegetables, medicinal plants, and thatching grass (Atacama Consultants 2017, 76). Traditional craft materials include wood, hides and skins, palm and sisal, the shea butter tree (*Vitalleria paradoxa*), papyrus (*Cyperus papyrus*), iron and stone, pottery and mud. A number of tree species are used to provide shade and act as windbreaks/ fences, to reduce erosion and for nitrogen fixation. Example uses include:

- Wood is collected for firewood and used to make charcoal;
- Wood is used for a wide range of purposes, ranging from carpentry for house construction, to dugout canoes (*Muvule* tree, *Melicia excelsa*) to making artisanal items such as wooden bowls. Specific species are used – for example, Tugu (*Borassus aethiopum*) heartwood is used to make beehives;
- Grass is used to thatch houses and as animal fodder (Kizongi Village Mapping);
- Baskets are woven using plant fibres;
- Bullrushes were traditionally used to make mattresses;
- Barkcloth is traditionally made from the inner bark of the *Mutuba* tree (*Ficus natalensis*), and is now largely used for cultural and spiritual functions (Trowell & Wachsmann 1953; Nyamweru & Gombe 2012). It is one of Uganda's cultural practices inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity;
- Anthill soil is used to daub houses, as the natural soils are relatively sandy. It was also traditionally used to make slingshot pellets (Kizongi Village Mapping). The blocks of earth from ant hills is also dug out and baked, then used as fire bricks when cooking as they hold the heat longer;
- Sand and clay are used to make bricks. There are deposits of clay used for making ceramic vessels at Bugana and Kasinyi;
- Wild fruits and vegetables are harvested;
- Medicinal plants are harvested;
- Some wild fruits are used in making traditional alcoholic beverages;
- There is some hunting of animals and birds;
- Papyrus is collected; and
- Shells are harvested from Lake Albert.

Useful trees and plants identified within the Study Area include:

- *Biwabyabasere* – thorny shrub used for protection/ kraals;
- *Ekyangwe/* loofah gourd (*Luffa cylindrical*) – bathing sponges, doors, table mats;
- *Kirapugo* – used to make soap;
- *Lubeeral/ Nyarogena* (*Hibiscus cannabinus*) – hedges, ropes, nets, yellow dye;
- *Luheere/ Pedo* tree – used building for toilets, wood cannot easily be destroyed by termites;
- *Lukoni/ Kikoni* (*Euphorbia tirucalli*) – charcoal, timber for rafters and veneers, gluey sap, windbreak fences;
- *Lusama* – used as soap;

- *Marula* tree (*Sclerocarya birrea*) – bark use to make rope, timber for mortars, pestles, bowls and various local crafts, furniture and heavy crates, nut oil;
- *Mbebera*/ creeper – used as ropes;
- *Moringa*/ Horse-radish tree/ 'miracle tree' (*Moringa oleifera*) – flowers important in apiculture, firewood, bark ropes and mats, tanning and dyeing;
- *Mudidiyo* – used for building purposes;
- *Mukaasya* (Acacia) –planted for poles;
- *Mukono* tree (*Solanecio manni*) – firewood, boundary marking;
- *Mukwakwa* (*Strychnos innocua*) – firewood and rafters for building small huts;
- African mahogany (*Khaya nyasica*) – firewood, timber for framing, panelling and veneer. Large logs are used to make dugout canoes;
- *Musizi*, *Musinde*, *Muside* (umbrella tree) (*Maesopsis eminii*) – firewood, leaves used as animal fodder, timber used in poles, boxes, crates, plywood and lumber construction, shade and shelter;
- *Mulolo*/ *Yago*/ Sausage tree (*Kigelia africana*) – Flowers important in apiculture, good-quality timber for general use, heartwood used for drums, utensils and cutlery; black dye from fruit;
- *Musisiye*/ *Nnongo* (*Albizia* spp.) – used as local herbs, soap, poles and timbers. Firewood, charcoal, timber, fodder (leaves), shade;
- *Musonge* – used for building timber;
- *Muteete* tree/ *Mutate* (*Balanites aegyptiaca*) – firewood, high quality charcoal, bark fibre, durable timber which is made into yokes, wooden spoons, pestles, mortars, handles, stools and combs. Gum used as glue. Sap used for trapping birds. Cooking oil;
- *Mutoma*/ *Mutooma* tree / barkcloth tree (*Ficus natalensis*) – bark is used for making bark cloth. The tree is grown as a live fence around homes and at a wide spacing for shade in plantations. Sap collected, boiled down, and the sticky substance used to smear on branches and catch birds;
- *Mwopoki* – charcoal;
- *Niimul* *Nyakanyaka*/ *Neem* tree (*Azadirachta indica*) – used for firewood, charcoal, timber, poles, soil conservation, oil (seeds), soap (seed oil). Ornamental, shade, windbreak. Fruits and seeds are the source of neem oil, fodder (leaves, oil-seed cake), bee forage;
- *Nkoma*/ pomegranate (*Punica granatum* L.) – used for fibres;
- *Ntale Ya Ddungu* (*Zanthoxylum chalybeum*) – firewood, durable timber used for carving, turnery and walking sticks. The twigs are used as toothbrushes;
- *Ntobotobo* (*Hibiscus calyphyllus*) – A fibre is obtained from the stem;
- *Sisal* hemp (*Agave sisalana*) – Boundary marker, source of fibre traditionally used in the production of twine, ropes, carpets, mattresses, and handicraft;
- *Tamarind* or *Chaw* (*Cwaa*) tree (*Tamarindus indica*) – trunk and large branches used to make charcoal. Makes excellent fuelwood for firing kilns. Straight portions are used in house construction. Small stems and branches are used to make clubs and tool handles for hoes, axes and pangas. Trunk is chiselled to make utensils such as mortars, pestles. Seeds are used as counters in traditional board games such as 'omweso'. Bark and wood ash used to make ink. Bark used for lighting fires and also eaten for worms; and
- *Uduk* – wood for building and charcoal making.

Analysis of the social and economic contribution of artisanal activities is considered in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

17.6.4.8.4 Traditional and Culturally Significant Foods

The Bunyoro region relies on agriculture with over 75% of the population in smallholder agricultural activity. It is a major producer of maize and tobacco as well as food crops such as cassava, sweet potatoes, beans and simsim (sesame seed). Livestock production is undertaken by the Balalo people, while the communities on the shores of Lake Albert undertake subsistence and commercial fishing (Atacama Consulting/ Ecology & Environment, Inc. 2014, 6-6). As well as being used to provide milk, meat and hides, livestock are important as they are used for dowries and sometimes, as in ritual sacrifices. In addition to fruit, trees provide shade, moisture and firewood. Some trees are used for gathering water.

Traditional semi-wild and cultivated vegetables are important in both nutrition and culture, and wild plants are often collected to sell (Goode, 1989; Kakitahi, 1984; FAO 1988; Rubaihayo 1994; Agea et al. 2011). ‘Cultural uses of traditional vegetables are associated with widely held beliefs connected with visitors, weddings, childbirth and in-laws.’ (Rubaihayo, n.d.). In Banyoro, the use of local vegetables such as *doodo*, *eybyo* (*Ejjobyo*) and *enswiga* is usually discouraged, but *enkoole* (cowpea; *Vigna unguiculata*) has a special significance as the ‘crop of peace’, used to feed people in times of scarcity (FAO 1988). For the Acholi, *boo* (cowpea seeds) is traditionally used in a special meal during which guests suggest a new baby’s name (FAO, 1988). The pumpkin is important in Acholi folklore, reflecting rootedness in place and culture (Ojaide, 2017).

The social and economic contribution of agriculture, hunting, fishing and food-gathering activities is addressed in **Chapter 16: Social** and in **Chapter 19: Ecosystem Services**.

Table 17-9: Traditional vegetables

Vernacular names	Scientific name	Common English name
Abongband (Acholi)	<i>Phaseolus lunatus</i>	Lima beans
Bamia (Runyoro); Otigo-Iwoka (Acholi)	<i>Hibiscus esculentus</i>	Okra
Boo/Ngor (Acholi); Omugobe (Runyoro); Amuli (Alur)	<i>Vigna unguiculata</i>	Cowpea
Doodo (Runyoro); Sokoo/Sokusaku (Alur)	<i>Amaranthus dubius</i>	Amaranthus spinach
Goyi (Alur)	<i>Amaranthus hybridus</i>	Amaranthus spinach
Ebbuga ezuungu (Luganda)	<i>Amaranthus subsp.incurvatus</i>	Amaranthus spinach
Ebihimba (Runyoro)	<i>Phaseolus vulgaris</i>	French beans
Ejjobyo (Luganda)	<i>Gynandropsis gynandra</i>	African spider herb
Ekyangwe (Runyoro)	<i>Luffa cylindricata</i>	Loofah gourd
Ekganga (Runyoro)	<i>H. sabdariffa</i>	-
Enderema (Runyoro); Kurakura (Alur)	<i>Basella alba</i>	Vine spinach
Enswiga (Runyoro)	<i>Solanum florulentum</i>	Bitter
Jagi (Acholi); Enjagi (Runyoro); Uli (Alur)	<i>Solarium gilo</i>	Bitter berries
Kamulali (Luganda); Rura (Acholi); Kamalr (Alur)	<i>Capsicum frutescens</i>	Chillies
Kicwika/konokono (Acholi); Emyongo (Runyoro); Okondo (Alur)	<i>Cucurbita maxima</i>	Pumpkin
Lapena (Acholi); Enkuuku (Runyoro)	<i>Cajanus cajan</i>	Pigeon peas
Lubeera (Luganda), Nyarogena (Acholi)	<i>Hibiscus cannabinus</i>	Kenaf, Deccan Help
Muhogo (Runyoro); Chombe (Alur)	<i>Manihot esculenta</i>	Cassava
Nakati/Nakasuga (Luganda)	<i>Solarium aethiopicum</i>	Scarlet eggplant
Nnanda ennene (Luganda); Androko (Alur)	<i>Commelina benghalensis</i>	Day flower
Obuga (Acholi)	<i>Amaranthus gracecizane</i>	Amaranthus spinach
Obuga-okuta (Acholi)	<i>Amaranthus spinosus</i>	Amaranthus spinach
Ocugocuga (Acholi)	<i>Solarium nigrum (green stem)</i>	- wild & semi-wild
Pot-ecok (Luganda)	<i>Ipomoea batatas</i>	Sweet potatoes
Padowiakuri (Acholi)	<i>Ipomoea eriocarpa</i>	-
Sere (Luganda); Anyengomon (Alur)	<i>Bidens pilosa</i>	Black jack
Ttimba (Luganda); Opela (Alur)	<i>Colocasia esculenta</i>	Cocoyam

Source: Rubaihayo n.d. Conservation and use of traditional vegetables in Uganda. NARO, Kawanda Agricultural Research Institute, Kampala
http://www.biodiversityinternational.org/fileadmin/biodiversity/publications/Web_version/500/ch15.htm

Wild and semi-wild trees and plants used for food within the Study Area, noted during field walkover survey and in consultation with local communities, include:

- *Acuga/ Crisia* (*Carissa edulis* (Forssk) Vahl.) – fruit, juice;
- *Alongo* – green vegetable;
- *Marula* tree (*Sclerocarya birrea*) – edible fruits and nuts, cooking oil, fodder, fermented alcoholic beverage (marula beer);
- *Jaaka/ Jack* fruit tree (*Artocarpus* spp.) – fruit and juice;
- *Kipaapaalil/ Mupaapalil* Paw paw/ Papaya trees (*Carica papaya*) – fruit;
- *Moringa/ Horse-radish* tree/ ‘miracle tree’ (*Moringa oleifera*) – edible leaves with high iron and protein content, roots and young plants, pods, edible oil, flower tea;
- *Mucungwal* Orange tree (*Citrus sinensis*) – fruit and juice;
- *Mudidiyo* – edible fruits;
- *Mukwakwa* (*Strychnos innocua*) – small fruits;
- *Mulolo/ Yago/ Sausage* tree (*Kigelia africana*) – baked fruit used to aid fermentation of beer, seeds roasted in times of food shortage. Fodder;
- *Munonde / Mukoge / Mukooge / Uganda* Mulberry (*Morus lactea*) – edible fruit that at times is squeezed and the liquid added to porridge;
- *Muteete* tree/ *Mutate* (*Balanites aegyptiaca*) – mainly feed for goats, but also human consumption. Gum sucked and chewed when fresh. Fruit can be used to brew an alcoholic drink;
- *Mutuura* tree (*Xerospermum Blume Sapindaceae*) – edible wild fruit;
- *Muyembe/ Moyeme/ Mango* tree (*Mangifera*) – fruit;
- *Ntale ya ddungu* (*Zanthoxylum chalybeum*) – dried leaves brewed to make a kind of tea. Leaves and fruit provide fodder for goats;
- *Ntobotobo* (*Hibiscus calyphyllus*) – leaves are cooked and eaten;
- *Tamarind* or *Chaw* (*Cwaa*) tree (*Tamarindus indica*) – fruits traditionally used to add flavour to porridge and eaten as a snack. Fruit pulp used as a preservative. The tree is a vulnerable IUCN red list species in the MFNP, Bunyoro subregion and Acholi subregion; and
- *Tungotungo* – fruits.

17.6.5 Baseline Survey Results

Archaeological walkover surveys were undertaken in six fields, Jobi Rii (JBR), Gunya (GNA), Nsoga (NSO), Ngiri (NGR), Kigogole (KGG), Kasemene-Warindi (KW), and at the proposed Central Processing Facility (CPF) location. Additionally, the location of the proposed Victoria Nile Ferry Crossing (VNFC) was surveyed. Sites, where identified, are plotted within buffers 200m and 1km from the Land Aquisition Extent.

Key categories of cultural heritage sites and findspots identified in the course of the field surveys are as follows:

Archaeology	<p><i>Struck stone tools (e.g. axes, blades, scrapers, points), lithic cores from which tools were struck, and debitage (waste flakes from tool production).</i></p> <p><i>Decorated and undecorated pottery sherds (cooking vessels etc.).</i></p> <p><i>Rubbers and grinding stones for crushing grain.</i></p> <p><i>Daub derived from buildings and other structures.</i></p> <p><i>Slag (ironworking debris) and tuyères (ceramic nozzles used in furnaces and forges).</i></p>
Cultural sites	<p><i>Traditional clan cultural places.</i></p>

Traditional family shrines.
Sacred trees, bushes, plants, rivers, streams, marshes, paths and routes.
Community gathering places.
The locations at which traditional healers dispense treatments and advice.

Places of worship

Churches and mosques.

Burial places

Graveyards, groups of burials and single graves.
Include both cemented and uncemented graves.
Some are surrounded by hedges or marked by trees.

Useful/medicinal/sacred plants

A wide range of culturally significant plants were identified in the course of field surveys.

Palaeontology

Fossil findspot locations.

Other

Finds of non-archaeological shell and recent animal bone, recent charcoal burning mounds, plants and stones marking land boundaries and abandoned homesteads.

Further baseline information on the baseline surveys of the ESIA are contained with Appendix R (Annex B and C).

17.6.5.1 Jobi Rii Field – Well Pad JBR-01 (CA-1)

No cultural material was identified within the proposed footprint of wellpad JBR-01. However, one receptor (ACH-01-003) was identified within the Land Aquisition Extent.

The relatively sparse archaeological receptors identified in the surrounding study area are assessed as being of low (local) significance.

Wellpad JBR-01 is located within MFNP, in an area of wooded grassland. The wellpad was subject to archaeology and cultural heritage survey in on 5th December 2016.

The major impediment of surveying this site was the thick vegetation at the centre point, the northwestern corner and the southeastern corners. The strategy was purposive survey focusing on open patches, which yielded archaeological materials.

The survey identified six archaeological sites within the wider 200m study area, comprising finds of roulette-decorated pottery sherds dating to the Late Iron Age or later and other ceramics, lithic cores and a scatter of quartz lithics. The lithic artefacts comprised Later Stone Age single platform and opposed double platform quartz cores. These cores were abandoned prematurely, which may indicate that raw materials were plentiful. The roulette decoration on the pottery indicates that it dates to the Late Iron Age. Besides the archaeological materials were medicinal plants such as Combretum (bush willow) and *Kadaali*. A further 18 archaeological sites were recorded to the northeast of the pad site within the wider 1km survey area. These included similar sites such as pottery and lithic scatters, and these sites also fall within the 200m search area for JBR-02.

Table 17-10: Archaeology and cultural heritage identified at JBR-01

Heritage UID	Description
ACH-01-001	Five ceramic rims and bodies with black slip finish and roulette decoration, coil breakage. Upturning rimsherd of one open bowl. Late Iron Age or later.
ACH-01-002	Lithic core, LSA.
ACH-01-003	Lithic core, LSA.
ACH-01-004	Lithic core, LSA.
ACH-01-005	Acacia medicinal plant and ceramics.
ACH-01-006	Lithic scatter of quartz, LSA.
ACH-00-001	LSA quartz core.
ACH-00-002	LSA quartz flake.

Heritage UID	Description
ACH-02-019	Pottery sherd (abraded) and animal bone.
ACH-02-020	Pottery sherd with thick rim, scraper, and other lithics.
ACH-02-021	Decorated pottery.
ACH-02-022	Lithics.
ACH-02-023	Concentration of pottery.
ACH-02-024	Pottery, lithic and daub.
ACH-02-025	Daub.
ACH-02-026	Pottery sherd.
ACH-02-027	Pottery sherd.
ACH-02-028	Pottery sherd.
ACH-02-029	Pottery sherd.
ACH-02-030	Pottery sherd.
ACH-02-031	Pottery sherd.
ACH-02-033	Plain pottery sherd.
ACH-02-034	Lithic and pottery.
ACH-02-035	LIA pottery with roulette decoration.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-01 are shown on Figure 17-1.

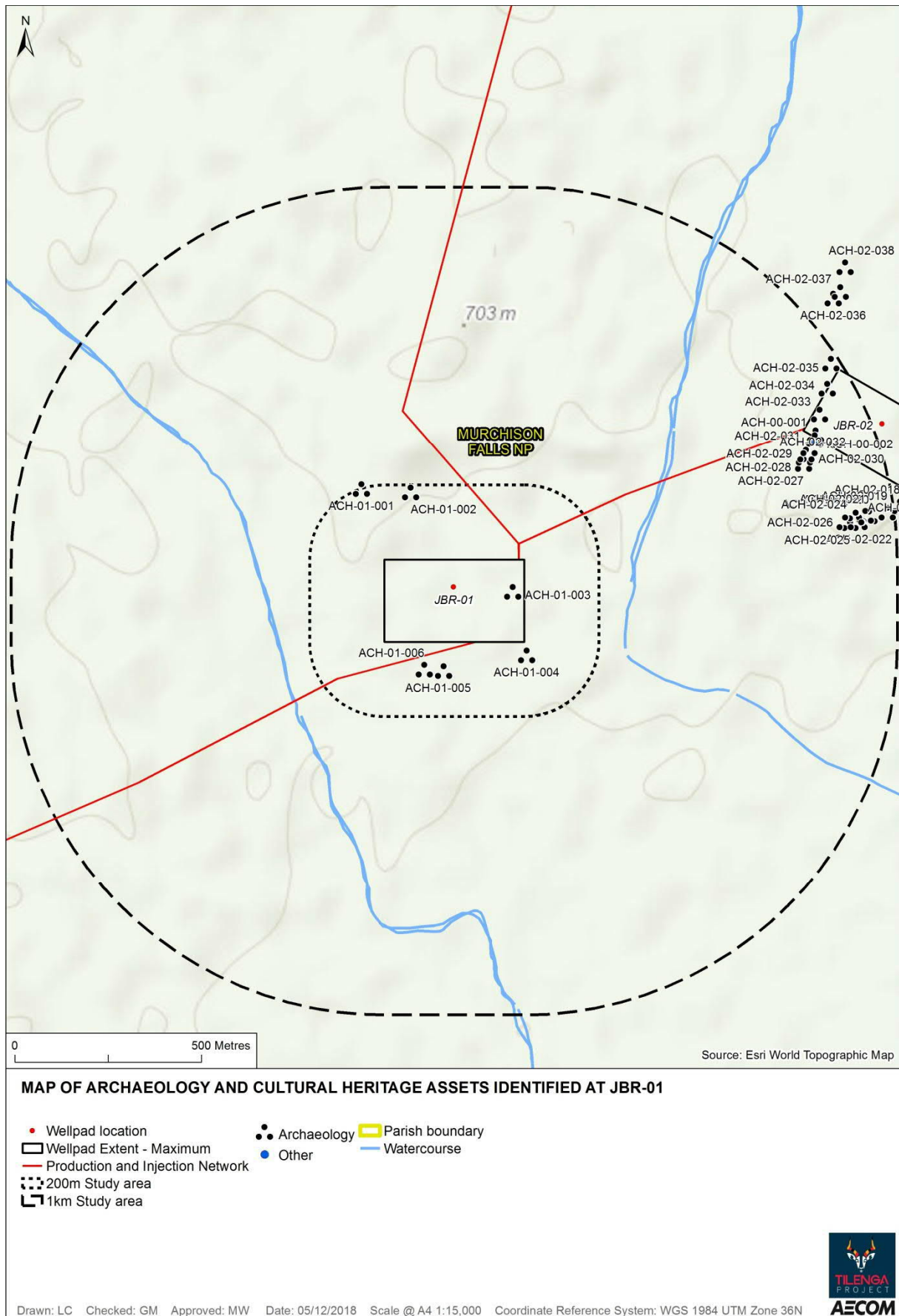


Figure 17-1: Map of archaeology and cultural heritage assets identified at JBR-01

17.6.5.2 Jobi Rii Field – Well Pad JBR-02 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad. However, three sites (ACH-00-001, ACH-02-033, and ACH-02-034) are situated within the Land Acquisition Extent.

Archaeological receptors identified in the wider study area are assessed as being of moderate (regional) significance, and are particularly important due to the presence of stone tool manufacturing sites and concentrations of multiperiod, chronologically diagnostic pottery.

Wellpad JBR-02 is located within MFNP, in an area of wooded grassland. The wellpad was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014) and on 27th June 2017.

The survey identified 39 archaeological sites within, or close to, the 200m study area. These included Late Stone Age cores and flakes, a possible Early Stone Age hammerstone, a hammerstone or fishing weight, a rubbing stone, pottery sherds, Neolithic decorated pottery and roulette-decorated Late Iron Age pottery. Concentrations of lithics may indicate manufacturing sites. Heaps of laterite, a raw material used for iron smelting, were recorded. Daub was noted, which is significant in the MFNP area which was evacuated over 100 years ago, as it may indicate a former settlement area. Concentrations of pottery, lithics, and pottery and lithics as well as in situ pottery sherds were recorded, producing coherent, well-preserved and complex assemblages reflecting the lack of ground disturbance in the MFNP over the past century. The pottery had Kansyore-style decoration, dating to the Neolithic pottery dating to about 8000 years ago. This wavy line and zig zag decoration is common to the Upper Nile catchment areas (Kyazike, 2016). Mammilations on pottery are attributed to the LIA period. A further two sites were identified to the south east of the pad site near the limit of the wider 1km study area. These sites (ACH-01-003 and ACH-01-004) were both lithic findspots, and both are within the 200m study area for JBR-01.



Plate 17-1: General view of the team surveying the area of JBR02.



Plate 17-2: Two lithics recorded in JBR02.



Plate 17-3: A large pottery scatter, included decorated sherds, observed in an area of erosion in JBR02.



Plate 17-4: A lithic scatter (possible working area) observed in an area of erosion in JBR02.

Useful plants noted in the area include *Lenga*, *Uduk* and *Kulumbero*.

Recent materials in the form of faunal remains were also observed especially animal bones. The parts of bones identified were teeth, hippo tibia and long rib bones. Small shells were also common in the site. The faunal remains seem to be from animals killed by other animals or those that died naturally.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-02 are shown on Figure 17-2.

Table 17-11: Archaeology and cultural heritage identified at JBR-02

Heritage UID	Description
ACH-00-001	Late Stone Age (LSA) quartz core. Exhausted core, single platform.
ACH-00-002	LSA quartz whole flake. 100% cortical.
ACH-02-003	Three decorated pottery sherds.
ACH-02-004	Red burnished pottery sherds and lithics.
ACH-02-005	Lithics.
ACH-02-006	Lithic core.
ACH-02-007	Lithic hammerstone (Early Stone Age), in situ pottery sherds.
ACH-02-008	Lithics.
ACH-02-009	Pottery.
ACH-02-010	Pottery concentration.
ACH-02-011	Lithics and pottery concentration.
ACH-02-012	Lithics, pottery concentration and medicinal plants. The hammerstone had a hole through it that could have been used on fishing nets.
ACH-02-013	Lithics.
ACH-02-014	Two pottery sherds, plain red burnished, black slip and tempered with sand.
ACH-02-015	Concentration of pottery sherds including thin bodied red slip, tempered with grog and sand. Buffalo bones - ribs and head.
ACH-02-016	Concentration of pottery sherds. Thin bodied red slip, tempered with grog and sand.
ACH-02-017	Pottery sherds with zigzag decoration, possibly Neolithic.
ACH-02-018	Pottery scatter and sandstone rubber.
ACH-02-019	Highly abraded pottery sherds and the long rib bones of a large mammal.
ACH-02-020	Pottery sherd with thick rim, convex side scraper and lithic fragments.
ACH-02-021	Pottery sherd decorated with a wavy line and mamillated bands of decoration.
ACH-02-022	Lithics.
ACH-02-023	Pottery concentration.
ACH-02-024	Pottery, lithics and daub. Lithics include a single platform core scraper made on a quartz cobble.
ACH-02-025	Daub.
ACH-02-026	Pottery sherd.
ACH-02-027	Pottery sherd.
ACH-02-028	Pottery sherd.
ACH-02-029	Pottery sherd.
ACH-02-030	Pottery sherd.
ACH-02-031	Pottery sherd.
ACH-02-033	Plain pottery sherd.
ACH-02-034	Lithics and pottery.
ACH-02-035	Pottery sherd decorated with a band of roulette decoration (Late Iron Age).
ACH-02-036	Plain pottery sherd.
ACH-02-037	Lithics and heaps of laterite, a raw material for iron smelting.
ACH-02-038	Concentration of lithics including opposed double platform cores. Medicinal plants including young Uduk trees and Kulumbero.
ACH-02-039	Scatter of pottery with red burnished finish, over 20 body pieces and a rim sherd noted.
ACH-02-040	Plain pottery sherd.
ACH-01-003 and 004	Lithic core.

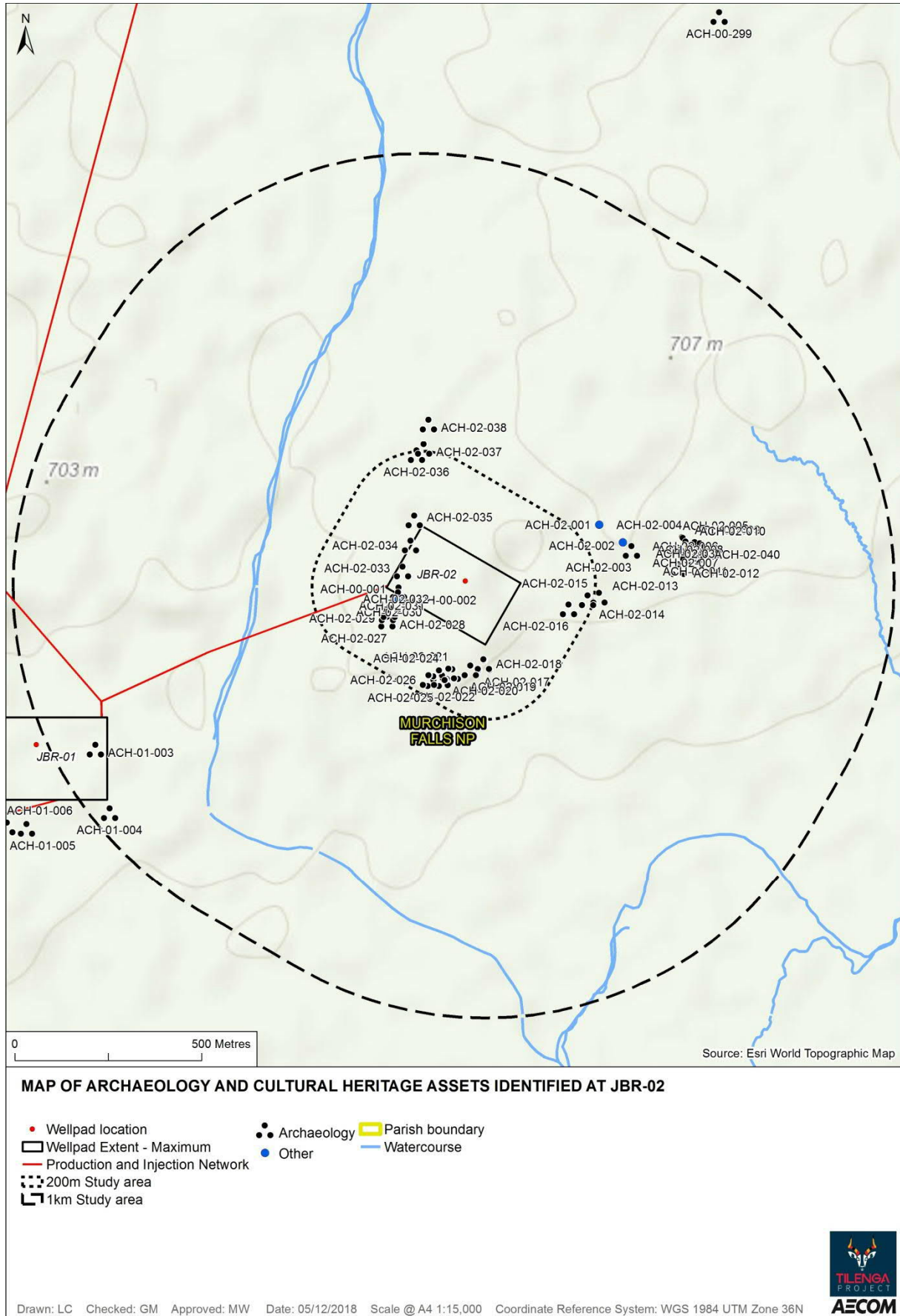


Figure 17-2: Map of archaeology and cultural heritage assets identified at JBR-02

17.6.5.3 Jobi Rii Field – Well Pad JBR-03 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad.

Archaeological receptors noted in the wider study area are assessed as being of low (local) significance.

Wellpad JBR-03 is located within MFNP in an area of open grassland and wooded grassland. The wellpad was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014).

The survey identified four archaeological sites, comprising Late Stone Age cores and flakes.

Table 17-12: Archaeology and cultural heritage identified at JBR-03

Heritage UID	Description
ACH-00-003	LSA quartz whole flakes.
ACH-00-298	LSA quartz core. Highly abraded, single platform core.
ACH-00-297	LSA quartz flake fragment.
ACH-00-006	LSA quartz core.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-03 are shown on Figure 17-3.

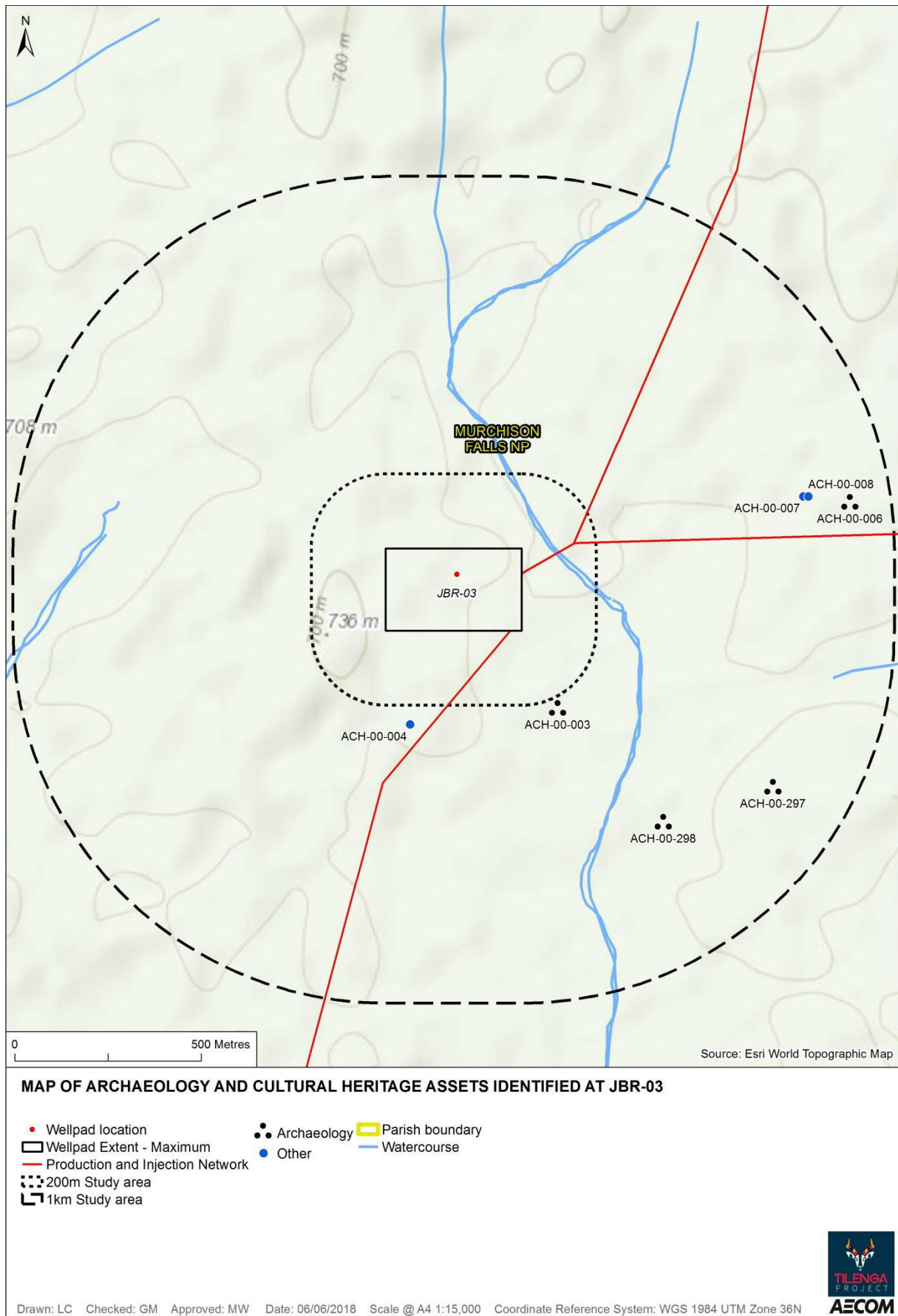


Figure 17-3: Map of archaeology and cultural heritage assets identified at JBR-03

17.6.5.4 Jobi Rii Field – Well Pad JBR-04 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad.

Archaeological sites noted in the wider study area are assessed as being of moderate (regional) significance. Coherent, well-preserved and complex assemblages are present, reflecting the lack of ground disturbance in the MFNP over the past century. The presence of both Kansyore-ware and Late Iron Age pottery may be significant, reflecting the transition between the Late Stone Age or Neolithic and the Iron Age.

Wellpad JBR-04 is located within MFNP in an area of open grassland and wooded grassland. Chance find sites were verified by the Department of Museums and Monuments in 2013 (MTWA, 2013; Eco & Partner, 2014; AECOM EBS, 2015).

Twelve archaeological sites were identified within, or immediately adjacent to, the 1km search area. These included Late Stone Age quartz cores and flakes, pottery sherds, pottery scatters including Kansyore pottery and roulette-decorated Late Iron Age pottery and faunal remains (animal bone).

Table 17-13: Archaeology and cultural heritage identified at JBR-04

Heritage UID	Description
ACH-00-297	LSA quartz flake fragment.
ACH-00-005	Pieces of pottery.
ACH-00-006	LSA quartz core. Pyramidal core.
ACH-00-007	Faunal remains.
ACH-00-008	Jaw, femur, vertebrae.
ACH-00-009	Few un-diagnostic potsherds.
ACH-00-287	Broken pieces of pottery.
ACH-00-289	Many pieces of pottery scattered on bare ground with scattered acacia small scrub within a large grassland.
ACH-00-290	Kansyore pottery, roulette sherds core and flake fragments and three whole flakes.
ACH-00-291	Pieces of pottery scattered in the scrub.
ACH-00-292	Kansyore pottery, roulette sherds core and flake fragments and three whole flakes.
ACH-00-299	Pieces of pottery.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-04 are shown on Figure 17-4.

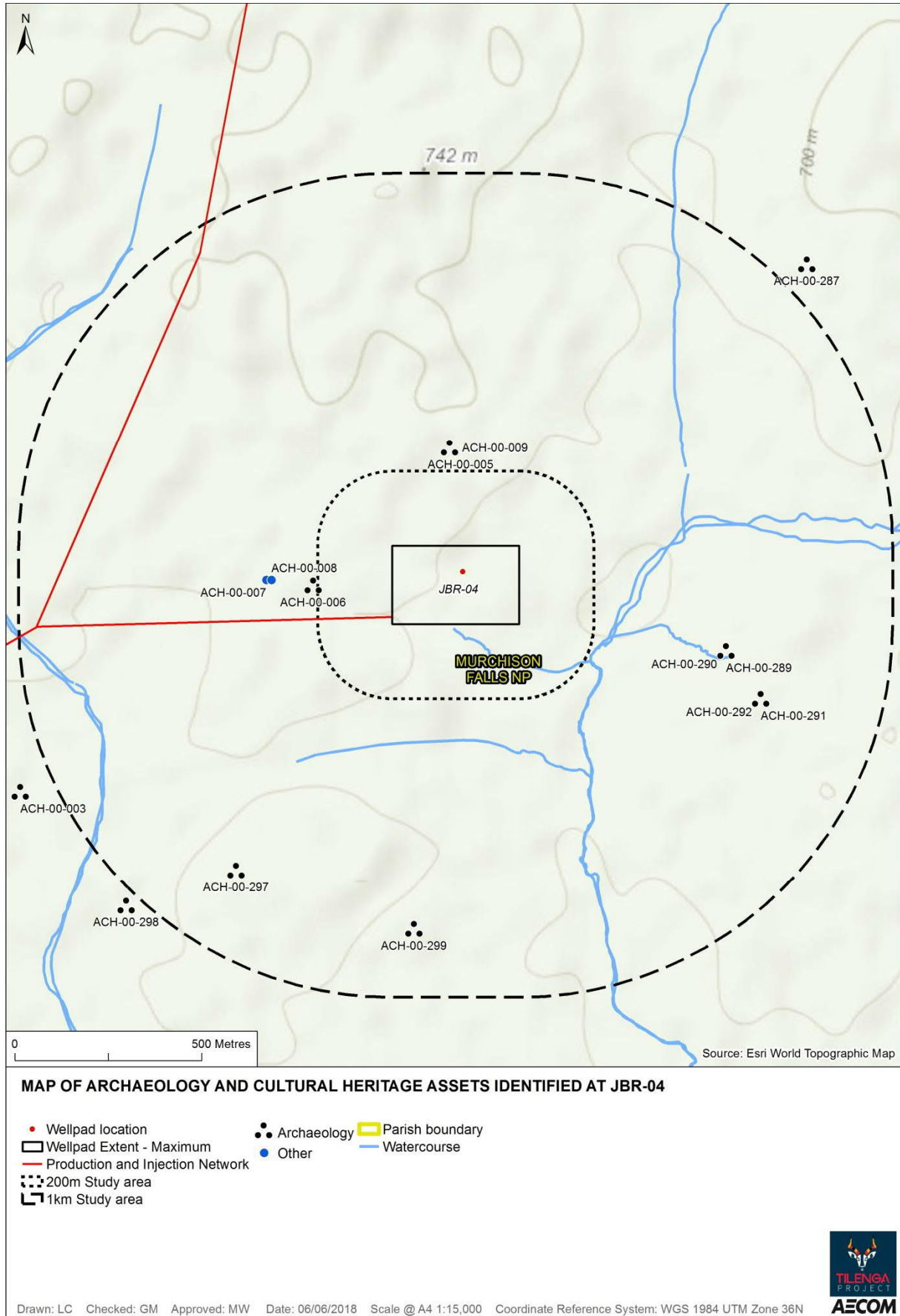


Figure 17-4: Map of archaeology and cultural heritage assets identified at JBR-04

17.6.5.5 Jobi Rii Field – Well Pad JBR-05 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad.

Faunal remains recorded in the wider study area are assessed as being of negligible significance.

Wellpad JBR-05 is located within MFNP in an area of open grassland with scattered trees. The wellpad was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014).

The survey identified two findspots within the 1km study area to the west of the proposed wellpad, comprising faunal remains (animal bone). The date of these bones is uncertain, and it is likely that exposed animal bones are relatively recent and non-archaeological. However, archaeological remains were recorded within the extreme limit of the 1km study area to the east and northeast of the proposed well site. These assets largely consisted of lithics and pottery sherds. As most fell within the 200m study area for JBR-06 they have been discussed in more detail in that section.

Table 17-14: Archaeology and cultural heritage identified at JBR-05

Heritage UID	Description
ACH-00-284	Faunal remains. Bone.
ACH-00-285	Faunal remains. Bone.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-05 are shown on Figure 17-5.

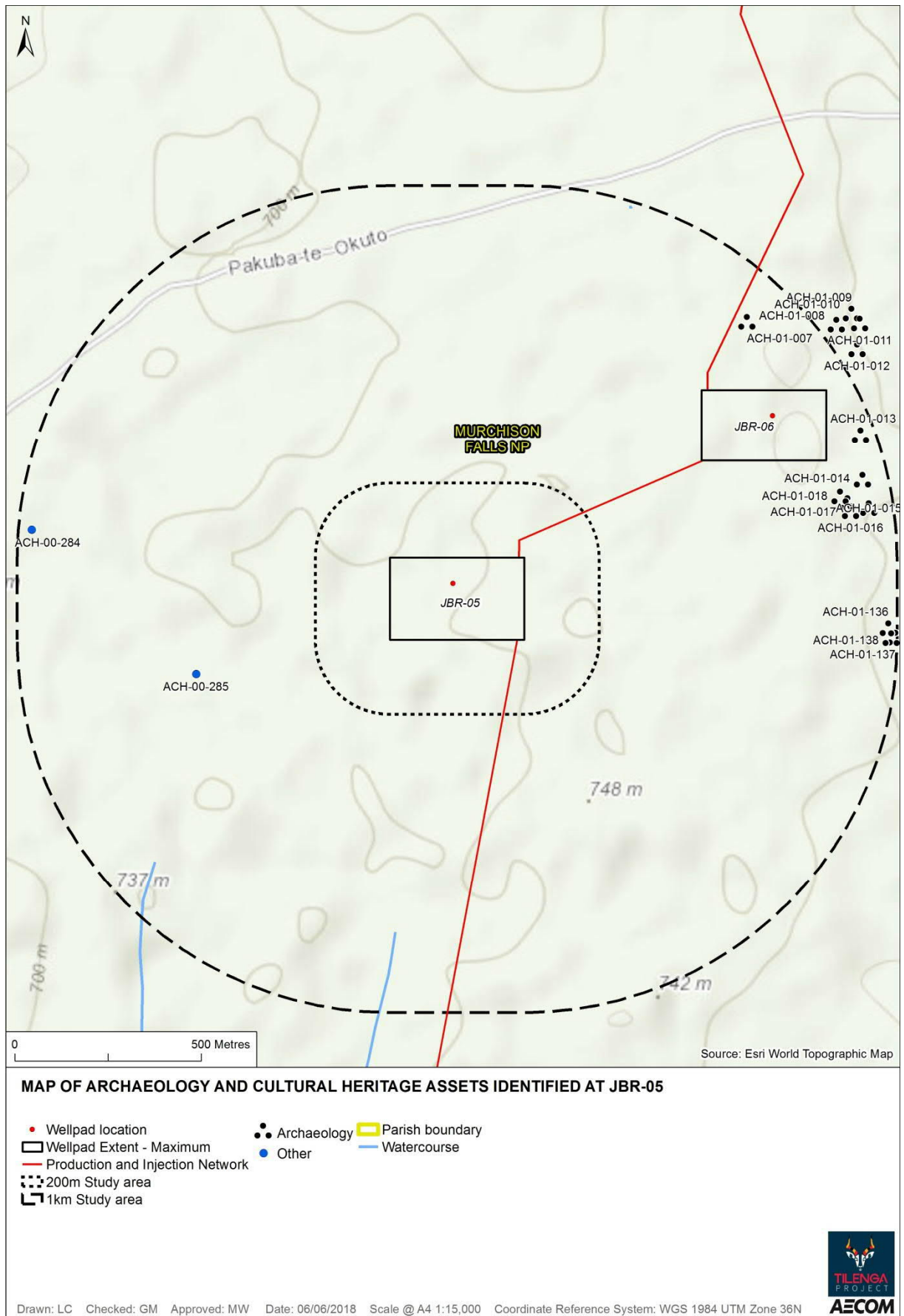


Figure 17-5: Map of archaeology and cultural heritage assets identified at JBR-05

17.6.5.6 Jobi Rii Field – Well Pad JBR-06 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad. Archaeological sites in the wider study area are assessed as being of moderate (regional) significance.

The coherent, well-preserved and complex assemblages reflect the lack of ground disturbance in the MFNP over the past century.

Wellpad JBR-06 is located within MFNP in an area of open grassland close to Pakuba airstrip. The wellpad was subject to archaeology and cultural heritage survey on 5th December 2016.

Archaeological survey in JBR-06 was limited by the thick vegetation – the northeastern corner had a lot of young bushes while the southeastern corner was also highly vegetated, inhibiting visibility. The walkover focussed on open areas.

The survey identified eleven sites within the 200m study area, and a further five sites within the wider 1km study area. These comprised of a Late Stone Age Levallois flake and core, lithic cores, a side scraper, pottery sherds, and large and widespread pottery scatters. Daub was also recorded, and may indicate former settlement areas pre-dating the evacuation of the MFNP area in the early 20th century. Concentrations of pottery were present. The degree of abrasion noted on pottery sherds may indicate that settlements in this area were abandoned prior to the establishment of the settlements that were evacuated.

The lithic assemblage ranged from the Middle Stone Age (MSA) to the LSA period. These included Levallois side scraper, a convex side scraper and a pyramidal core, all of quartz. The prematurely abandoned cores suggest plentiful locally available raw materials. The pottery sherds were highly abraded while others were plain, which made it difficult to date them since they had no visible decoration. Analysis of ceramic forms indicates some upturned rims from open bowls. The location of archaeology and cultural heritage assets identified at Wellpad JBR-06 are shown on Figure 17-6.

Table 17-15: Archaeology and cultural heritage identified at JBR-06

Heritage UID	Description
ACH-01-007	Pottery sherd with coil breakage.
ACH-01-008	Widespread pottery scatter.
ACH-01-009	Large pottery scatter.
ACH-01-010	Daub and Levallois flake.
ACH-01-011	Internally abraded pottery sherd, surface finish red inside and outside.
ACH-01-012	Pottery sherd.
ACH-01-013	Pottery sherd.
ACH-01-014	Scatter of abraded ceramics about 10x10m ² .
ACH-01-015	Pottery sherd.
ACH-01-016	Daub and ceramics.
ACH-01-017	Pottery rim sherd.
ACH-01-018	Pottery rim sherd.
ACH-01-136	Lithic cores and in situ abraded ceramics.
ACH-01-137	Levallois core.
ACH-01-138	Convex side scraper.
ACH-01-139	Lithic cores and six sherds of red burnished pottery sherds.

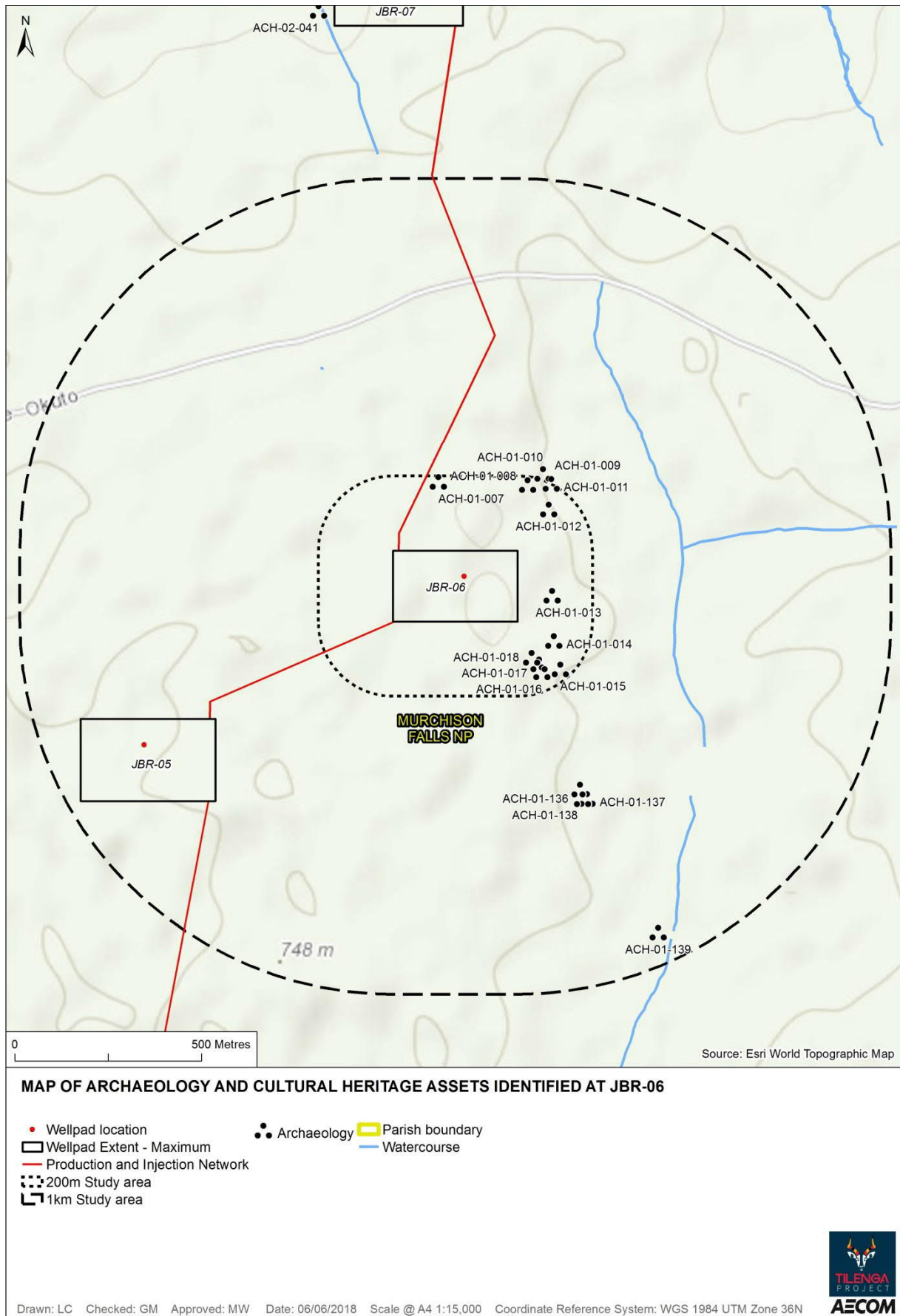


Figure 17-6: Map of archaeology and cultural heritage assets identified at JBR-06

17.6.5.7 Jobi Rii Field – Well Pad JBR-07 (CA-1)

Daub fragments (ACH-02-042 and ACH-02-043) and a pottery sherd (ACH-02-044) were identified within the proposed footprint of the Land Acquisition Extent for wellpad JBR-07.

The archaeological receptors identified in the wider study area are assessed as being of low significance.

Wellpad JBR-07 is located within MFNP in an area of open grassland. The wellpad area was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014) and 27th June 2017 (Tilenga ESIA Team | Elizabeth Kyazike).

The survey identified archaeological sites in JBR-07, comprising lithics and Late Stone Age cores, a grinding stone, daub, and animal bone. A concentration of pottery was recorded at an animal watering hole. Some well-fired vessels may have been used for storage rather than of cooking. Sparse daub was also recorded, and may indicate former settlement areas. The area was not very productive in that even some of the open areas yielded no cultural materials.

JBR-07 contained several scatters of animal bone from wild animals that died naturally, including the remains of hartebeest and buffalo.

Table 17-16: Archaeology and cultural heritage identified at JBR-07

Heritage UID	Description
ACH-02-041	Plain pottery sherd.
ACH-02-042	Daub.
ACH-02-043	Daub
ACH-02-044	Pottery sherd.
ACH-02-045	The long bones of a large mammal (modern).
ACH-02-046	The rib cage of a large mammal (modern).
ACH-02-047	Tiny potsherds.
ACH-02-048	Pottery sherd.
ACH-02-049	Pottery sherd.
ACH-02-050	Red slipped pottery.
ACH-02-051	Pottery sherd.
ACH-02-052	Plain, red slipped, thin bodied pottery sherds.
ACH-02-053	Faunal remains - bone (modern).
ACH-02-054	Pottery sherd.
ACH-02-055	Pottery sherds, including rim and body sherds.
ACH-02-056	Red burnished pottery sherds.
ACH-02-057	Pottery sherd.
ACH-02-058	Grinding stone.
ACH-02-059	Pottery sherds. Faunal remains including the skull of a hartebeest (<i>Alcelaphus buselaphus</i>) (modern).
ACH-02-060	Pottery sherd.
ACH-02-061	Pottery sherd, Kulumbeero (medicinal plant).
ACH-02-062	Medicinal plant, pottery scatters.
ACH-02-063	Pottery and daub.
ACH-02-064	Pottery sherd.
ACH-02-065	Pottery sherd.
ACH-02-066	Pottery sherds noted at buffalo drinking place. Ceramics have been heavily trampled by buffalo.
ACH-02-067	Pottery, lithics.
ACH-02-068	Pottery sherd.
ACH-02-069	Pottery sherds, red slipped inside and outside. Found at an animal watering hole.

Heritage UID	Description
ACH-00-010	LSA volcanic core. Single platform core.
ACH-00-011	LSA quartz cores. Single platform and multi-platform.
ACH-00-012	LSA quartz core. Single platform.
ACH-00-013	Animal bone.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-07 are shown on Figure 17-7.

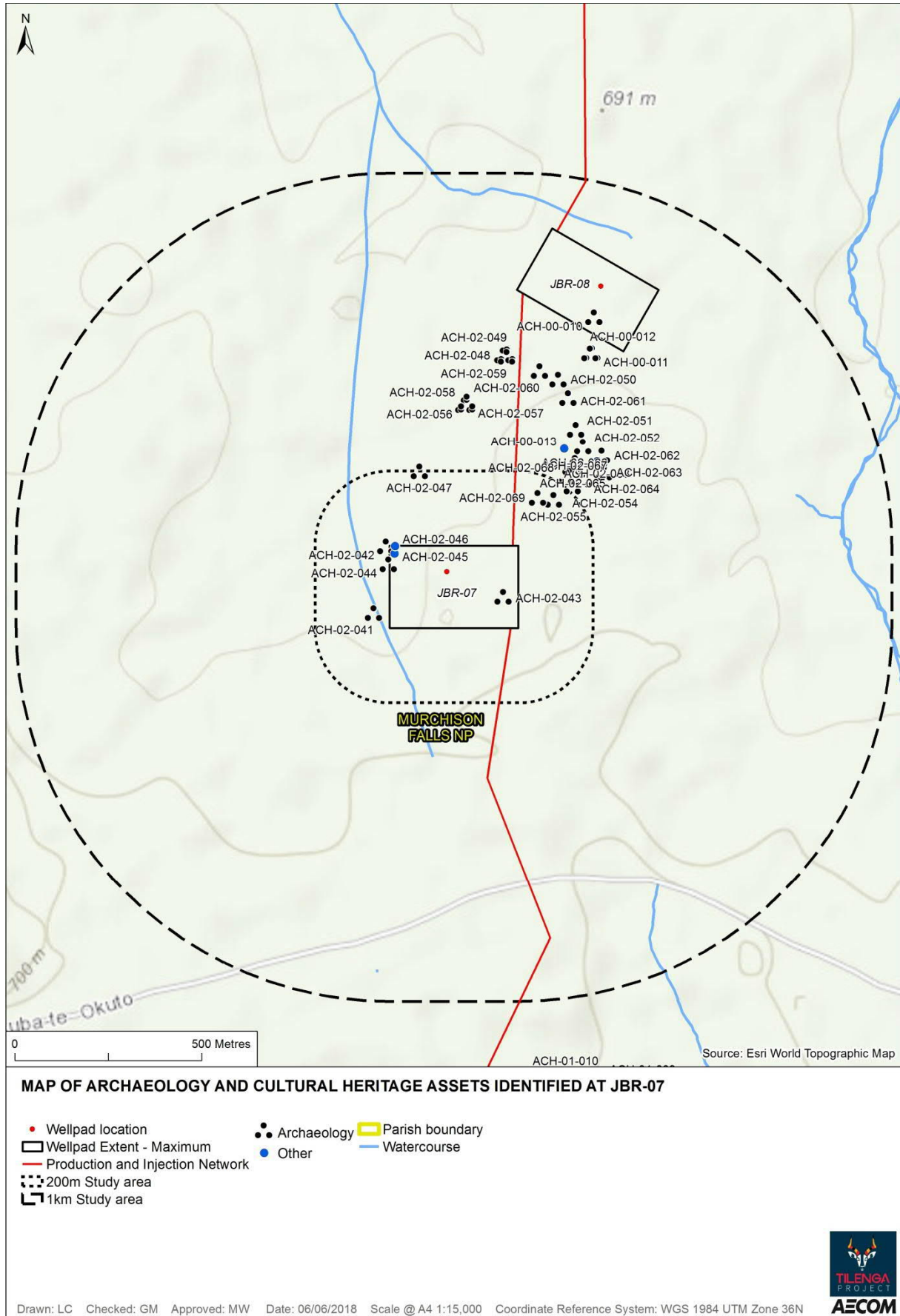


Figure 17-7: Map of archaeology and cultural heritage assets identified at JBR-07

17.6.5.8 Jobi Rii Field – Well Pad JBR-08 (CA-1)

A Late Stone Age single platform core (ACH-00-010) was noted within the footprint of wellpad JBR-08.

The archaeological receptors identified in the wider study area are assessed as being of low significance.

Wellpad JBR-08 is located within MFNP in an area of open grassland; there is a swampy area towards the eastern edge of the JBR-08 study area. The wellpad area was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014) and 27th June 2017 (Tilenga ESIA Team| Elizabeth Kyazike).

The survey identified archaeological sites in JBR-08, comprising lithics and Late Stone Age cores, a grinding stone, daub, and animal bone. A concentration of pottery was recorded at an animal watering hole. Some well-fired vessels may have been used for storage rather than of cooking. Sparse daub was also recorded, and may indicate former settlement areas. The area was not very productive in that even some of the open areas yielded no cultural materials.

JBR-07 contained several scatters of animal bone from wild animals that died naturally, including the remains of hartebeest and buffalo.

Table 17-17: Archaeology and cultural heritage identified at JBR-08

Heritage UID	Description
ACH-02-041	Plain pottery sherd.
ACH-02-042	Daub.
ACH-02-043	Daub
ACH-02-044	Pottery sherd.
ACH-02-045	The long bones of a large mammal (modern).
ACH-02-046	The rib cage of a large mammal (modern).
ACH-02-047	Tiny potsherds.
ACH-02-048	Pottery sherd.
ACH-02-049	Pottery sherd.
ACH-02-050	Red slipped pottery.
ACH-02-051	Pottery sherd.
ACH-02-052	Plain, red slipped, thin bodied pottery sherds.
ACH-02-053	Faunal remains - bone (modern).
ACH-02-054	Pottery sherd.
ACH-02-055	Pottery sherds, including rim and body sherds.
ACH-02-056	Red burnished pottery sherds.
ACH-02-057	Pottery sherd.
ACH-02-058	Grinding stone.
ACH-02-059	Pottery sherds. Faunal remains including the skull of a hartebeest (alcelaphus buselaphus) (modern).
ACH-02-060	Pottery sherd.
ACH-02-061	Pottery sherd, Kulumbeero (medicinal plant).
ACH-02-062	Medicinal plant, pottery scatters.
ACH-02-063	Pottery and daub.
ACH-02-064	Pottery sherd.
ACH-02-065	Pottery sherd.
ACH-02-066	Pottery sherds noted at buffalo drinking place. Ceramics have been heavily trampled by buffalo.
ACH-02-067	Pottery, lithics.
ACH-02-068	Pottery sherd.
ACH-02-069	Pottery sherds, red slipped inside and outside. Found at an animal watering hole.

Heritage UID	Description
ACH-00-010	LSA volcanic core. Single platform core.
ACH-00-011	LSA quartz cores. Single platform and multi-platform.
ACH-00-012	LSA quartz core. Single platform.
ACH-00-013	Animal bone.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-08 are shown on Figure 17-8.

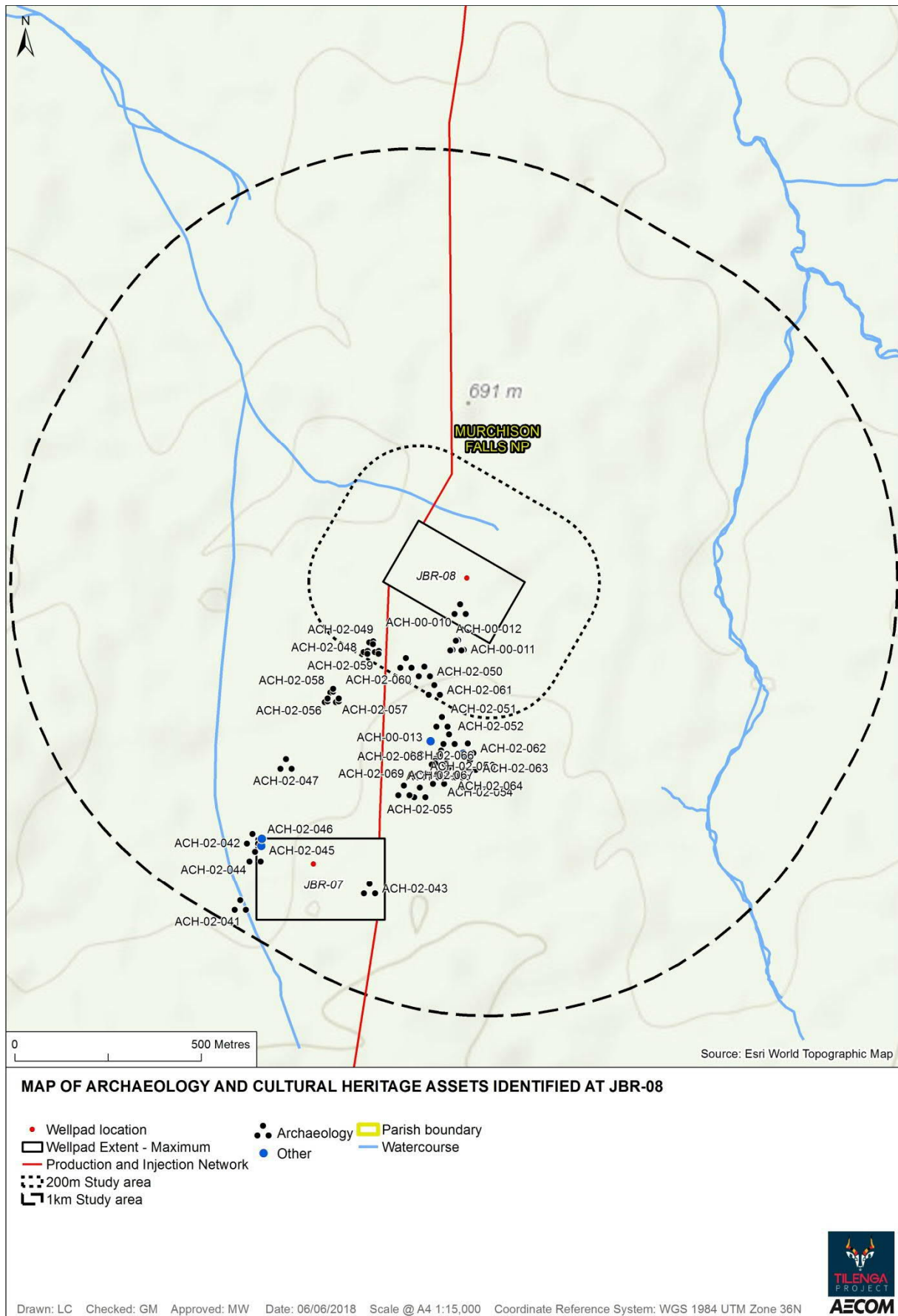


Figure 17-8: Map of archaeology and cultural heritage assets identified at JBR-08

17.6.5.9 Jobi Rii Field – Well Pad JBR-09 (CA-1)

No cultural material was identified within the proposed footprint of the wellpad.

The single lithic find from the wider study area is assessed as being of low (local) significance.

Wellpad JBR-09 is located within an area of wooded grassland with thickets, seasonally flooded grassland and swamp. The wellpad was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014).

The survey identified one site, a Late Stone Age quartz whole flake. This receptor is assessed as being of low (local) significance.

The quantity of material noted within this site is very low compared to other wellpads surveyed in the MFNP. Further survey will be undertaken prior to construction.

Table 17-18: Archaeology and cultural heritage identified at JBR-09

Heritage UID	Description
ACH-00-014	LSA quartz whole flake.

The location of the archaeology and cultural heritage asset identified at Wellpad JBR-09 is shown on Figure 17-9.

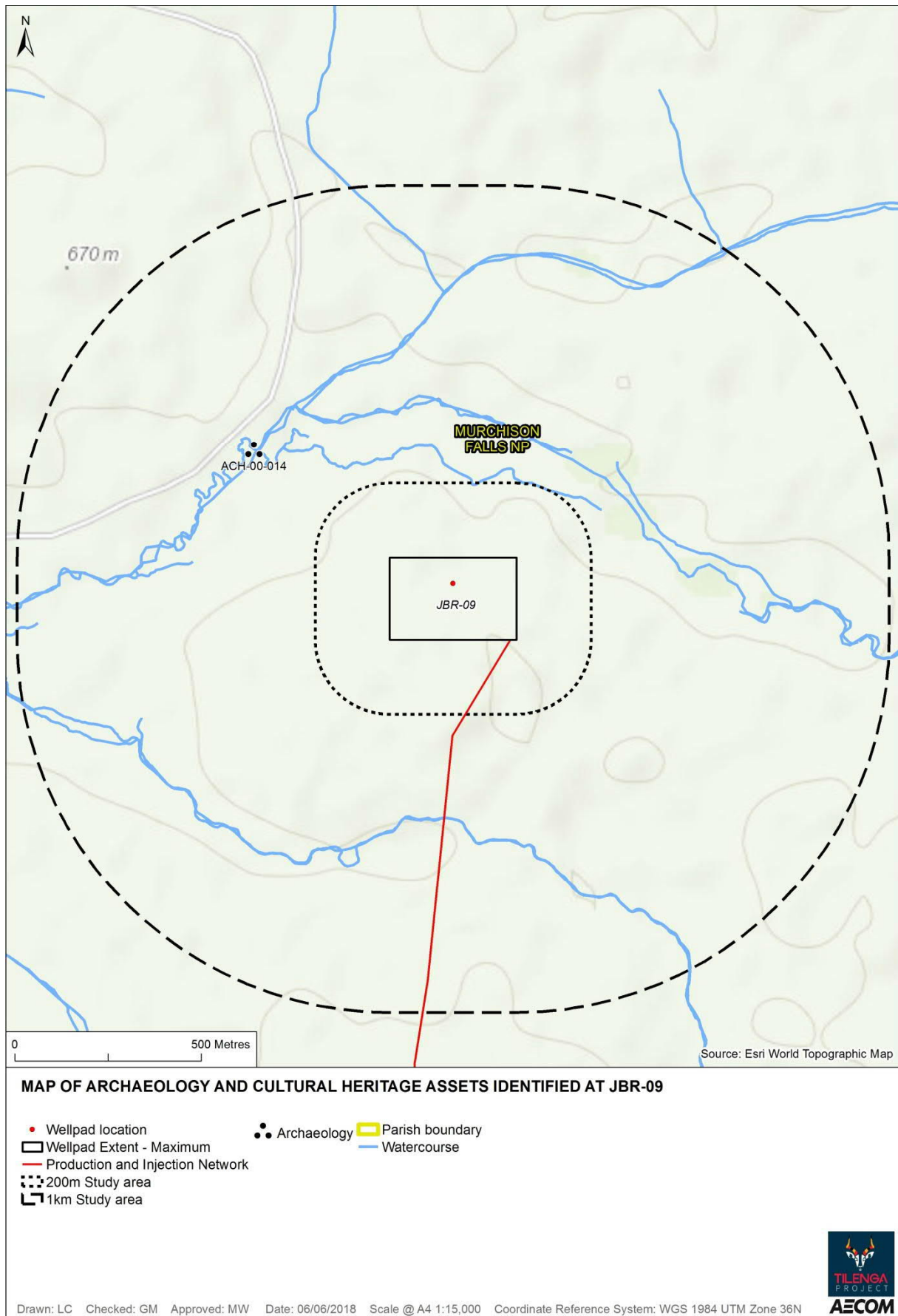


Figure 17-9: Map of archaeology and cultural heritage assets identified at JBR-09

17.6.5.10 Jobi Rii Field – Well Pad JBR-10 (CA-1)

Pottery scatters including Iron Age Chobi Ware (ACH-02-072) and undated pottery sherds (ACH-02-073; ACH-02-098; ACH-02-099) were recorded within the proposed footprint of wellpad JBR-10.

Archaeological remains noted in the JBR-10 study area are assessed as being of moderate (regional) significance, as they include a chronological sequence of pottery and lithics and well-preserved concentrations of artefact scatters.

Wellpad JBR-10 is located within MFNP in an area of bushy and wooded grassland with seasonally flooded swamp, wetlands and ponds. The wellpad was subject to archaeology and cultural heritage survey in 2014 (Eco & Partner, 2014) and 27th June 2017 (Tilenga ESIA Team | Elizabeth Kyazike). The survey was hindered by dense vegetation and water.

The surveys identified 26 archaeological sites, comprising lithics including cores, a sandstone grinding stone which may have been imported to the MFNP area, pottery sherds, a pottery scatter, and concentrations of pottery including roulette-decorated pottery. The surface finishing of the sand-tempered, red pottery was mainly characterised by burnished slip. Sparse daub was also recorded, and may indicate former settlement areas. Additionally, non-archaeological features including recent hearths, medicinal plants (*Lenga*, *Kulumbero*, *Mbumbuula*, cactus and *Mukabyakabya*), terrestrial shell and animal bone were recorded. Trees traditionally used for construction such as *Uduk* trees were also common in JBR-10. *Lenga* is usually associated with traditional worship sites and is sometimes planted with other crops to ensure good yields. *Kulumbero* is used to treat eye diseases, *Mbumbuula* for wounds and cactus sap for trapping birds. These plants are common in the region.

Table 17-19: Archaeology and cultural heritage identified at JBR-10

Heritage UID	Description
ACH-02-070	Pottery rim sherd.
ACH-02-072	Pottery scatters.
ACH-02-073	Four pottery sherds.
ACH-02-074	Daub.
ACH-02-075	Pottery sherd.
ACH-02-076	Lithics.
ACH-02-077	Pottery sherds, plain, tempered with grog and sand, and oxidised.
ACH-02-078	Pottery sherd.
ACH-02-084	Daub and medicinal plants - Mukubyakubya and Mbumbuula, which is a clan totem.
ACH-02-085	Pottery sherd.
ACH-02-086	Red burnished pottery sherd.
ACH-02-088	Lithic core.
ACH-02-089	Probable lithics, raw material is a black volcanic product.
ACH-02-090	Four burnished pottery sherds.
ACH-02-091	Pottery sherd.
ACH-02-092	Probable grinding stone, in sandstone. Sandstone is rare in the area.
ACH-02-093 and 094	Pottery sherd.
ACH-02-095	Lithics.
ACH-02-096	Large concentration of pottery sherds, with red burnished finished and rouletted decoration.
ACH-02-097	Pottery rim sherd, with red burnished finish.
ACH-02-098	Decorated pottery body sherd.
ACH-02-099 and 100	Pottery sherd.
ACH-00-015	LSA quartz core. Single platform.
ACH-00-016	LSA quartz whole flake, core. Single platform.

The location of archaeology and cultural heritage assets identified at Wellpad JBR-10 are shown on Figure 17-10 and Figure 17-11.

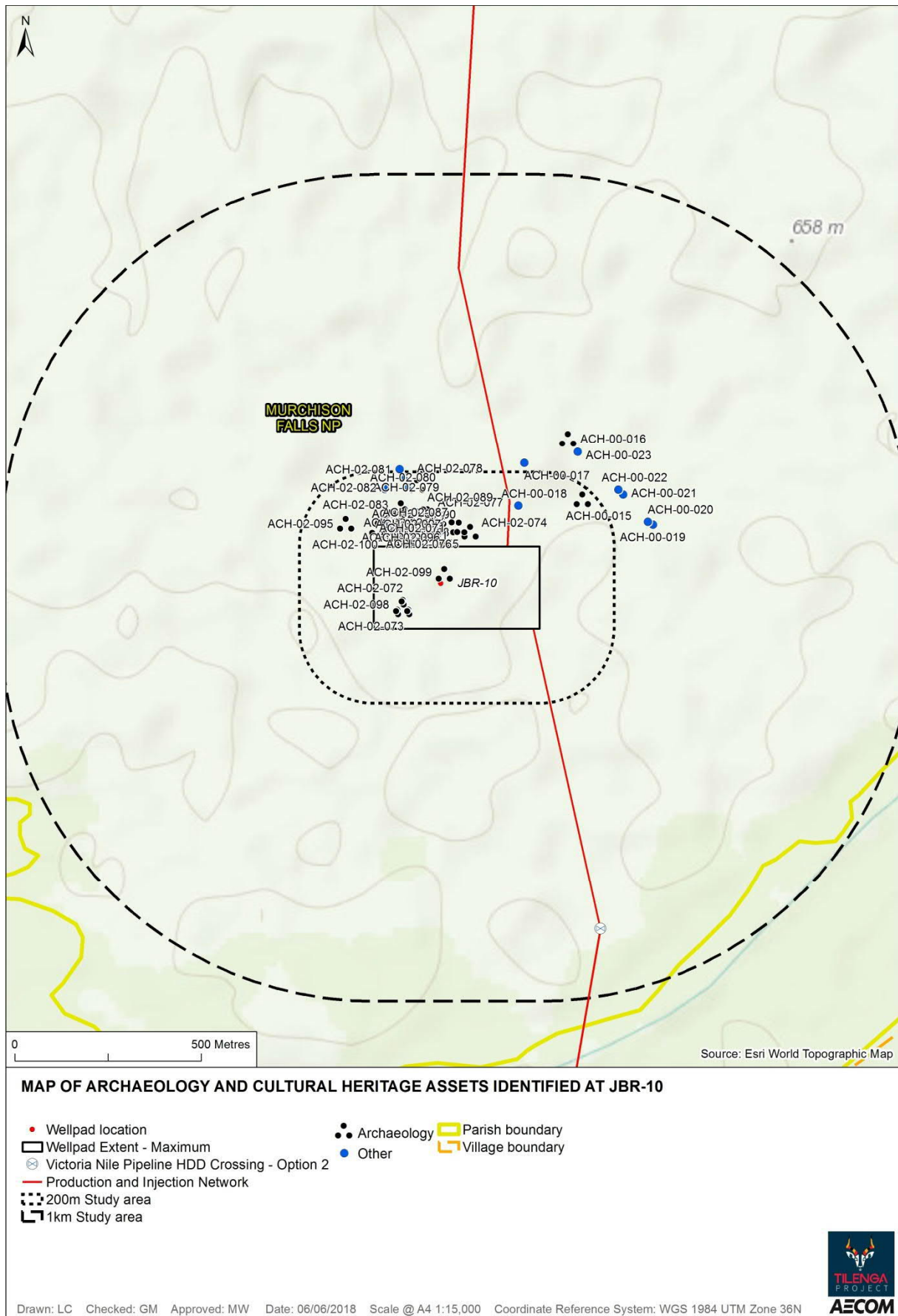


Figure 17-10: Map of archaeology and cultural heritage assets identified at JBR-10

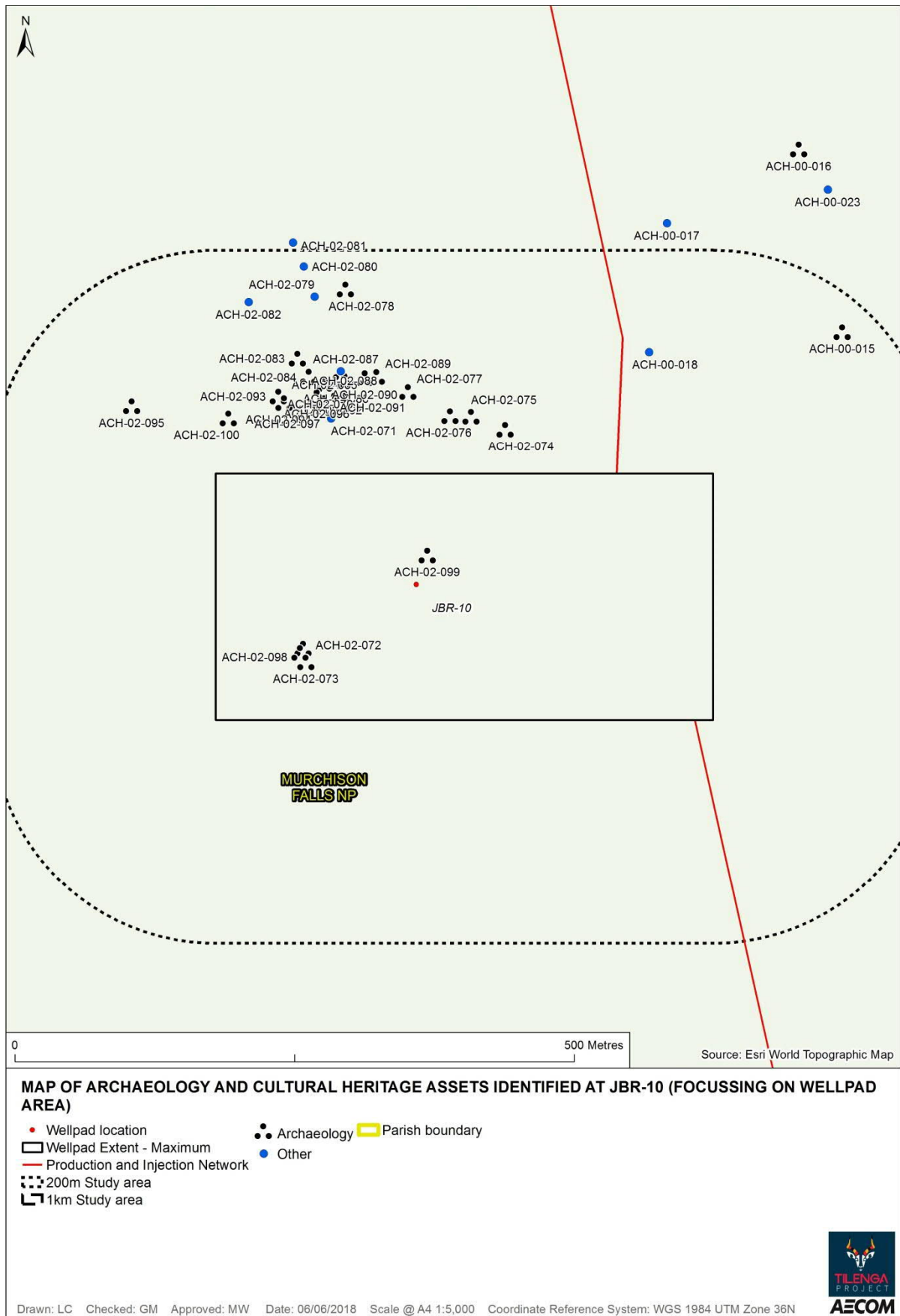


Figure 17-11: Map of archaeology and cultural heritage assets identified at JBR-10 (focussing on wellpad area)

17.6.5.11 Victoria Nile Ferry Crossing (VNFC) - North & South (CA-1)

A Late Stone Age quartz flake (ACH-02-101) and lithic cores (ACH-02-345; ACH-02-346) were identified within the proposed footprint of the VNFC.

Archaeological receptors in the wider study area are assessed as being of moderate (regional) significance, as they include multi-period materials and well-preserved concentrations of artefact scatters.

The northern side of the Nile crossing survey area is located within MFNP. The proposed crossing is located very close to the existing barge and ferry crossing. The area was subject to archaeology and cultural heritage survey by the Department of Museums and Monuments in 2013 and on 28th June 2017. Further sites were reported in the Environmental Baseline Study for the area formally known as EA1 (EBS, 2015). The area also includes a findspot recorded in the course of the Baker Centenary Expedition to the Western Rift (Posnansky, 1964).

The survey was impeded by marshland, the Victoria Nile and dense vegetation cover.

Fieldwork identified eight sites, three of which were within the 200m search area with the remaining five assets in the wider 1km study area. These comprised a Late Stone Age core, flakes and scrapers, a possible digging stick weight, pottery sherds, roulette-decorated Late Iron Age pottery and iron working tuyères. Surveys also noted a marine workshops and old boats at the ferry, and a railway line. Useful plants noted in the area included *Mbumbuula* and *Mulolo/ Yago/* sausage trees (*Kigelia africana*) and *Kulumbero*.

Table 17-20: Archaeology and cultural heritage identified at VNFC - North and South

Heritage UID	Description
ACH-02-101	Quartz flake made from a river cobble, crushed platform (bipolar), Late Stone Age.
ACH-00-295	Plenty of lithic artefacts as flakes, cores and scrapers. Also tuyères and roulette pottery.
ACH-00-296	Plenty of lithic artefacts like flakes, cores and scrapers. Also tuyères and roulette pottery.
ACH-00-300	Double bored stone from Paraa found during Baker Centenary Expedition, 1963. Possibly the weight of a digging-stick. Nationally protected site, located northeast of the Project Area.
ACH-00-303	Pottery sherds identified.
ACH-00-305	Pottery sherds identified.
ACH-02-345	Lithics found close to a close to a generator house.
ACH-02-346	Multiplatform core.

The location of archaeology and cultural heritage assets identified at the VNFC survey area are shown on Figure 17-12 and Figure 17-13.

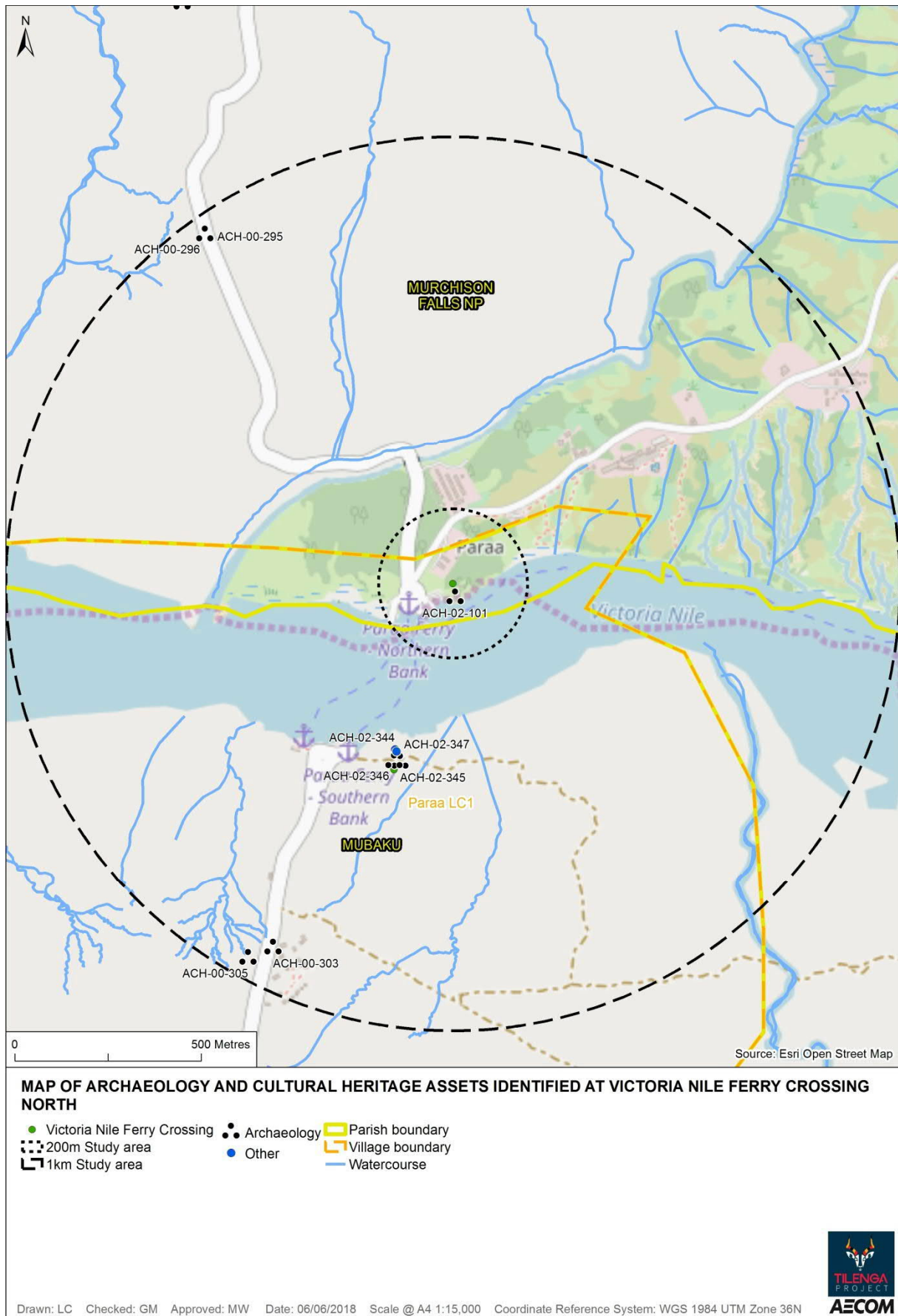


Figure 17-12: Map of archaeology and cultural heritage assets identified at VNFC- North

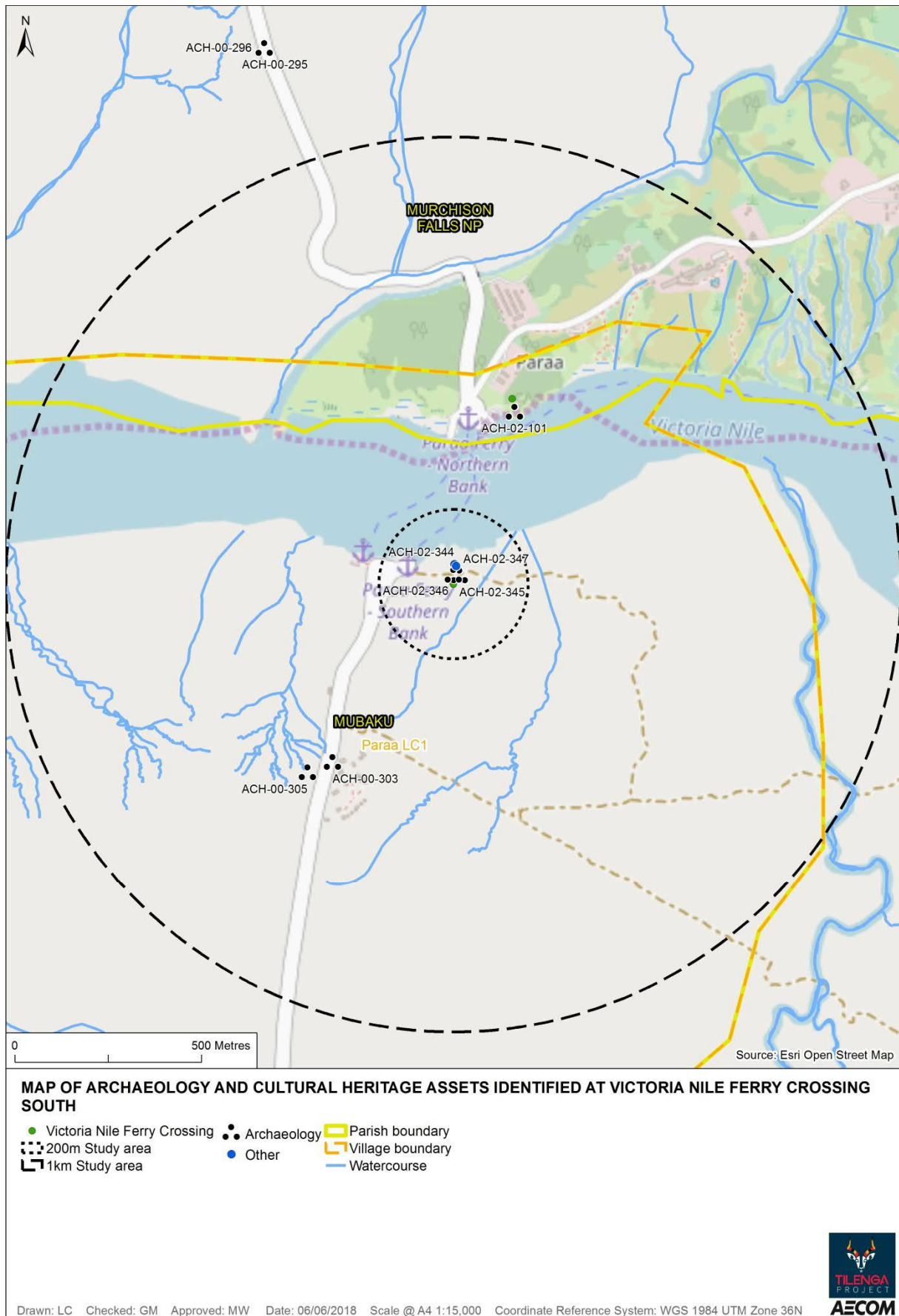


Figure 17-13: Map of archaeology and cultural heritage assets identified at VNFC - South

17.6.5.12 Gunya Field – Well Pad GNA-01 (Avogera & Kisomere) (CA-1)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad.

The archaeological receptors within GNA-01 study area are assessed as being of low (local) significance. Places of worship and burial grounds within GNA-01 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad GNA-01 is located in an area of mainly cultivated land with settlements and some grazing land. The wellpad was subject to archaeology and cultural heritage survey by the Department of Museums and Monuments in 2013, ARTELIA's Social Screening survey (ARTELIA 2013) and ARTELIA's Social and Health Baseline Survey (ARTELIA 2015); survey results are also reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014).

Gunya, the name of the wellfield, means 'crocodile'.

Surveys did not identify any receptors within the 200m study area, but did record a number of receptors within, or immediately adjacent to, the wider 1km study area. These included two archaeological sites, comprising Late Stone Age cores, scrapers and flakes.

A clan burial site of 20 graves was recorded at Kisomere.

Places of worship comprise four churches and a mosque (Alleluyah Church; Kisomere Church of Uganda; Kasinyi Church of God; Kisomere Lamtekwaro church and Kisomere Mosque).

There are two sacred trees, both distant from GNA-01.

Table 17-21: Archaeology and cultural heritage identified at GNA-01

Heritage UID	Description
ACH-00-070	LSA quartz core, multiplatform.
ACH-00-352	LSA quartz cores (2), scrapers (3) and flakes (8). Adjacent double platform core, opposed double PF, convex side (1), utilised flakes (2).
ACH-00-072	Burial place. 20 graves (clan burial site), Kisomere.
ACH-00-068	Worship place. Alleluyah Church. This was started in 2002 and serves approximately 50 people in the community.
ACH-00-069	Worship place. Kisomere Church of Uganda.
ACH-00-362	Kasinyi Church of God. This was started by the community in 2003.
ACH-00-366	Kisomere Lamtekwaro church. This was started by Oreyamar based in Panyimur. It serves approximately 100 people in this village.
ACH-00-354	Kisomere Mosque. This was started in 1998 by the community and serves this village and all the neighbouring ones.
ACH-00-359	Alur sacred tree. Admission to this place was not possible since the guardians were asking for eggs and a white hen. The Alur tribe within this village uses this tree.
ACH-00-364	Sacred tree. Lenga – Musingabakazi tree.

The location of archaeology and cultural heritage assets identified at the Wellpad GNA-01 are shown on Figure 17-14.

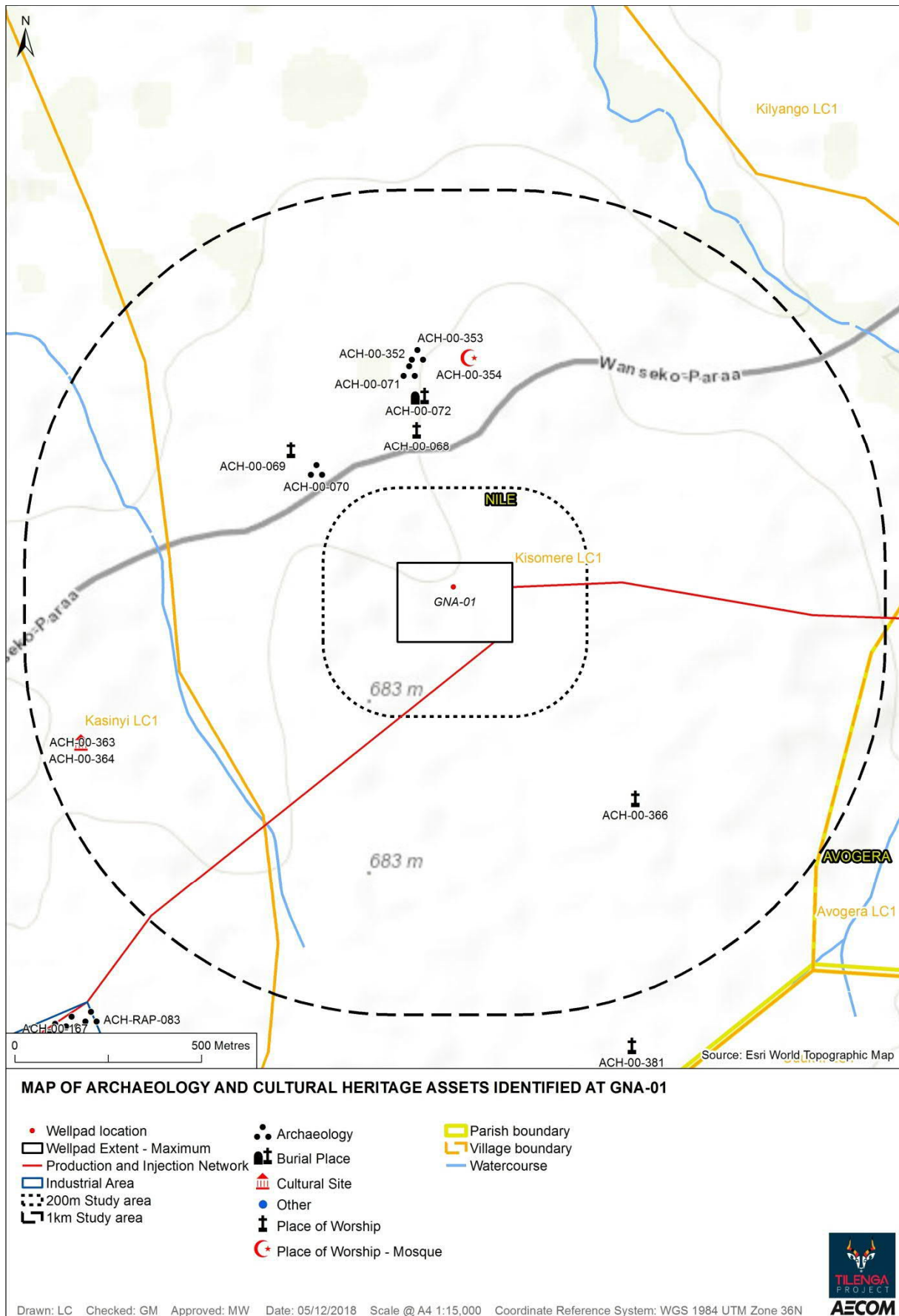


Figure 17-14: Map of archaeology and cultural heritage assets identified at GNA-01

17.6.5.13 Gunya Field – Well Pad GNA-02 (Kilyango, Mubaku) (CA-1)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad. The archaeological and palaeontological receptors within the GNA-02 study area are assessed as being of low (local) significance. Burial grounds, places of worship, cultural sites and sacred trees within GNA-02 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad GNA-02 is located in an area of mainly cultivated land and settlements. The wellpad was subject to archaeology and cultural heritage survey in the course of ARTELIA's Social Screening survey (ARTELIA 2013), ARTELIA's Social and Health Baseline Survey (ARTELIA 2015); survey results are also reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014).

A single palaeontological findspot is recorded at Magungu, northwest of GNA-02, dating to the Pleistocene. Two archaeological sites are recorded, a Middle Stone Age core and a Late Stone Age core scraper. To the northeast of the wellpad area is the site of Fort Magungu where the Victoria Nile meets Lake Albert, established by Governor General Charles Gordon in 1876. Seven burial sites were recorded.

Five churches were recorded (Kilyango Church of Uganda; Kilyango Pentecostal Church; Kilyango Full Gospel Church; Kilyango St. Kizito chapel; Kilyango Church of God).

Three *abila*, traditional family ancestral shrines, were recorded. A sacred tree is located south of the wellpad area.

Table 17-22: Archaeology and cultural heritage identified at GNA-02

Heritage UID	Description
ACH-00-341	Palaeontology. Principal Pleistocene, Magungu
ACH-00-079	MSA quartz core, core axe. Multiplatform.
ACH-00-080	LSA quartz core scraper. Single platform core scraper.
ACH-00-082	Burial site. 10 graves, Kilyango.
ACH-00-083	Burial site. Single burial site, Kilyango.
ACH-00-084	Burial site. Individual grave site, Kilyango.
ACH-00-085	Burial site. Single burial site, Kilyango.
ACH-00-086	Burial site, 10 graves, Kilyango
ACH-00-087	Burial site, 14 graves (30m x 30m area), Kilyango.
ACH-00-088	Burial site, individual grave site, Kilyango.
ACH-00-074	Kilyango Church of Uganda. Started under a tree in 1970 by the community and serves approximately 100 people in the community and neighbouring areas.
ACH-00-075	Kilyango Pentecostal Church. Started in 2007 by the community and serves approximately 50 people in the community.
ACH-00-076	Kilyango Full Gospel Church. It was started in 1984 by the community and serves approximately 50 people in the village and the neighbouring ones.
ACH-00-077	Kilyango St. Kizito chapel. Started in the 1970's by the community and serves more than 200 people in the village and the surrounding area.
ACH-00-078	Kilyango Church. Church of God, 2014.
ACH-00-339	Fort Magungu. Designated Monument.
ACH-00-347	Abila. This is a traditional shrine and is used only by a single family and not the entire community.
ACH-00-073	Abila. This is a traditional shrine and is used only by a single family and not the entire community.
ACH-00-347	Abila. This is a traditional shrine and is used only by a single family and not the entire community.
ACH-00-350	Alur sacred tree. Admission to this place was not possible since the guardians were asking for a goat. The Alur tribe within this village uses this tree.

The location of archaeology and cultural heritage assets identified at the Wellpad GNA-02 are shown on Figure 17-15.

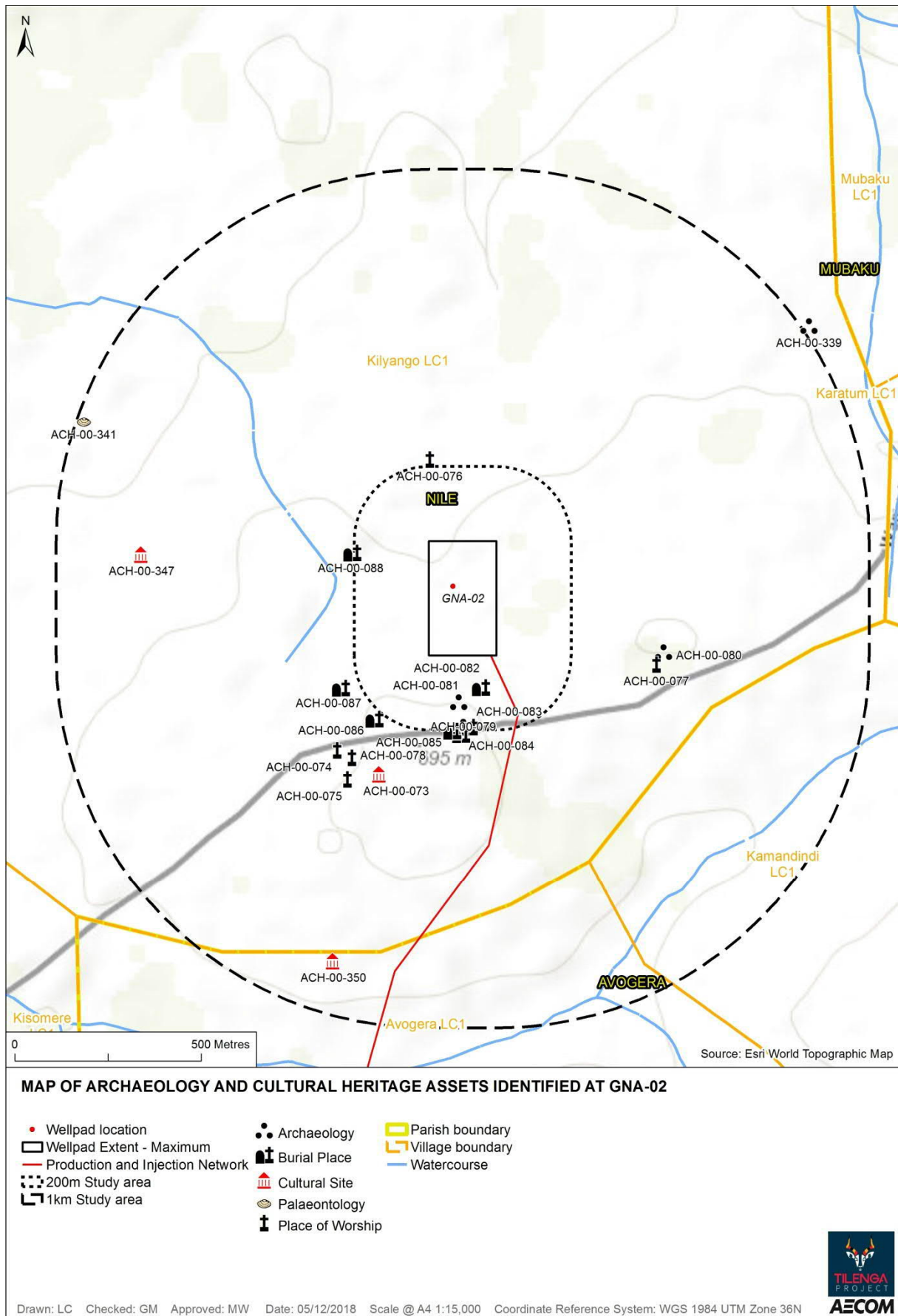


Figure 17-15: Map of archaeology and cultural heritage assets identified at GNA-02

17.6.5.14 Gunya Field – Well Pad GNA-03 (Uduk II, Gunya) (CA-1)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad.

The archaeological receptors within the GNA-03 study area are assessed as being of low (local) significance. Burial grounds, places of worship, cultural sites and sacred trees within the GNA-03 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad GNA-03 is located in an area characterised by cultivated land and settlements. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA’s Social Screening survey (ARTELIA 2013), ARTELIA’s Social and Health Baseline Survey (ARTELIA 2015) and on 5th December 2016, which involved consultation with local council representatives.

Walkover survey was constrained by the presence of cotton gardens and bushes. The place-name Uduk derived from the many Uduk trees in the village.

Archaeological findspots identified in GNA-03 comprise a pottery scatter, pottery sherds, daub and a source of soil for smearing house walls. The antiquity of these finds is not certain – many were identified within or in the immediate vicinity of the current villages and homesteads. Traditional pottery-making techniques and vessel forms have changed little in over 1000 years, and material found within and in the vicinity of current settlements and agricultural areas may derive from recent discard and manuring fields. However, one clearly Late Iron Age sherd with a band of decoration at the shoulder and maize comb rouletting was identified.

Daub signifying construction in the past was also identified at one site within GNA-03. Pottery was also common. The pottery was slipped or burnished and tempered with sand and grog. Some sherds were abraded, making them difficult to date. According to Onge Lenato, a local resident, pottery is not currently made in this area, but is bought at Panymur.

Three burial places were recorded at Uduk II.

Places of worship noted in GNA-03 comprise the Church of Uganda Church of God and the Uduk II Pentecostal Church. Northwest of GNA-03 is the Akichira Catholic Church.

One sacred tree is located within the GNA-03 survey area. Under this tree, the Alur tribe in this village offers sacrifice to their gods asking for good crop yields, rains etc. There is another sacred tree and a sacred area south of the survey area. Other trees in the area include *Uduk*, *Oyomo*, *Lenga*, *Mango*, *Pedo* and *Neem* trees.

There is one traditional healer living within GNA-03. Another healer is located north of GNA-03, and they are willing to relocate their shrine should the need arise.

Table 17-23: Archaeology and cultural heritage identified at GNA-03

Heritage UID	Description
ACH-01-058	Pottery scatter over wide area.
ACH-01-059	Pottery sherd.
ACH-01-060	Red burnished and slipped pottery sherd with sand temper and coil breakage decoration.
ACH-01-061	Pottery sherd.
ACH-01-062	Pottery sherd with red surface and sand and grog temper.
ACH-01-063	Pottery sherd with sand and grog temper.
ACH-01-064	Pottery sherd at home of Onge.
ACH-01-065	Pottery sherd.
ACH-01-066	Pottery sherd.
ACH-01-069	Mango tree and pottery sherd with sand, grog and mica temper.
ACH-01-070	Fruit tree and ceramics.
ACH-01-071	Fruit tree and ceramics at Ochoke Luwigi.
ACH-01-072	Daub and ceramics at Nyarukura Alice.

Heritage UID	Description
ACH-01-068	Source of soil for smearing houses with big pottery sherds.
ACH-00-092	Burial place with 3 graves, Uduk II.
ACH-00-093	Burial place with 8 graves, Uduk II.
ACH-01-073	Burial place with 11 graves, at the home of Udaga Kanja born in 1952. Big mango trees acts as a grave markers for the entire burial site.
ACH-00-090	Uduk II Church of God. This is Church is affiliated to Church of Uganda. It's a semi-permanent structure.
ACH-00-091	Uduk II Pentecostal Church.
ACH-00-381	Akichira Catholic Church. The church was built in 1972 by the community and serves approximately 200 people in the village and the neighbouring ones.
ACH-00-089	Alur sacred tree. Under this tree, the Alur tribe in this village offers sacrifice to their gods asking for good crop yields, rains etc.
ACH-00-432	Alur sacred tree, Uduk II. Under this tree, the Alur tribe in this village offers sacrifice to their gods asking for good crop yields, rains etc.
ACH-00-433	Sacred tree, Uduk II. Alur traditional sacred area.
ACH-00-387	This healer is willing to relocate his shrine when the need arises.
ACH-01-067	Traditional healer location.

The location of archaeology and cultural heritage assets identified at the Wellpad GNA-03 are shown on Figure 17-16.

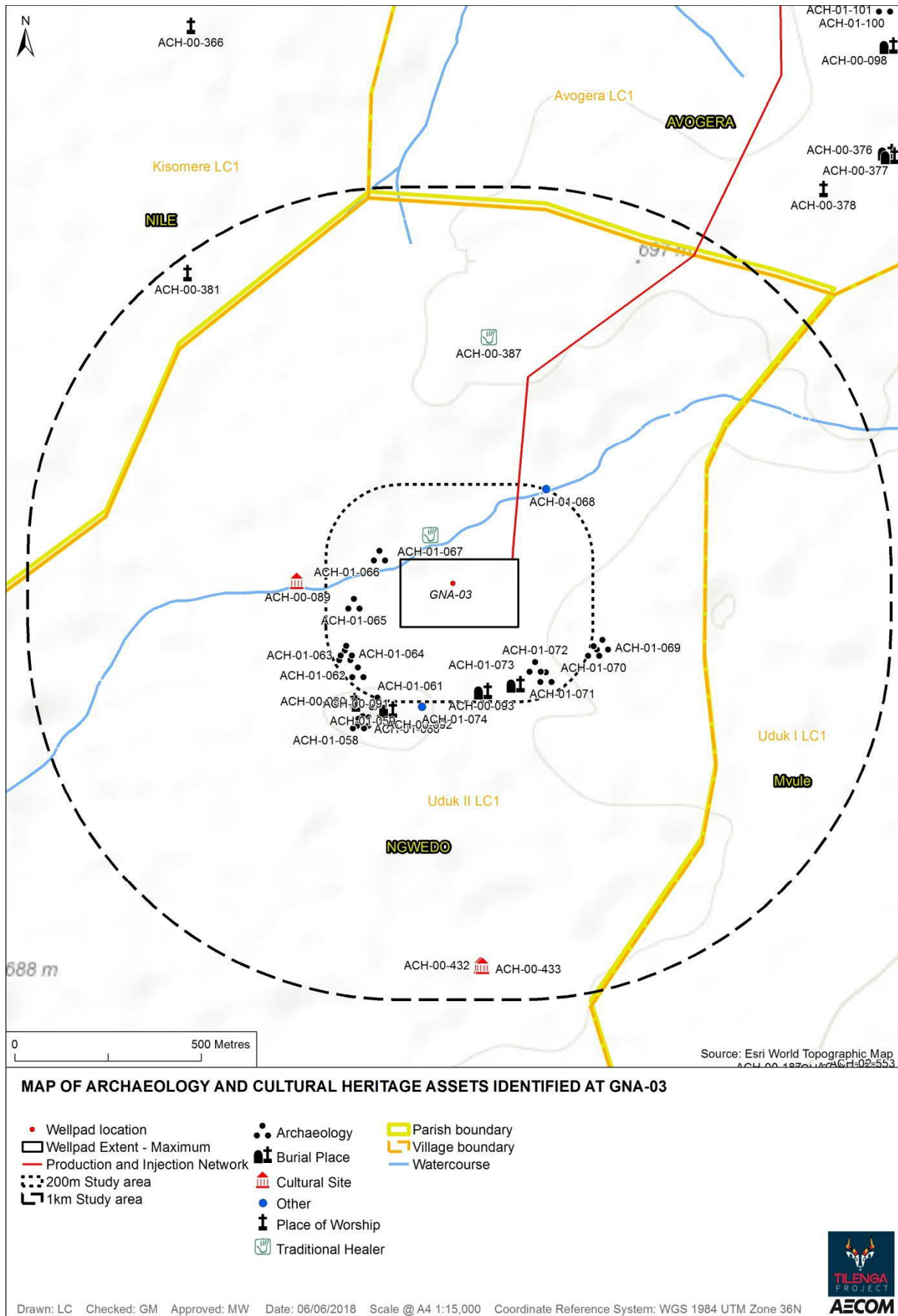


Figure 17-16: Map of archaeology and cultural heritage assets identified at GNA-03

17.6.5.15 Gunya Field – Well Pad GNA-04 (Avogera LC1) (CA-1)

A number of receptors have been recorded within the proposed footprint of the wellpad including a quartz core fragment (ACH-02-869), a crescent shaped lithic (ACH-01-098), iron slag (ACH-01-095), and plain pottery sherds (ACH-01-094, ACH-01-097, ACH-02-321, ACH-02-322, ACH-02-036 and ACH-02-038), as well as a grinding stone (ACH-02-337). A further four receptors were recorded within the Land Acquisition Extents including decorated pottery (ACH-02-305 and ACH-02-306) and undecorated pottery (ACH-01-096 and ACH-01-339).

The archaeological receptors within the wider GNA-04 study area are assessed as being of moderate (regional) significance, due to the presence of a potentially long sequence of occupation, pottery scatters and in situ pottery and lithic scatters, and metalworking.

Burial grounds, places of worship, cultural sites and sacred trees within the GNA-04 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad GNA-04 is located in an area of mainly cultivated land and settlements. This site is located in Avogera village mainly inhabited by the Alur people. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA’s Social Screening survey (ARTELIA 2013), ARTELIA’s Social and Health Baseline Survey (ARTELIA 2015) and on 4th December 2016 and 28th June 2017 (Tilenga ESIA Team | Elizabeth Kyazike), including consultation with the Avogera village chairman. Survey results are also reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014).

Survey was limited by limited by the thick cassava plantations.

Archaeological findspots identified in GNA-04 comprise a characteristic Late Stone Age crescent-shaped struck stone tool, a quartz core fragment and an abraded cobble, a grinding stone and extensive pottery sherds, some with roulette or knotted decoration or grooved lines. Concentrations of potsherds and pottery scatters were noted as well as an in situ pottery and lithic scatter. Iron slag was recorded, and two grinding stones, in current use.

Some pottery sherds had oblique roulette decoration, and were smudged, indicating that they were fired at reduced temperatures. Pottery forms identified include an independent necked pot and a bowl.

A number of burial places were recorded, including a clan leader’s grave.

Places of worship comprise Avogera Catholic Church, Avogera Open Heaven Church, Avogera Church of Uganda south of the wellpad area and Avogera Miracle Church east of the wellpad area.

A traditional healer has a semi-permanent shrine east of the wellpad area. There are sacred trees north of the wellpad area and west of the wellpad area.

Useful/medicinal/sacred plants identified in the area include neem trees, Bongo trees (marking burial site), mango, Lenga and Mulolo trees.



Plate 17-5: An example of domestic activities taking place within a settlement in GNA04. This includes a small oven in the foreground, and baked earth from ant hills used for fires in the background.



Plate 17-6: A large ornate grave marking the resting place of an elder at GNA04 (ACH-02-313). Note the incorporation of glass bottles to hold flowers/offerings.

Table 17-24: Archaeology and cultural heritage identified at GNA-04

Heritage UID	Description
ACH-02-869	Quartz core fragment.
ACH-01-075	Two plain burnished pottery body sherds, grog and sand tempered found at Avogera Primary School.
ACH-01-076	Pottery body sherd with mamillated roulette decoration found at Avogera Primary School.
ACH-01-077	Two pottery sherds with roulette decoration found at Avogera Primary School.
ACH-01-078	Burial place with pottery sherd, Avogera.
ACH-01-079	Pottery body sherd with mamillated roulette decoration, Avogera.
ACH-01-080	Pottery neck sherd, Avogera.
ACH-01-081	Pottery body sherd, Avogera.
ACH-01-082	Widespread pottery scatter, including red burnished and slipped ware.
ACH-01-083	Pottery vessel rim sherd.
ACH-01-084	Red burnished plain pottery sherd.
ACH-01-085	Three burnished pottery sherds with dotted decoration.
ACH-01-086	Sand-tempered pottery sherd with string knotted decoration.
ACH-01-087	Abraded pottery body sherd.
ACH-01-088	Plain slipped pottery sherd.
ACH-01-089	Plain ceramics, sooted.
ACH-01-090	Red slipped pottery sherd.
ACH-01-091	Pottery sherd with red burnished surface, sand temper and string knotted roulette decoration.
ACH-01-092	Pottery sherd decorated with horizontal grooved lines.
ACH-01-093	Pottery rim sherd.
ACH-01-094	Pottery plain body sherd.
ACH-01-095	Iron slag.
ACH-01-096	Scatter of sooted ceramics.
ACH-01-097	Pottery sherd.
ACH-01-098	Late Stone Age crescent-shaped struck stone tool.
ACH-01-099	Pottery sherd.
ACH-01-100	Pottery sherd.
ACH-01-101	Pottery rim sherd.
ACH-01-102	Cooking pot body sherd, burnished and slipped, sooted.
ACH-01-103	Two fragments of red burnished pottery, one with roulette decoration and one plain.
ACH-01-104	Lenga tree (medicinal plant) and grinding stone
ACH-02-274	Pottery sherd.
ACH-02-277	Pottery sherds, animal bone (modern).
ACH-02-278	Pottery sherds.
ACH-02-279	Thin bodied plain sherds.
ACH-02-280	Pottery sherds.
ACH-02-281	Pottery sherds.
ACH-02-282	Decorated pottery sherds.
ACH-02-283	Pottery sherds.
ACH-02-284	Pottery sherds
ACH-02-290	Decorated pottery sherds.
ACH-02-291	Pottery sherds.
ACH-02-292	Plain pottery sherds.
ACH-02-293	Pottery sherd rouletted obliquely, single lithic platform core.
ACH-02-294	In situ pottery and lithic scatter.

Heritage UID	Description
ACH-02-295	Plain pottery sherds.
ACH-02-296	Pottery sherds.
ACH-02-299	Pottery sherds. One with roulette decoration.
ACH-02-300	Abraded quartz cobble.
ACH-02-301	Pottery sherds in different fabrics.
ACH-02-302	Pottery sherd with rouletted rim.
ACH-02-303	Concentration of pottery.
ACH-02-305	Four sherds of roulette-decorated pottery.
ACH-02-306	Pottery rim, small bowl with a band of roulette decoration.
ACH-02-307	Two pottery sherds.
ACH-02-308	Large, sooted pottery sherd.
ACH-02-309	Plain pottery sherds.
ACH-02-310	Plain pottery sherds.
ACH-02-311	Plain pottery sherds.
ACH-02-312	Plain pottery sherds.
ACH-02-315	Pottery sherd with band of roulette decoration.
ACH-02-316	Grinding stone at home of Olera Mary.
ACH-02-318	Decorated, thin bodied and slipped pottery noted at Avogera Catholic Church.
ACH-02-319	Plain pottery sherd.
ACH-02-320	Decorated pottery sherd.
ACH-02-321	Pottery sherd.
ACH-02-322	Pottery sherd.
ACH-02-325	Plain pottery sherd.
ACH-02-326	Pottery sherd.
ACH-02-327	Plain pottery sherd.
ACH-02-328	Pottery sherd.
ACH-02-329	Pottery sherd.
ACH-02-330	Pottery rim sherd.
ACH-02-331	Plain pottery sherd.
ACH-02-332	Decorated pottery sherd found close to a grave.
ACH-02-333	Shell (modern) and pottery sherd.
ACH-02-334	Pottery rim sherd.
ACH-02-335	Pottery sherd.
ACH-02-336	Pottery sherd.
ACH-02-338	Pottery sherd.
ACH-02-339	Pottery sherd.
ACH-02-340	Pottery sherd.
ACH-02-341	Pottery sherd.
ACH-02-342	Large concentration of pottery sherds.
ACH-02-343	Pottery sherd.
ACH-02-337	Grinding stone (Kemirondo Agala residence).
ACH-00-099	Clan leaders' burial site, Avogera.
ACH-02-313	Grave of clan leader Ongei Selfino. The grave has a bottle for putting flowers in and a cross made from bicycle parts to show he was a Christian. Lenga plants are also close to it.
ACH-00-377	Avogera Grave Yard. This grave yard is located quite near the road and has very prominent concrete tomb stones. These belong to one family.
ACH-00-098	Burial site (16 people), Avogera.
ACH-00-096	Burial site, 5 graves, Avogera.

Heritage UID	Description
ACH-00-097	Burial site, 2 graves for Mr. Orwoth Ronald's family aged 52, Avogera.
ACH-00-376	Individual grave site, Avogera.
ACH-01-078	Grave of child buried in 2014
ACH-01-105	Sausage tree (medicinal plant) and burials (over 20 people).
ACH-02-298	Burial ground, two graves not cemented for Magdalene Nilak buried in 1997 and Okumu Henry buried in 1999, all Alur.
ACH-02-275	A grave yard that also has a bee hive, with 26 graves of which 2 are cemented but only five names could be remembered of those buried.
ACH-02-297	Grave yard under Mr. Olwoch Ronald. Three graves exist of Okumu Etiene, Emmanuel and Odong John Mary. All of them are not cemented. Burial ground, pottery sherds. Burials face where the home is. They don't have any mark stone or tree for identification.
ACH-02-314	Burial ground. One cemented grave for Okumu Matyansi. Other uncemented graves include Siraje Kakura, Apiyo, Odongo, Okumu Chunyaa, Siraje Kakura, Roger Rashimu and Kakura Solei. The site is under a care taker called Utungu Emmanuel. The burial site is also associated with pottery scatters.
ACH-02-276	Burial place. Plain, thin-walled pottery found.
ACH-00-378	Avogera Church of Uganda. This also a semi-permanent structure constructed by the community.
ACH-00-094	Avogera Catholic Church. It is a semi-permanent structure located near Avogera Primary school. This church was built by the community. Started in 1956 by the community and serves between 100 in the community.
ACH-01-106	Avogera Catholic Church.
ACH-00-095	Avogera Open Heaven Church. For this church, there is no physical building. It is housed under a big tree with a good shade.
ACH-00-367	Avogera Miracle Church. Started in 2012 by the community. Has one service a week and serves approximately 40 people in the village.
ACH-00-370	Traditional Healer. This person has a semi-permanent shrine that is located near the main road.
ACH-00-350	Alur sacred tree. Admission to this place was not possible since the guardians were asking for a goat. The Alur tribe within this village uses this tree.
ACH-00-359	Alur sacred tree. Admission to this place was not possible since the guardians were asking for eggs and a white hen. The Alur tribe within this village uses this tree.

The location of archaeology and cultural heritage assets identified at the Wellpad GNA-04 are shown on Figure 17-17 and Figure 17-18.

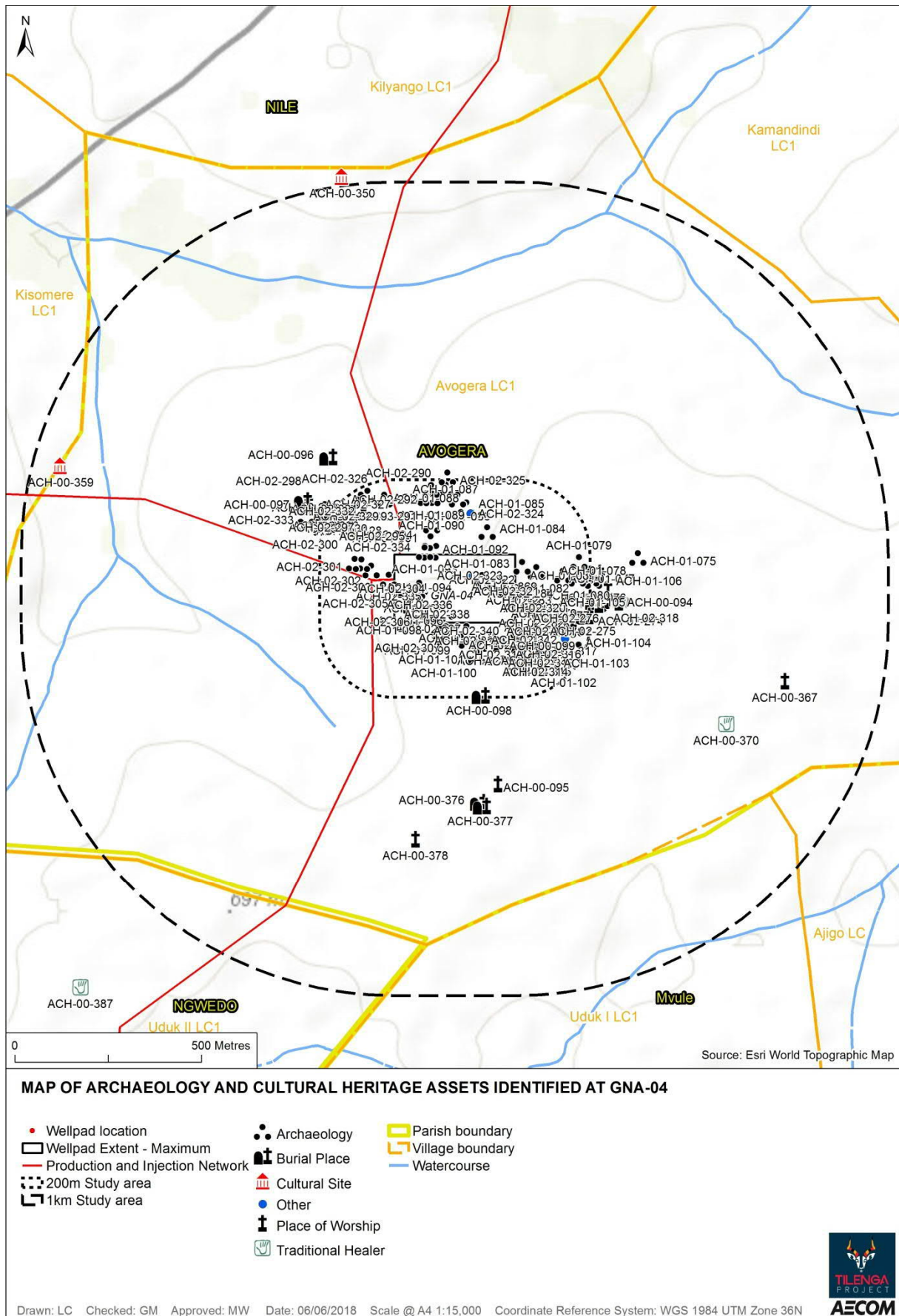


Figure 17-17: Map of archaeology and cultural heritage assets identified at GNA-04

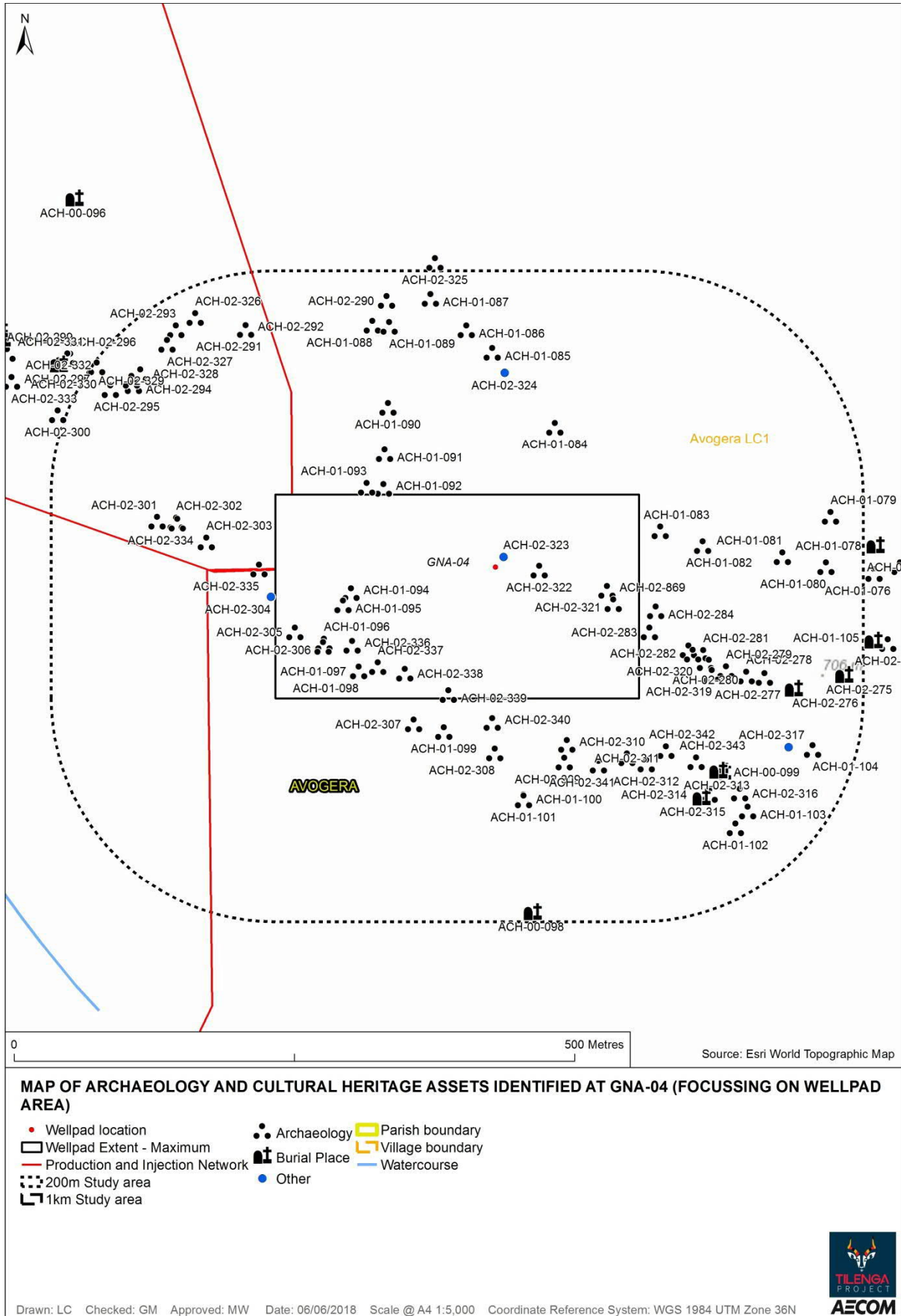


Figure 17-18: Map of archaeology and cultural heritage assets identified at GNA-04 (focussing on wellpad area)

17.6.5.16 Nsoga Field – Well Pad NSO-01 (Ngwedo TC) (LA-2)

An abraded pottery sherd (ACH-01-122) was identified within the proposed footprint of the wellpad.

The significance of the isolated archaeological remains is assessed as low (local).

Wellpad NSO-01 is located in an area of cultivation and grazing land with few settlements. The wellpad area was subject to archaeology and cultural heritage survey on 8th December 2016.

The area was heavily vegetated and it was difficult to gain access and view material on the ground surface.

Find comprised a single undiagnostic, abraded pottery sherd. Although no further assets were recorded within the 200m study area, a number of receptors were recorded within the 1km search area, on land to the south of the proposed wellpad. These include decorated and undated pottery sherds, some of which is dated to the Iron Age period.

The area should be subject to further intrusive test pit survey to evaluate its archaeological potential.

Table 17-25: Archaeology and cultural heritage identified at NSO-01

Heritage UID	Description
ACH-01-122	Highly abraded pottery sherd.
ACH-01-135	Pottery rim sherd.
ACH-01-126	Daub and <i>Mukolyo</i> plant.
ACH-01-127	Pottery sherd.
ACH-01-128	Decorated pottery sherd.
ACH-01-129	Pottery sherd.
ACH-01-130	Iron Age pottery with decoration.
ACH-01-131	Pottery sherd.
ACH-01-132	Pottery sherds.
ACH-01-133	Pottery sherd.

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-01 are shown on Figure 17-19.

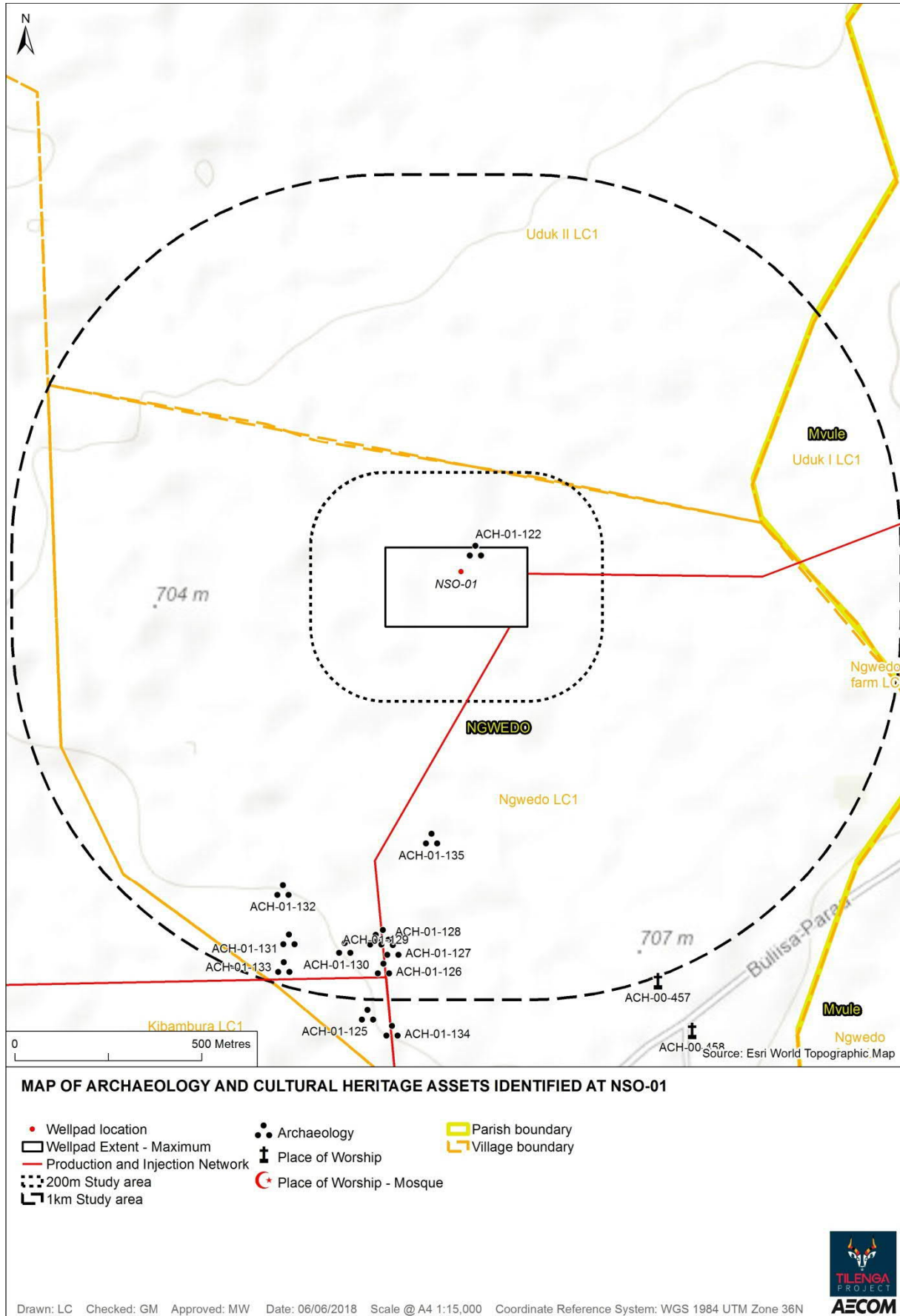


Figure 17-19: Map of archaeology and cultural heritage assets identified at NSO-01

17.6.5.17 Nsoga Field – Well Pad NSO-02 (Ngwedo Farm LC1) (LA-2)

No archaeological or cultural heritage assets have been identified within the proposed footprint of wellpad NSO-02.

The significance of archaeological remains in the wider study area is assessed as low (local), as they largely comprise isolated findspots of material that may be of relatively recent date found in the vicinity of a settlement. Burial grounds are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NSO-02 is located in an area characterised by settlements and cultivation at Ngwedo Farm village. The land mainly belongs to the Babwongo clan. The wellpad area was subject to archaeology and cultural heritage survey on 2nd July 2017. This survey was accompanied by the Chairman Ngwedo Farm and the cultural leader for Kibambura and Ngwedo Farm.

Archaeological remains identified in NSO-02 200m and 1km study areas comprise pottery sherds, both decorated and undecorated, and a stone cobble in current use for smoothing clay floors. Lithics were also recorded in a number of areas, including the land to the east of the proposed wellpad site near the KGG-05 wellpad site.

Three burial places were recorded and a church was identified to the east of the proposed wellpad site.

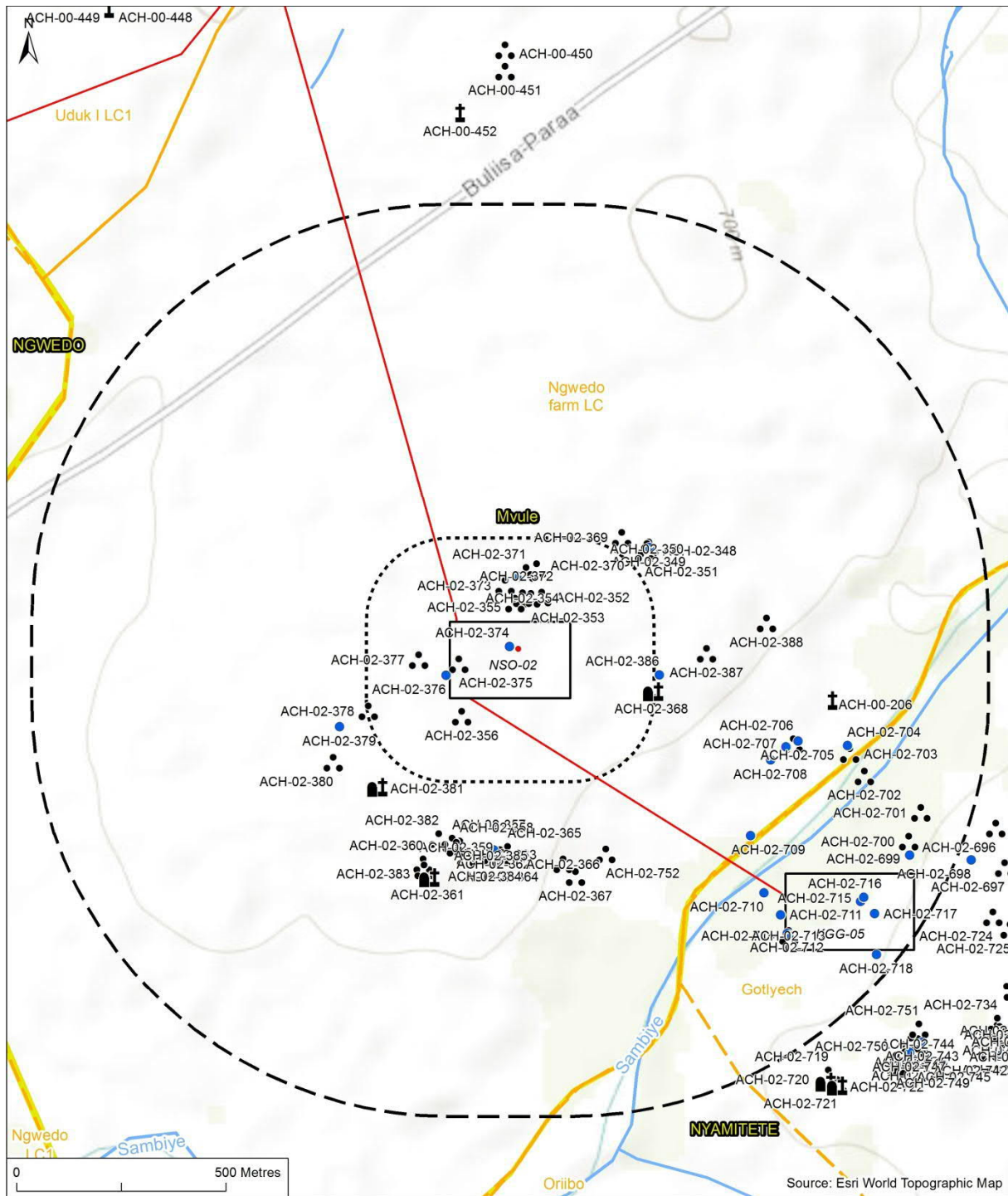
A possible cultural site was identified, comprising pottery sherds close to a shrub. The use of this site as a traditional religious site was not confirmed by local people.

Table 17-26: Archaeology and cultural heritage identified at NSO-02

Heritage UID	Description
ACH-00-206	Ngwedo Farm Church.
ACH-02-348	Plain pottery sherds, medium-bodied, red inside and out.
ACH-02-350	Pottery sherd.
ACH-02-351	Pottery sherds found on land of the Babwongo clan, it's a cultivation area where people reside during farming season of a month or so and then go back to their homes.
ACH-02-352	Red pottery sherds from vessel for carrying water tempered with grog.
ACH-02-353	Red, medium bodied pottery sherds, tempered with sand and grog.
ACH-02-354	Red, medium bodied pottery sherds, tempered with sand and grog.
ACH-02-355	Red, medium sized pottery sherds tempered with grog and sand pottery; round cobble for smearing/smoothing the clay floor in Nyandera Sayuni's home.
ACH-02-356	Pottery sherds burnished in and out, tempered with sand and grog.
ACH-02-357	Four pottery sherds, three plain and one decorated.
ACH-02-358	Pottery decorated with a thick groove.
ACH-02-359	Pottery sherds. Very thin bodied, red and in a fine fabric.
ACH-02-360	Roulette-decorated pottery sherd.
ACH-02-363	Plain pottery sherd, thin bodied, red throughout, fine paste, tempered with sand.
ACH-02-364	Large pottery sherd, plain, red, medium bodied, and sand-tempered.
ACH-02-365	Plain pottery sherds close to a shrub which might be a sacrificial place because of the concentration.
ACH-02-366	Large concentration of pottery sherds.
ACH-02-367	Pottery sherd.
ACH-02-369	Plain pottery sherd.
ACH-02-370	Pottery sherd.
ACH-02-371	Pottery sherd.
ACH-02-373	Pottery sherd.
ACH-02-377	Pottery sherd.
ACH-02-378	Pottery sherd.

Heritage UID	Description
ACH-02-380	Pottery sherd.
ACH-02-382	Plain pottery sherd.
ACH-02-383	Plain pottery sherd.
ACH-02-384	Plain pottery sherd.
ACH-02-385	Plain pottery sherd.
ACH-02-387	Plain pottery sherd.
ACH-02-388	Pottery sherd.
ACH-02-368	Burial ground with seven uncemented graves. The dead are: Katushabe Christine, Byomukama Michael, Nyandura Harriet, Eva Saleli, and two twins with no name. The graveyard is under the care of Bagonza Alfred of the Basehere clan. An orange tree is located nearby.
ACH-02-361	Two graves, not cemented. For Mulimba and a child whose name is not known.
ACH-02-381	Two graves. Birungi Darison is the caretaker.
ACH-02-700	Plain pottery and <i>Musinga Bakazi</i> Tree.
ACH-02-701	Quartz platform core.
ACH-02-702	Plain pottery sherd.
ACH-02-703	Roulette-decorated pottery.
ACH-02-707	Pottery sherd and <i>Mukwakwa</i> plant.
ACH-02-714	Quartz flake.
ACH-02-752	Plain pottery sherd.

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-02 are shown on Figure 17-20 and Figure 17-21.



MAP OF ARCHAEOLOGY AND CULTURAL HERITAGE ASSETS IDENTIFIED AT NSO-02

- Wellpad location
- Wellpad Extent - Maximum
- Production and Injection Network
- ⋯ 200m Study area
- ⊠ 1km Study area
- Archaeology
- ⚡ Burial Place
- Other
- ⚡ Place of Worship
- ▭ Parish boundary
- ▭ Village boundary
- Watercourse

Drawn: LC Checked: GM Approved: MW Date: 06/06/2018 Scale @ A4 1:15,000 Coordinate Reference System: WGS 1984 UTM Zone 36N



Figure 17-20: Map of archaeology and cultural heritage assets identified at NSO-02

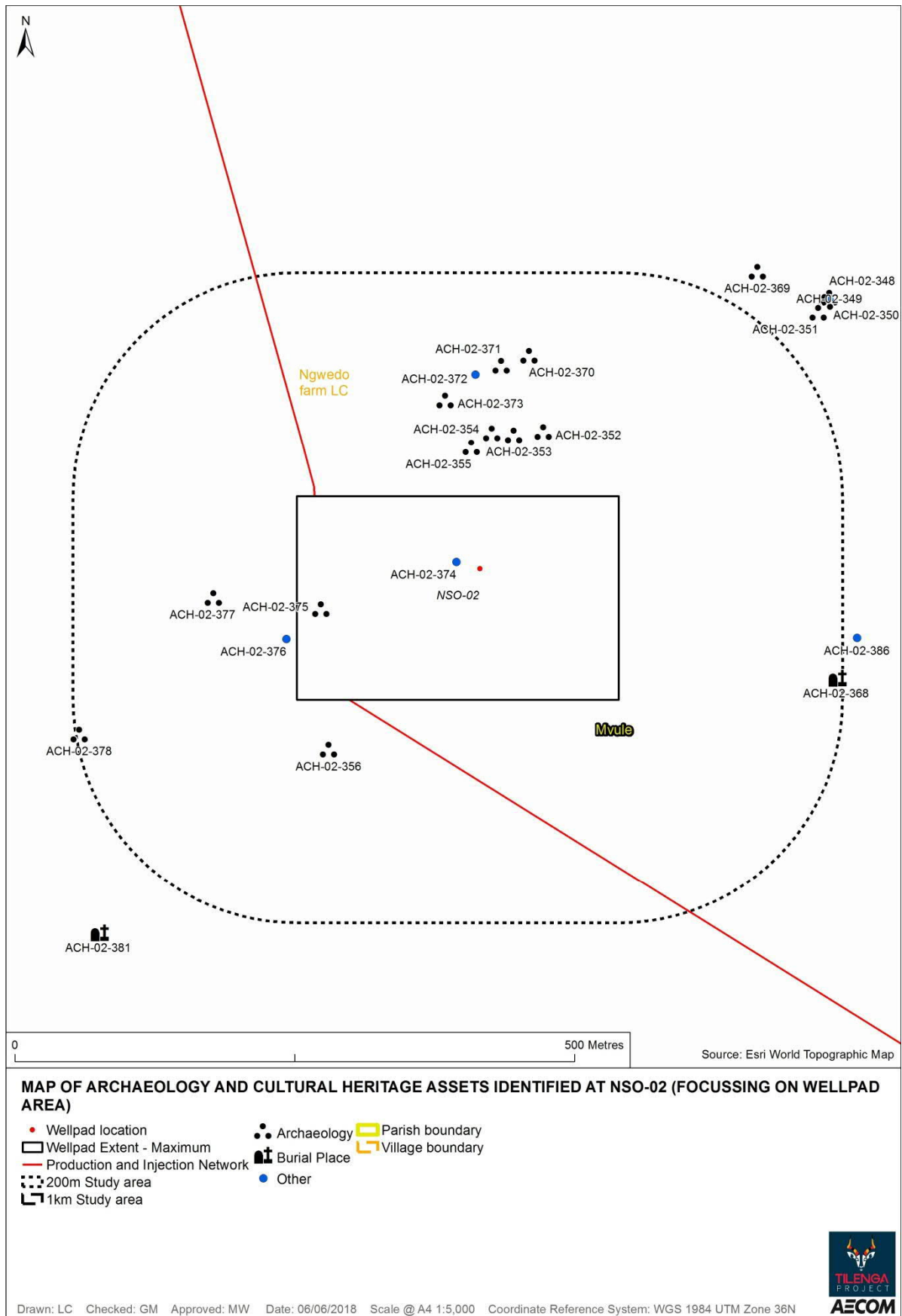


Figure 17-21: Map of archaeology and cultural heritage assets identified at NSO-02 (focussing on wellpad area)

17.6.5.18 Nsoga Field – Well Pad NSO-03 (Kibambura LC1) (LA-2)

Plain, grey pottery sherds (ACH-02-391) were identified within the proposed footprint of the wellpad. There is a cultural site within the proposed wellpad footprint, ihongo called Kayese which is thought to cure madness (ACH-02-389).

The significance of archaeological remains is assessed as low (local), as they largely comprise isolated findspots of material that may be of relatively recent date found in the vicinity of settlement and craft activities.

The cultural sites are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NSO-03 is located in an area of grazing land dominated by Mukolyo trees, with little cultivation or settlement. The wellpad area was subject to archaeology and cultural heritage survey on 7th December 2016 and 1st July 2017. Surveys were accompanied by cultural leaders for the Bagungu and Alur ethnic groups, and the Chairpersons of Kibambura, Kisansya East and Kakindo Cell villages. The area contained a large number of recent and current charcoal burning mounds. Sherds of pottery were recorded in the earthen clamps of some of these mounds, which are made from upcast soils.

The centre point of the site was very bushy with cactus, impeding survey. Pottery scatters were noted in open areas, which indicate the area has archaeological potential, which may be masked by vegetation and should be further evaluated by intrusive test pit evaluation.

Archaeological remains identified in the wellpad area comprise pottery sherds.

Two cultural sites were noted, one within the wellpad area and one in the 200m study area:

- A *ihongo* (sacrifice site) called Buswa in a tamarind tree for the Basiabi clan. The caretaker of the site is called Kaheru, and resides at Bihongoro. At the site they sacrifice black or white animals and chickens; and
- A site called Kayese, a *ihongo*.

'Kayere near the Sambye River is where the people of Kibambura village congregate to slaughter a goat in a ritual performed to cure insanity. The affected individual is brought to the tree to be healed with the blood of the sacrificed goat. It is purported that the spirits disturbing the person will then leave them. This site is also marked by a Munonde tree and the sacrifice is offered amidst singing and calling to the gods, such as Lubanga, Nyina Barongo, Tundururu, Kiguru, Buswa, Kagoro, and Windi.' (Atacama Consulting/ Ecology & Environment, Inc. 2014, 5-6). The Sambye seasonal stream separates after reaching Kizongi cell, creating two streams. The one which takes right hand direction is called Sambye Mudulu, 'male stream' and the one which takes the left hand direction is called Sambye Mukali, 'female stream'. The former is powerful than the latter. (Bugungu Heritage and Information Center).

The Kihongo called Nyina barongo deals with matters of praying for getting children. It is believed that if the women who are believers in the site move away during the resettlement it will affect them. Accordingly, they would have to travel to wherever the cultural site will be relocated by the Batera clan (Atacama 2017).

Identified medicinal and sacred plants include Cactus, *Musingabakazi*, *Malakwang*, *Mukolyo*, *Mbumbuula*, *Aloe vera* and *Kadaali*. NSO-03 also has bee hives. The site also has a rare tree species called Mwopoki that is used for charcoal burning.



Plate 17-7: Three sherds of pottery recorded in the upcast soil of a charcoal clamp in NSO03.

Table 17-27: Archaeology and cultural heritage identified at NSO-03

Heritage UID	Description
ACH-01-123	Well-fired, brick red pottery sherd with grog and sand temper.
ACH-01-124	Slipped pottery sherds with sand, grog and mica temper. Found in an open patch, indicating that if the area was open more ceramics would have been seen.
ACH-01-156	Internally abraded, sand and grog tempered pottery sherd.
ACH-01-157	Internally abraded, mica-tempered pottery in a very fine fabric.
ACH-01-158	Pottery sherds at Kiiza Bisekwa homestead of five houses.
ACH-01-159	Pottery sherd.
ACH-02-391	Plain, grey pottery sherds found in the earthen clamp of a modern charcoal burning mound.
ACH-02-393	Modern charcoal burning mound and pottery.
ACH-02-396	Red, burnished pottery sherds in a fine fabric found in the earthen clamp of a modern charcoal burning mound.
ACH-02-399	Pottery sherds found in the earthen clamp of a modern charcoal burning mound.
ACH-02-401	Pottery sherds found in the earthen clamp of a modern charcoal burning mound.
ACH-02-406	Three tiny potsherds recovered from a modern charcoal burning mound. Brick red, thin bodied, with an abraded interior.
ACH-02-415	Metal and plain pottery sherd found in modern charcoal mound.
ACH-02-416	Pottery sherd found in modern charcoal mound.
ACH-02-417	Pottery sherd found in modern charcoal mound.
ACH-02-418	Pottery sherd found in modern charcoal mound.
ACH-02-419	Pottery sherd found in modern charcoal mound.
ACH-02-412	Cultural site. <i>ihongo</i> called Buswa in a tamarind tree for the Basiabi clan. The caretaker is Kaheru who lives at Bihongoro.
ACH-02-389	Cultural site. Number 1 for healing madness, site called Kayese, a <i>ihongo</i>

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-03 are shown on Figure 17-22 and Figure 17-23.

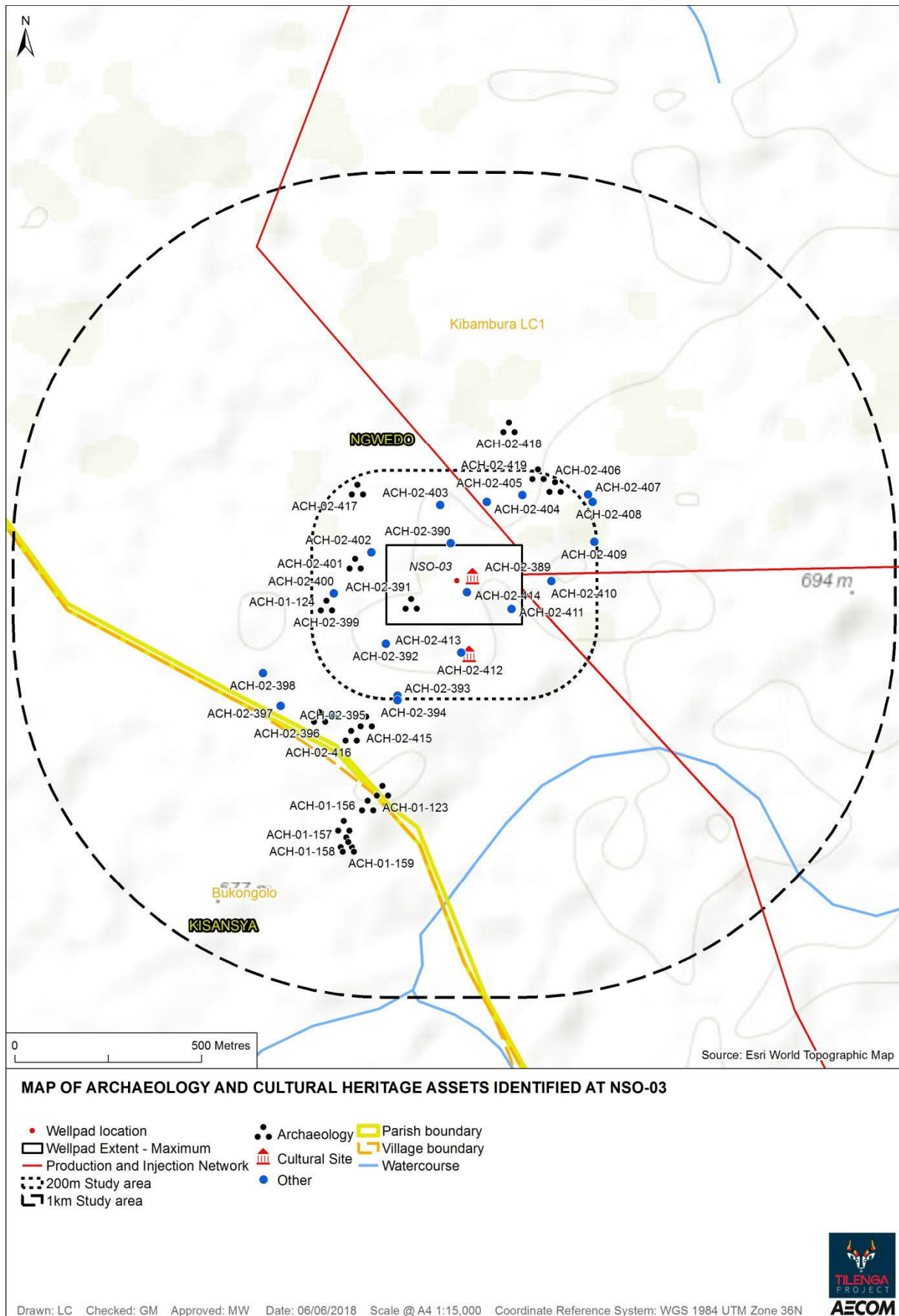


Figure 17-22: Map of archaeology and cultural heritage assets identified at NSO-03

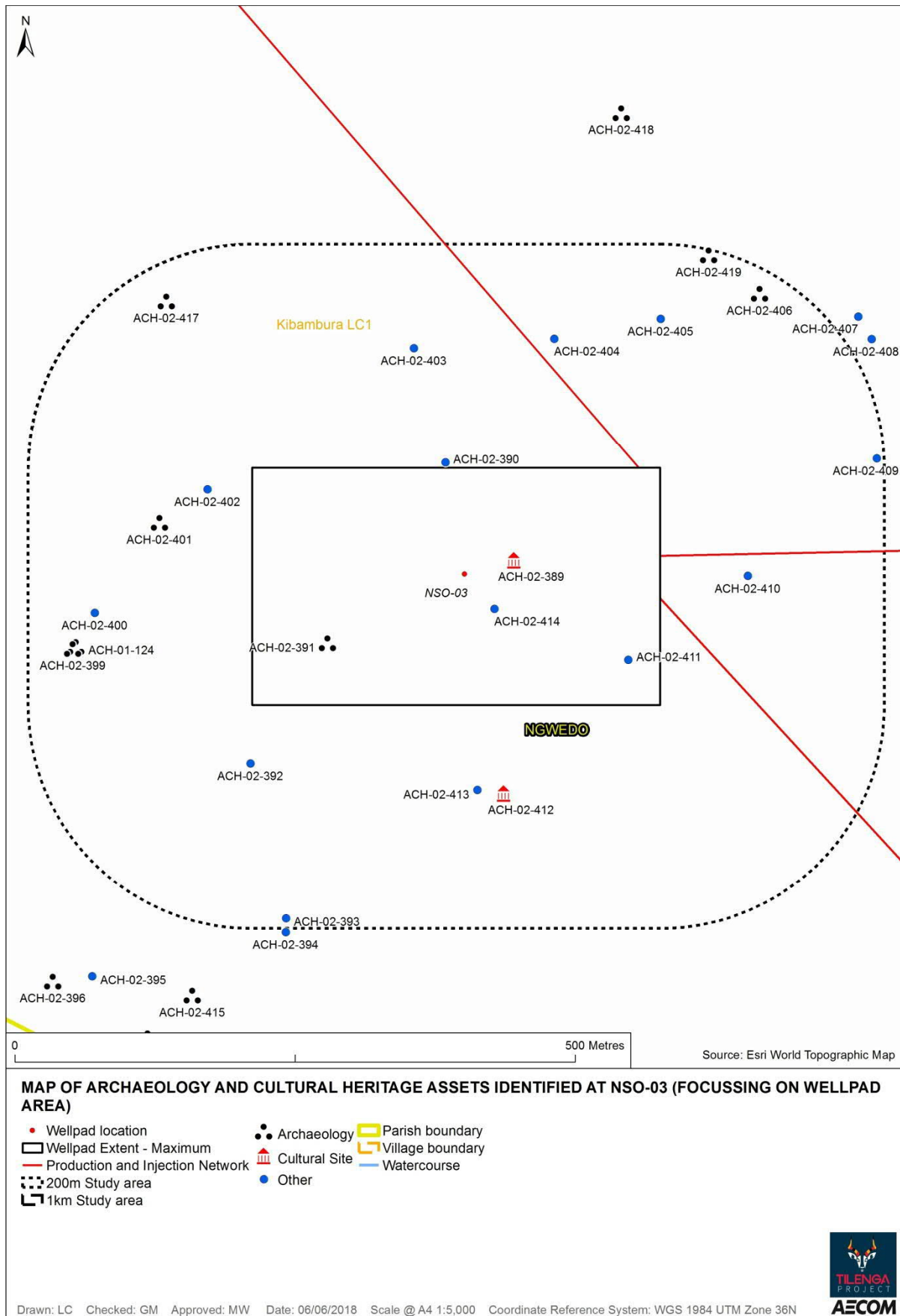


Figure 17-23: Map of archaeology and cultural heritage assets identified at NSO-03 (focussing on wellpad area)

17.6.5.19 Nsoga Field – Well Pad NSO-04 (Kijumbya LC1) (LA-2)

A scraper, five debitage flakes, and a Levallois core (ACH-02-473), plain and decorated pottery sherds (ACH-02-420; ACH-02-421; ACH-02-423; ACH-02-472; ACH-02-473; ACH-02-474) and a large scatter of abraded pottery (ACH-02-422) were identified within the proposed footprint of the wellpad. A further site, consisting of pottery and a cactus plant, was also identified in the Land Acquisition Extents (ACH-02-493).

The significance of archaeological remains is assessed as moderate (regional), due to the presence of a potentially long sequence of occupation, from MSA lithic scatters to LIA pottery.

The burials, places of worship and cultural sites in the wider NSO-04 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NSO-04 is located in an area of cultivation and grazing land in the villages of Kijumbya and Kibambura. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA's Social Screening survey (ARTELIA 2013), ARTELIA's Social and Health Baseline Survey (ARTELIA 2015) and on 2nd July 2017, which was accompanied by the chairperson of Kibambura and the cultural leader for Kibambura and Ngwedo Farm. Survey results are also reported in the EA-1/EA-1A & EA-2 North Project chapter on archaeology and cultural heritage (Atacama Consulting/ Ecology & Environment, Inc. 2014).

Archaeological remains identified in NSO-04 comprise lithics, cores and debitage, an end scraper, a basalt grinding stone and fishing weight, pottery sherds, roulette-decorated pottery, pottery scatters, pottery and lithic scatters, ironworking tuyère and the foundations of an abandoned homestead. Surveys also noted a number of recent charcoal-burning mounds. Sherds of pottery were recorded in the earthen clamps of some of these mounds, which are made from upcast soil.

Burial places include ten graves of the Bachwa clan and five graves of the Basiabi clan.

Places of worship in the NSO-04 wellpad study area comprise Kibambura Church of Uganda and Kisansya East Town Church.

The two villages are separated by the seasonal River Sambye that runs across the site. The name Kibambura is derived from an elder's name called Mubambula but it is also a clan name. This means that Kibambula may refer to a place for the members of the Kibambula clan.

There are two cultural sites within the NSO-04 200m study area:

- a *ihongo* called Ekihongo kya Sambye in a big *Musisiye* tree, where sacrifices are done in mainly January and June every year. Ekihongo is a name for a shrine or place for sacrifice, a term widely used in Buliisa derived from '*kuhonga*', meaning dedicating to the gods. The sacrificial items include a black goat and a white and black cock. The site is in a huge *Musisiye* tree and is mainly used to address problems of crop failure and sickness among the people (ACH-02-424).
- a *ihongo* called Lubanga in large trees, where a black cock and nine eggs are sacrificed, mainly in February every year to prevent sickness and stop wild animals from attacking the community (ACH-02-446).

There are a further five cultural site within the 1km NSO-04 survey area. The Kibambura part of the site has a dense concentration of ceramics that could be explained by the ritual activities that take place within the site. The site also yielded a lot of quartz worked stone tools. Medicinal, cultural and/or useful plants noted in the area include *Mudendemule* trees, which are used for the construction of family shrines and Lusama, used to make soap.





	
<p>Ekihongo kya Sambye cultural site (ACH-02-424)</p>	<p>Lubanga cultural site (ACH-02-446)</p>
	
<p>Plate 17-8: A collection of lithics observed in an erosion scar in NSO-04 (ACH-02-434), within the study area.</p>	<p>Plate 17-9: A pottery scatter in an erosion scar near the seasonal river in NSO-04 (ACH-02-433). The site was identified as a ritual site by local elders, within the study area.</p>

Table 17-28: Archaeology and cultural heritage identified at NSO-04

Heritage UID	Description
ACH-02-420	Seven pottery sherds, one decorated and the rest plain. Red inside and out and not very thin. Tempered with sand.
ACH-02-421	Two sherds of plain pottery.
ACH-02-422	Large pottery scatter, abraded plain red and black sherds.
ACH-02-423	Pottery sherd.
ACH-02-425	Concentration of pottery sherds.
ACH-02-426	Pottery rim sherd.
ACH-02-427	Several pottery sherds.
ACH-02-430	Plain red pottery sherd, slipped, black inside, and grog tempered.
ACH-02-431	Pottery sherd.
ACH-02-432	Pottery sherd.
ACH-02-433	Concentration of mainly roulette-decorated pottery sherds. The site may be a sacrificial place due to the dense pottery scatter.
ACH-02-434	Lithics.
ACH-02-435	Tuyère, ceramics, shell (modern).
ACH-02-436	Pottery sherd.
ACH-02-437	Pottery sherd.

Heritage UID	Description
ACH-02-438	Roulette-decorated pottery and a medicinal plant.
ACH-02-439	Roulette-decorated pottery, lithic quartz core and debitage.
ACH-02-440	Pottery sherd.
ACH-02-441	Pottery sherd.
ACH-02-442	Concentration of pottery and lithics.
ACH-02-443	Quartz lithic debitage.
ACH-02-444	Pottery sherd.
ACH-02-450	Thick bodied pottery with grog and sand temper; quartz lithics.
ACH-02-452	Roulette-decorated pottery.
ACH-02-453	Charcoal burning mound (modern), pottery.
ACH-02-454	Pottery concentration; Kulumbero medicinal plant.
ACH-02-456	Pottery sherd.
ACH-02-462	Grinding stone on basalt.
ACH-02-463	Fishing weight in basalt.
ACH-02-467	Pottery sherd with heavily abraded interior and roulette decoration. Huge Musingabakazi tree.
ACH-02-468	Pottery sherd of thick-bodied storage vessel for carrying water, red inside and out.
ACH-02-472	Pottery sherd, Aloe Vera and Kulumbero medicinal plants.
ACH-02-473	End scraper, five debitage flakes, Levallois core and pottery rim sherd.
ACH-02-474	Plain abraded pottery sherds, Mukwakwa medicinal plant.
ACH-02-478	Pottery concertation about 30m ² in diameter. Shell (modern).
ACH-02-482	Pottery sherd.
ACH-02-485	Pottery sherd and house foundations.
ACH-02-488	Pottery sherds in soil in ditch.
ACH-02-489	Quartz core scraper.
ACH-02-490	Thick plain pottery in soil ditch.
ACH-02-491	Pottery sherd.
ACH-02-493	Pottery and Cactus plant.
ACH-02-494	Plain pottery sherd.
ACH-02-486	Burial place, 10 graves for Bachwa clan. The caretaker is Mitrance Nzaireki, 73 years old.
ACH-02-492	Burial place, 5 graves of the Basiabi clan. The caretaker is Veronica Nyabigambo Malyoto.
ACH-00-182	Kibamura Church of Uganda. This structure was constructed in 2000 and there are plans to construct a much bigger church.
ACH-00-183	Kibambura Church. Church of Uganda.
ACH-00-467	Kisansya East Town Church. This belongs to the charismatic and was started in 2012.
ACH-02-424	Cultural site. Ihongo called Sambye for sacrifice that involves use of a black goat and a black cock done in January and June for sickness, good yields, in a big Musisiye tree.
ACH-02-446	Cultural site called Lubanga where a black cock and nine eggs are taken in very huge trees. Sacrifices are done every year in February to prevent sickness, and to ensure that wild animals do not disturb the community.
ACH-00-184	Kibambura. Sacred site (TAC9).
ACH-00-491	Kibambura. Sacred site (TAC 8).
ACH-00-488	Kibambura. Sacred site (TAC7).
ACH-00-493	Kibambura. Sacred site (TAC11).
ACH-00-494	Kibambura. Sacred site (TAC10).

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-04 are shown on Figure 17-24 and Figure 17-25.

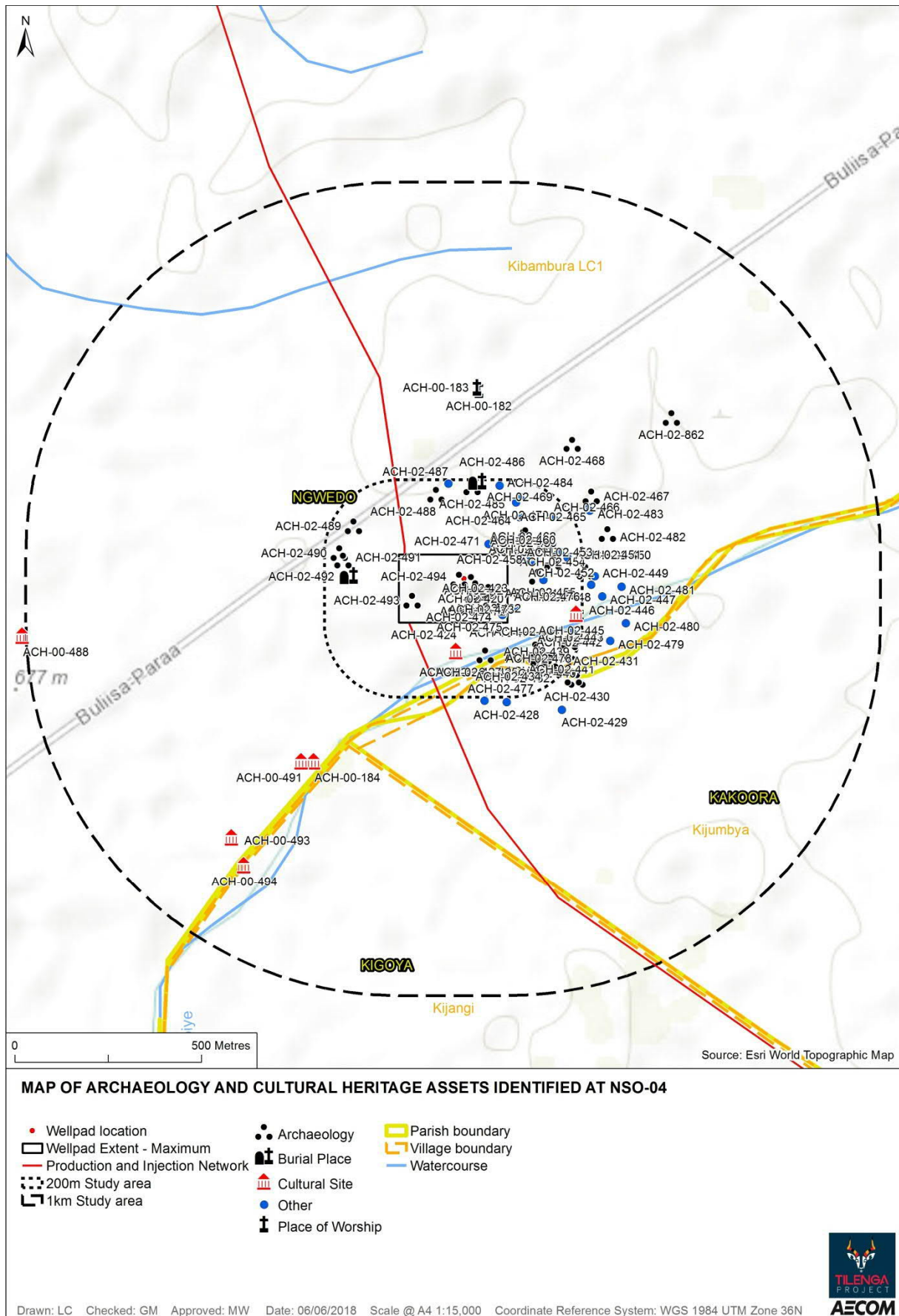


Figure 17-24: Map of archaeology and cultural heritage assets identified at NSO-04

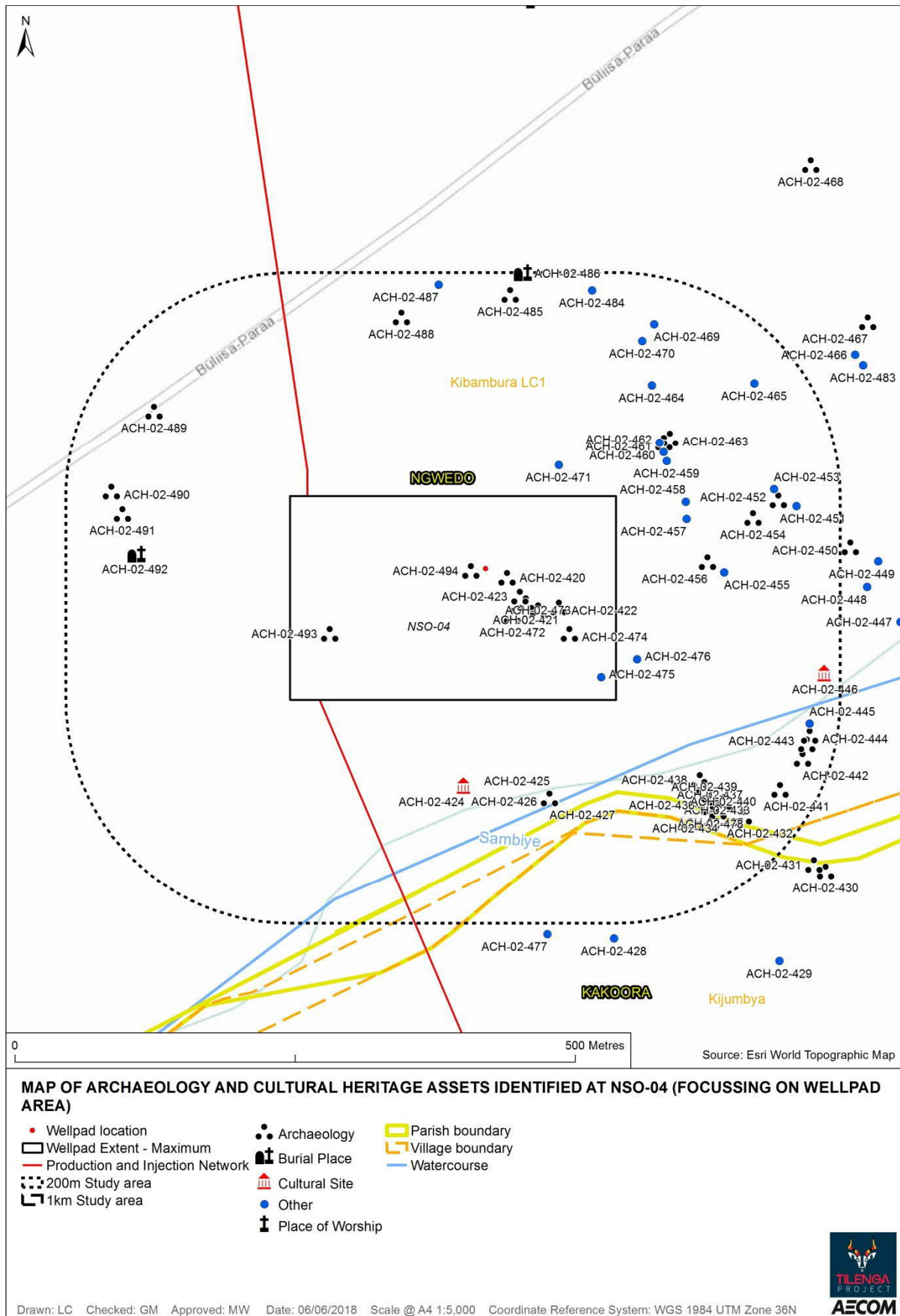


Figure 17-25: Map of archaeology and cultural heritage assets identified at NSO-04 (focussing on wellpad area)

17.6.5.20 Nsoga Field – Well Pad NSO-05 (Ngwedo, Pandiga) (LA-2)

The proposed location of wellpad NSO-05 has been relocated since the field surveys were undertaken, and as a result the site has not been subject to an archaeological walkover survey. As a result there are no previously recorded assets within the proposed wellpad, Land Acquisition Extents, or the 200m study area.

It is recommended that an archaeological walkover survey is undertaken before works commence to assist in planning mitigation and assessing potential impacts.

Although no archaeological walkover survey was undertaken for NSO-05, the 1km study area boundary falls within the study areas for a number of adjacent proposed wellpad sites. This data includes two places of worship identified on the 1km study limit of the NSO-05 site, the first being the Ngwedo Church (ACH-00-459) and the second being the Ngwedo Mosque (ACH-00-461).

A further archaeological site was identified immediately outside of the 1km study area to the north of the proposed wellpad site. This site consisted of pottery sherds.

Table 17-29: Archaeology and cultural heritage identified at NSO-05

Heritage UID	Description
ACH-01-134	Slipped and burnished pottery sherd with sand and grog temper.
ACH-00-459	Ngwedo Church of Uganda.
ACH-00-461	Ngwedo Mosque.

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-05 are shown on Figure 17-26.

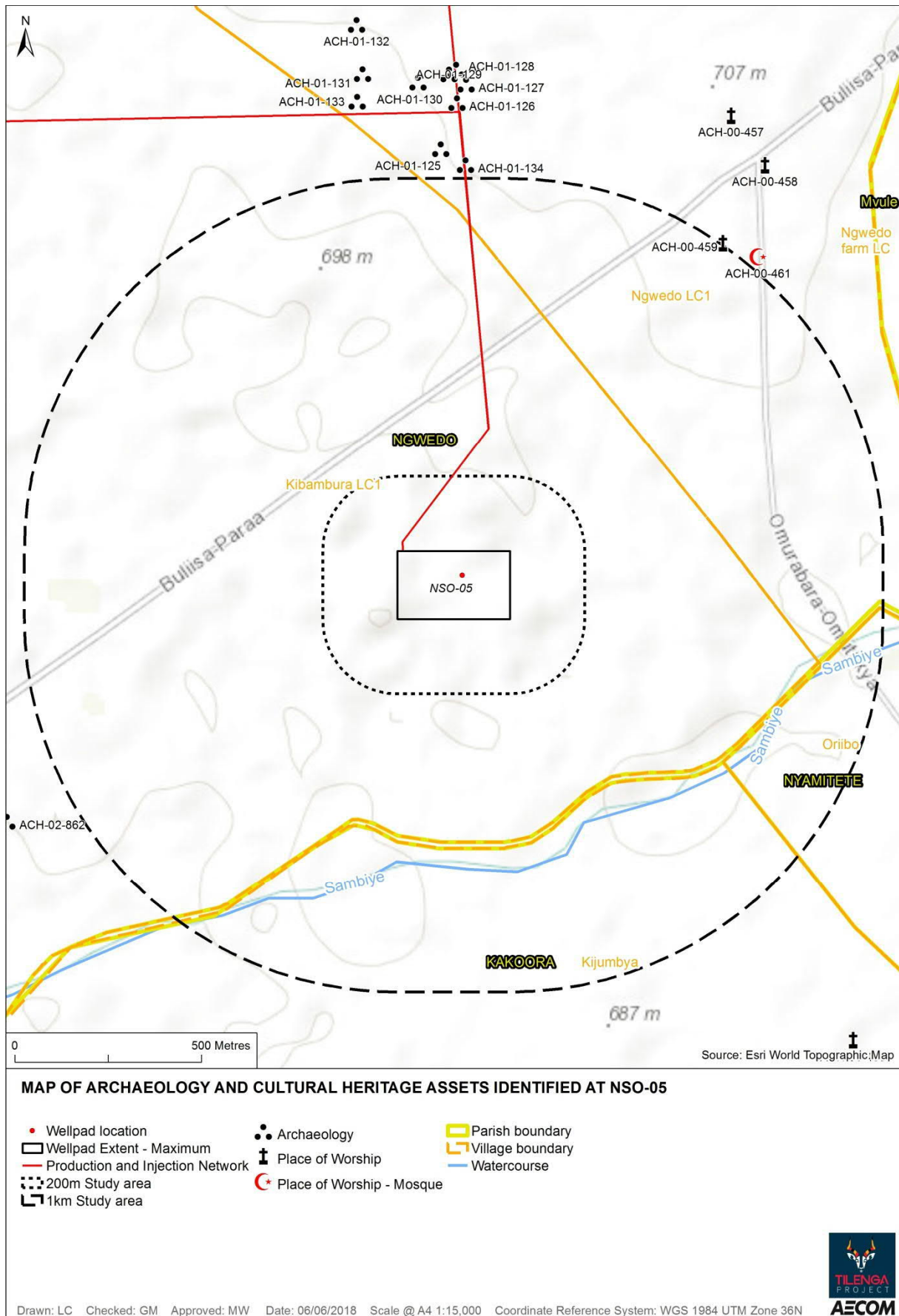


Figure 17-26: Map of archaeology and cultural heritage assets identified at NSO-05

17.6.5.21 Nsoga Field – Well Pad NSO-06 (Kisansya East & Kakindo, Ngwedo Farm, Kijumbya, Uduk I) (LA-2)

A burial place with two graves, one cemented (ACH-02-548) was recorded at Uduk I/Ngwedo Farm, within the proposed footprint of the wellpad.

Burial grounds, places of worship and cultural sites within NSO-06 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

The archaeological receptors within the wider NSO-06 study area are assessed as being of moderate (regional) significance, due to the presence of a potentially long sequence of occupation, and evidence of shifting settlement foci.

Wellpad NSO-06 is located in an area of cultivation and settlements, including Ngwedo Farm and Uduk 1 villages. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA's Social Screening survey (ARTELIA 2013), ARTELIA's Social and Health Baseline Survey (ARTELIA 2015) and survey results are also reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014). The area was further surveyed in June/July 2017.

The area has been disturbed by the cultivation of cassava and cotton, and visibility was impeded by crops as well as thick vegetation.

Archaeological remains identified in the surveys comprise Late Stone Age cores, lithics, pottery sherds, roulette-decorated pottery including Middle Iron Age Chobi Ware, a concentration of pottery and ironworking tuyères. A series of abandoned homesteads and the foundations of homesteads were recorded, as well as recent house daub/floor polishing cobbles (*lingilingi*). The surveys also noted a watering point and modern charcoal burning mounds.

Several burial places including cemeteries, clan graveyards and small burial grounds are present in the area beyond the proposed footprint of the wellpad.

Places of worship within the NSO-06 study area comprise the Burranam Tabernacle Church, the Pentecostal Church of Uganda and the End of Time Message Church (Parnam). Southwest of the study area are Shongambe Church of Uganda and Shongambe Church of Uganda. To the south of the study area is Ngwedo Farm St. Charles Lwanga Catholic Church, while the Uduk I Aljazeera Mosque lies near the 1km study area limit to the north east of the wellpad site.

A clan *kibila* is marked by three sets of three stones close to *Uduk* trees (ACH-02-538). The site is used for fortune telling, they have ancestors who are dead that they call upon to tell the future. If bad luck is foretold, people go back home and pray. They offer sacrifices once a year. There are three further *kibila* family shrines (ACH-02-556, ACH-02-536 and ACH-00-188). There is a further possible shrine located in *Lenga* and *Uduk* trees in front of a homestead (ACH-02-533).

A shrine (*abila*) and traditional healing point is located to the northeast of the study area.



Plate 17-10: Modern decorated pottery sherds recorded in NSO-06.



Plate 17-11: A family shrine being demonstrated by the shrine caretaker Orombi Charles in NSO-06.



Plate 17-13: Pottery vessels being used in the production/distillation of alcohol in NSO-06.



Plate 17-12: A game (omweso) set out in the earth outside a hut in NSO-06.



Plate 17-14: A pottery vessel being used for cooking in NSO-06. Note the use of baked/fired ant hill earth to support the pot.

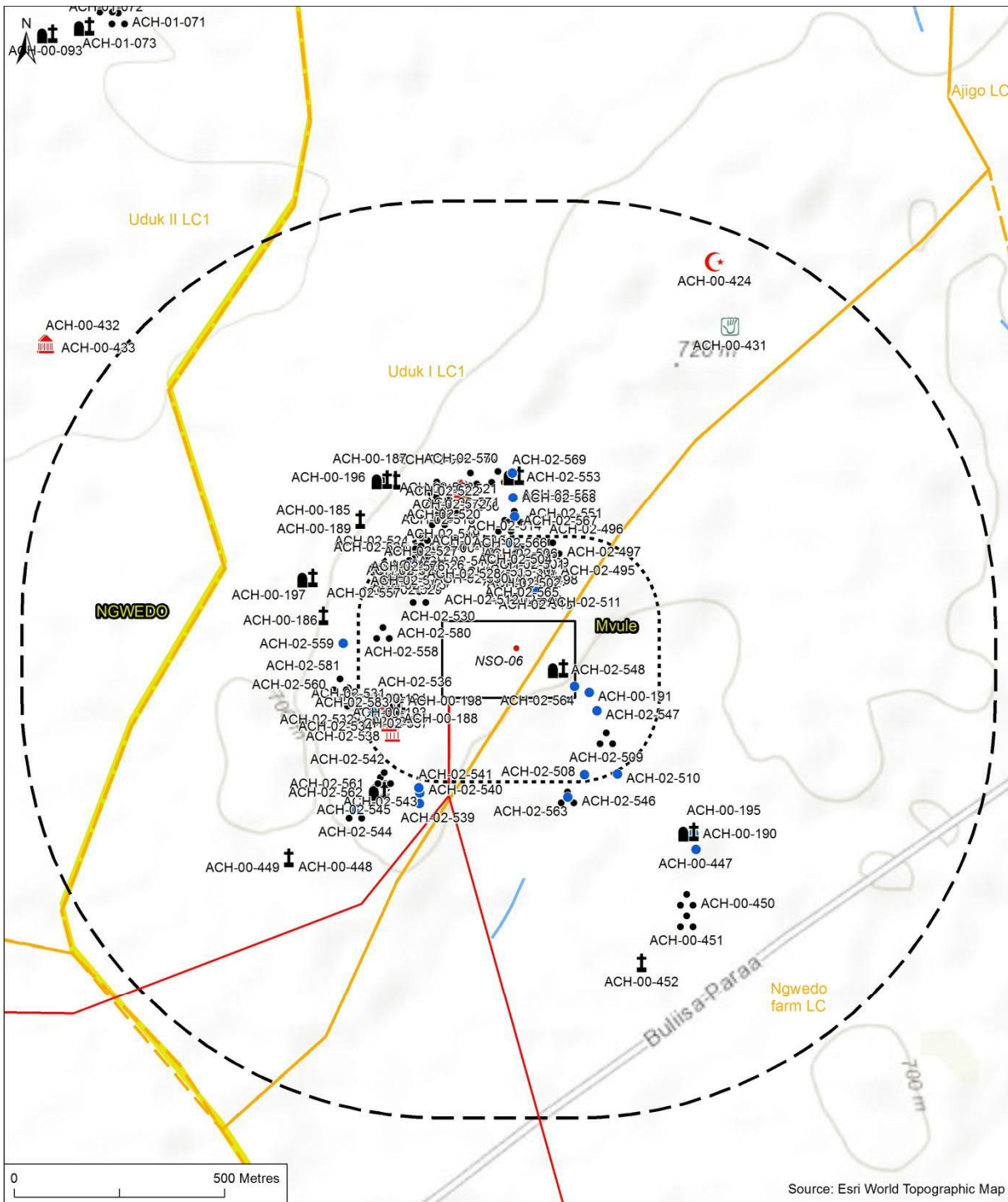
Table 17-30: Archaeology and cultural heritage identified at NSO-06

Heritage UID	Description
ACH-00-450	LSA quartz core.
ACH-00-451	LSA quartz core, abraded.
ACH-02-495	Pottery sherd.
ACH-02-496	Plain pottery sherds, red inside and out.

Heritage UID	Description
ACH-02-499	Two red pottery sherds, one plain and one decorated.
ACH-02-500	Plain and red pottery sherds.
ACH-02-501	Pottery sherd.
ACH-02-502	House foundation.
ACH-02-503	Black pottery sherd with roulette band decoration, slipped, with sand and grog temper.
ACH-02-504	House foundation, stone grinder.
ACH-02-505	Pottery sherd.
ACH-02-506	Pottery sherd.
ACH-02-507	Black-slipped pottery neck sherd.
ACH-02-509	House polishing cobble.
ACH-02-511	House polishing cobble.
ACH-02-512	Pottery sherd.
ACH-02-514	Red pottery sherd, layer peeling probably due to manufacture using coiling method.
ACH-02-515	Deserted homestead.
ACH-02-516	Pottery sherd, pink bead.
ACH-02-517	Pottery sherd.
ACH-02-518	Lithics. Possible multi-platform core.
ACH-02-519	Pottery sherd.
ACH-02-520	Pottery sherd.
ACH-02-522	Abandoned homestead.
ACH-02-523	Plain pottery sherd, sand and grog temper.
ACH-02-524	Pottery sherd, Musingabakazi medicinal plant.
ACH-02-525	House polishing cobble.
ACH-02-526	Sooted pottery sherd from cooking vessel.
ACH-02-527	Plain and decorated pottery sherds.
ACH-02-529	Whole pot and pottery sherds with roulette band decoration.
ACH-02-531	Pottery rim sherd, black, with an out-turning rim.
ACH-02-532	Abandoned house with several pots for brewing.
ACH-02-541	Jack fruit using as a water collecting point.
ACH-02-542	Abandoned homestead.
ACH-02-543	Pottery sherd, a medicinal plant and fruit trees located close to a homestead in a court yard.
ACH-02-544	Sooted pottery sherd from a vessel used for cooking beans.
ACH-02-546	Pottery sherd.
ACH-02-535	Three pottery sherds, possibly Chobi Ware due to poor finishing, roulette-decorated. In a place with a concentration of pottery.
ACH-02-549	Plain pottery sherd, thin-bodied and slipped.
ACH-02-550	Pottery sherd and mango tree.
ACH-02-551	Pottery, ironworking tuyère fragment and mango tree.
ACH-02-554	Plain pottery sherd.
ACH-02-555	Pottery sherd.
ACH-02-557	Large pottery sherd and mango tree.
ACH-02-558	Pottery sherd.
ACH-02-560	Pottery rim sherd.
ACH-02-574	Plain pottery sherd, black outside, thin bodied and sand tempered.
ACH-02-575	Abandoned homestead.
ACH-02-580	Pottery sherd.

Heritage UID	Description
ACH-02-581	Lithic rubbing stone.
ACH-02-498	Burial place with about 30 graves. Only two graves are clear where one is cemented and the other not cemented in a big Mutooma tree usually used as graveyard marker. Potter rim-neck sherd, rim out-turning, sooted (evidence of cooking), with temper sand and grog. Orange tree. At ACH-02-498, the caretakers claimed that due to shortage of land they have to cultivate the land around the graves. A key problem is the lack of clear burial markers.
ACH-02-548	Burial place. Two graves, one cemented. The caretaker is Mandaun Mary.
ACH-02-553	Burial place. Six graves, of which two are cemented. Oikonyenga Joyce is the caretaker.
ACH-02-537	Burial ground with 17 graves. Four are cemented. Graveyard for the Jonam clan marked by Uduk trees. The caretaker is currently Okello Pitwa.
ACH-02-561	Burial place. One cemented grave for Peter Ayita. The caretaker is Oyella William.
ACH-02-578	Burial ground of the Abira clan used since 1964. Under the care of Obole Nelson.
ACH-02-562	Burial place. Two graves. Musanda Allen is the caretaker.
ACH-02-572	Burial place. At least 11 graves, not cemented. For Awase Mukambo's clan and under the care of Mzee Avoya. Used from 1968 to date. The dead are oriented towards the east.
ACH-00-195	Burial ground (6 people). Uduk I.
ACH-00-196	Graveyard of (about 10 graves). Uduk I.
ACH-00-187	Uduk I Communal Grave Site.
ACH-00-197	Grave yard (7 graves). Uduk I.
ACH-00-198	Graveyard (more than 20 graves). Uduk I.
ACH-00-185	Uduk I Burranam Tabernacle Church. Started in 2013 by the community.
ACH-00-186	Uduk I Pentecostal Church of Uganda. It was started in 2005 by the community and serves approximately 28 families in the village.
ACH-00-189	Uduk I End of Time Message Church (Parnam).
ACH-00-448	Uduk I Shongambe Church Of Uganda. Established in 1990 by the community and also houses a nursery school
ACH-00-449	Uduk I Shongambe Church of Uganda. It is a Protestant church; started in 1989; many used by elders.
ACH-00-452	Ngwedo Farm St. Charles Lwanga Ngwedo farm Catholic Church. Started in 1972 by the missionaries. Has two services in a week. One charismatic renewal on Friday and general Sunday service. Serves approximately 80 people in one service.
ACH-00-431	Abila - Traditional Healer. Local traditional healing point called Fideli. It is operated by a woman who is a daughter to Kanuto.
ACH-00-188	Uduk I Clan Sacred Site. For the clan to pray to their gods.
ACH-02-521	Cultural site. Kibila of Orombi Charles with four sets of three stones, black and white goat skins, stool, close by is a sausage tree that was cut. The site is a family shrine.
ACH-02-536	Cultural site. Kibila in Uduk trees where a big pot was buried, with upside down bottles. Located behind a house used for healing the sick and barrenness. They use a black goat for sacrifice at the site. Within the same home was a grave yard of 17 burials, 4 of which were cemented for members of the Jonam clan under the care of Okello Pitwa (ACH-02-537).
ACH-02-538	Cultural site. A kibila that has three sets of three stones close to Uduk trees. The site has protective powers and is used for fortune telling, they have ancestors who are dead that they call upon to tell the future. It also assists in the event of bad luck where family members come and pray. They offer sacrifices at least once a year.
ACH-02-556	Cultural site. Family shrine. Olombi Charles is the custodian. It helps to prevent sickness, disturbances etc.
ACH-02-533	Possible cultural site. Lenga and Uduk trees in front of a homestead.
ACH-00-424	Uduk I Aljazeera Mosque.

The location of archaeology and cultural heritage assets identified at the Wellpad NSO-06 are shown on Figure 17-27 and Figure 17-28.



MAP OF ARCHAEOLOGY AND CULTURAL HERITAGE ASSETS IDENTIFIED AT NSO-06

- Wellpad location
- ◻ Wellpad Extent - Maximum
- Production and Injection Network
- ⊞ 200m Study area
- ⊞ 1km Study area
- Archaeology
- ⚰ Burial Place
- ⚰ Cultural Site
- Other
- ⚰ Place of Worship
- ☪ Place of Worship - Mosque
- ⚰ Possible Cultural Site
- ⚰ Traditional Healer
- ▭ Parish boundary
- ▭ Village boundary
- Watercourse

Drawn: LC Checked: GM Approved: MW Date: 06/06/2018 Scale @ A4 1:15,000 Coordinate Reference System: WGS 1984 UTM Zone 36N



Figure 17-27: Map of archaeology and cultural heritage assets identified at NSO-06

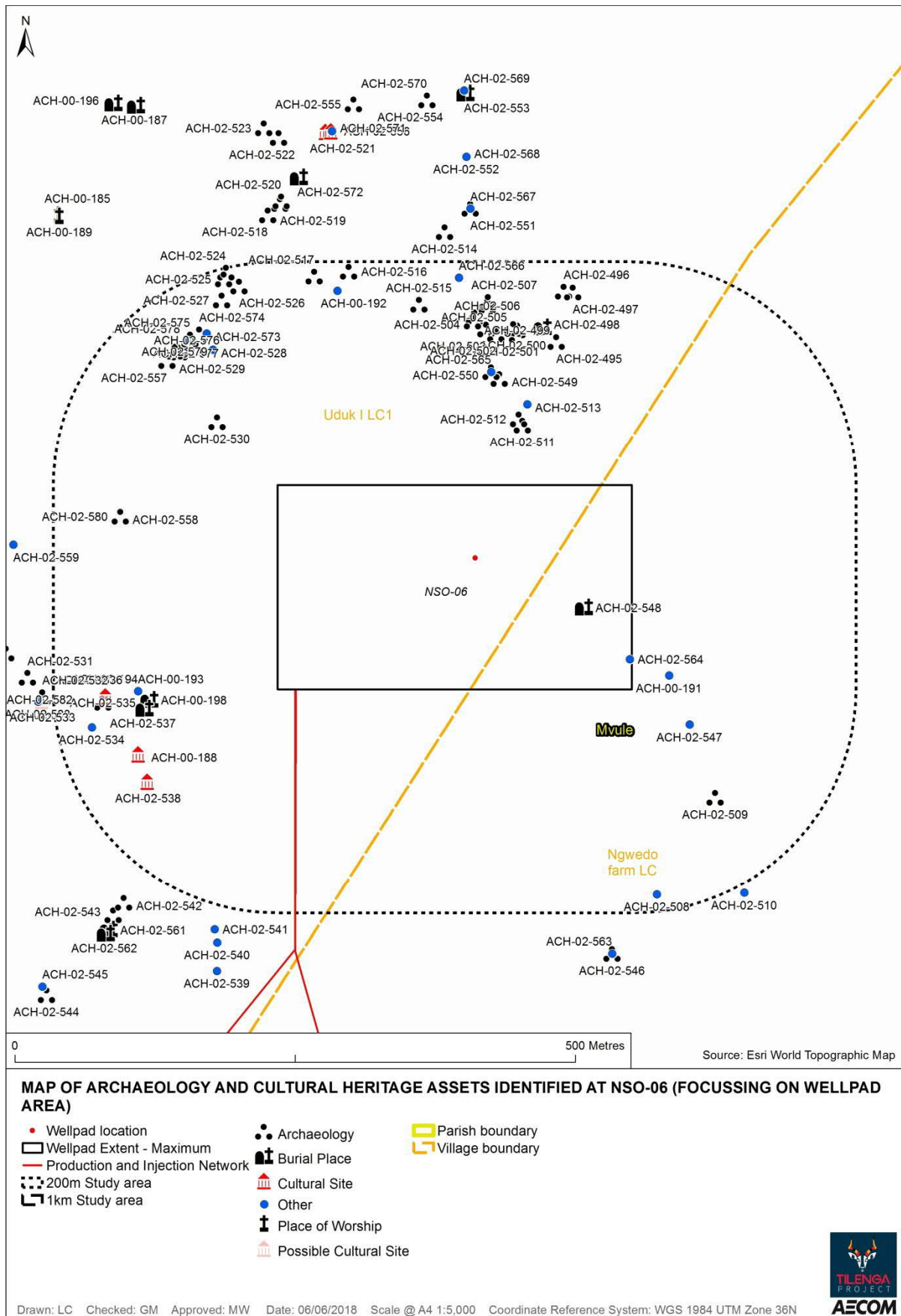


Figure 17-28: Map of archaeology and cultural heritage assets identified at NSO-06 (focussing on wellpad area)

17.6.5.22 Kigogole Field – Well Pad KGG-01 (Gotlyech) (LA-2)

Decorated pottery sherds (ACH-02-585) were identified within the proposed footprint of wellpad KGG-01. Other receptors recorded within the wellpad site include a possible sacred tree (ACH-02-588), an abandoned homestead (ACH-02-586), and a further finds of pottery (ACH-02-584) although this latter pottery may be more recent in date. In addition to the above sites, a single findspot of pottery was also recorded in the Land Acquisition Extents (ACH-02-589).

The decorated pottery archaeological receptors at KGG-01 are assessed as being of moderate (regional) significance, due to the presence of a potentially long sequence of occupation, and evidence of shifting settlement foci, while the sacred tree is considered to be of high significance. Both the modern pottery and the abandoned homestead are of low significance.

Burial grounds, places of worship and cultural sites in the wider study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KGG-01 is located in an area of cultivation and grazing land around settlements. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA’s Social and Health Baseline Survey (ARTELIA 2015) and on 5th July 2017. This survey was accompanied by a council member, secretary and elder of Uribo village.

The site is situated in Uriibo Village. ‘Uriibo’ is an Alur word meaning a mixture (unity) or different tribes. Uriibo is also the name of the clan that first settled there. The central point of the site had cassava gardens. The land was relatively flat with some limited areas of shrub and vegetation.

Archaeological sites identified comprise lithics, pottery sherds, complete pots, a pottery scatter and a relatively large number of former homestead sites.



Plate 17-15: An assemblage of pottery collected at KGG-01. All of this material was recovered from within approximately 3m of this spot. Note the numerous fabrics and decorations represented.

The survey also noted charcoal burning mounds, a borehole, a sawmill, and sisal trees used as boundary markers.

There are a number of burial grounds, including one marked by a barkcloth tree, two burial grounds of the Uribo clan, six graves and eight graves of the Manano family.

Places of worship comprise Itambiro Church, Church of Uganda, Pentecostal Church of God, Charismatic Episcopal Church and Uribo Catholic Church. The Full Gospel church is located west of the survey area, and the Kijumbya Catholic Church is southwest of the study area.

Two confirmed cultural sites include a barkcloth tree with cut marks and an *abila*, an *abila* of the Basiabi family in Uduk trees and Lenga plants. Two large tamarind trees are used for community meetings. There is also a possible sacred tree, three possible sacred tamarind trees, and a possible cultural site marked by barkcloth trees.



Kibila with Lenga plants (ACH-02-595)

Table 17-31: Archaeology and cultural heritage identified at KGG-01

Heritage UID	Description
ACH-02-584	Pottery (newly broken and modern).
ACH-02-585	Pottery sherd, roulette-decorated, oblique, polished inside. Found at location of a former homestead.
ACH-02-586	Former homestead that now has pineapples growing.
ACH-02-588	Sacred tamarind tree.
ACH-02-589	Plain, red burnished, sand tempered pottery sherd.
ACH-02-591	Pottery scatter of mainly plain, burnished, red sherds in a very fine paste.
ACH-02-592	Charcoal burning place, shell (modern). One decorated body sherd.
ACH-02-596	Pottery sherds with roulette band decoration. Two plain, one black and sooted and another well-burnished.
ACH-02-598	Former house of Benega Juliet.
ACH-02-599	Former house of Benega Juliet.
ACH-02-601	Uduk trees, pottery handle of a cooking vessel, bone.
ACH-02-603	Three abandoned homesteads, burnished pottery and a quartz core.
ACH-02-604	Lithics, shell (modern).
ACH-02-608	Plain pottery sherd, horizontal roulette-decorated sherd, animal bone (horns) and mud ball for shooting birds.
ACH-02-612	Lithics. Complete set of grinding stone, in current use (modern).
ACH-02-614	Two complete pots, one for cooking beans, which had a base with decoration and a band of roulette around the neck.
ACH-02-615	Animal bone (modern) and sisal tree used as a land boundary marker.
ACH-02-616	Plain, abraded pottery sherds.
ACH-02-617	Plain, abraded pottery sherds.

Heritage UID	Description
ACH-02-619	Abandoned homestead.
ACH-02-621	Plain, reddish pottery sherd.
ACH-02-624	Lithics. Half of a grinder or mudding stone.
ACH-02-626	Lithics and pottery sherds. Small fragments of plain pottery, one type still in use for cooking beans.
ACH-02-620	Burial ground. It has several graves including one cemented grave with words of Matthew 5(1) on Matayo Ovoya grave. There is a barkcloth tree to mark the grave site. The few names of the dead known include: Teopista, Onega Joseph, Jaba Paul, Okello Nestroy, Jetu. The site has been used for burial since the care taker Onen Ejino who is 61 years was still a child. The site is no longer used for burial due to the fear of the nearby quarry site.
ACH-02-622	Burial ground of 25 graves that was shifted from WP 604. It is still for the Uribo clan and has been used since 1997, the caretaker is Simon Tholac.
ACH-02-627	Burial ground. Three cemented graves of Katirina Ukoko who died in 1998, Okumu and Ojok Richard who passed on in 2004. Three further graves are not cemented - Achen, Apiyo and Brian Fathum.
ACH-02-611	Burial ground of eight individuals. The dead are: Harriet Manano, Kayeni Manano, Akumu Janet, Doreen Amiya, Achen, Alfred Manano, Thiwe, Monica Samuel Manano and Bidong Grace. The burial site is for the Manano family and is currently under the care of Luka.
ACH-02-602	Burial ground of the Uribo clan, Uribo is a name for both the village and the clan. Uriibo is an Alur word meaning a mixture (unity) or different tribes. Some graves have bottles that are used for putting in holy water and flowers. There are four cemented graves, and numerous uncemented graves.
ACH-00-200	Itambiro Church (Itambiro Iya Bisaka).
ACH-00-201	Church of Uganda.
ACH-00-202	Pentecostal Church of God.
ACH-00-203	Charismatic Episcopal Church.
ACH-00-204	Church of God.
ACH-00-489	Full Gospel church.
ACH-00-497	Kijumbya Catholic Church. Started in 1972 by the community.
ACH-02-618	Uribo Catholic Church.
ACH-02-623	Cultural site and barkcloth tree with cut marks. The tree is used to get sap for trapping birds, there is also Abira at the same place.
ACH-02-595	Cultural site in Uduk trees with well-designed lenga plants. The Abira requires sacrifice every appearance of the new moon. Close to it is a big barkcloth tree. The site is for the Basiabi clan. Within the Kibila are pottery and bone scatters possibly associated with the ritual activities at the site. They use the site especially with the appearance of the new moon. The site is used for snake bites, curses and barrenness.
ACH-02-609	Sacred tree, plain pottery sherd, pottery sherd with horizontal roulette decoration.
ACH-02-610	Two big tamarind trees used for community meetings and some other Scamoa trees for treating wounds.
ACH-02-625	Possible sacred tree (tamarind) and lithic basalt core.
ACH-02-588	Sacred tree (tamarind).
ACH-02-600	Probable cultural site. Three hutlike barkcloth trees, the same type of trees are used to mark graves, especially for burials where the dead body was not seen and they just bury clothes (drowning).
ACH-02-613	Sacred tree - the tamarind tree is used for the shade. Pottery sherds. Lithic core that was prematurely abandoned and might have been used for spreading mud on the outside of houses.

The location of archaeology and cultural heritage assets identified at the Wellpad KGG-01 are shown on Figure 17-29 and Figure 17-30.

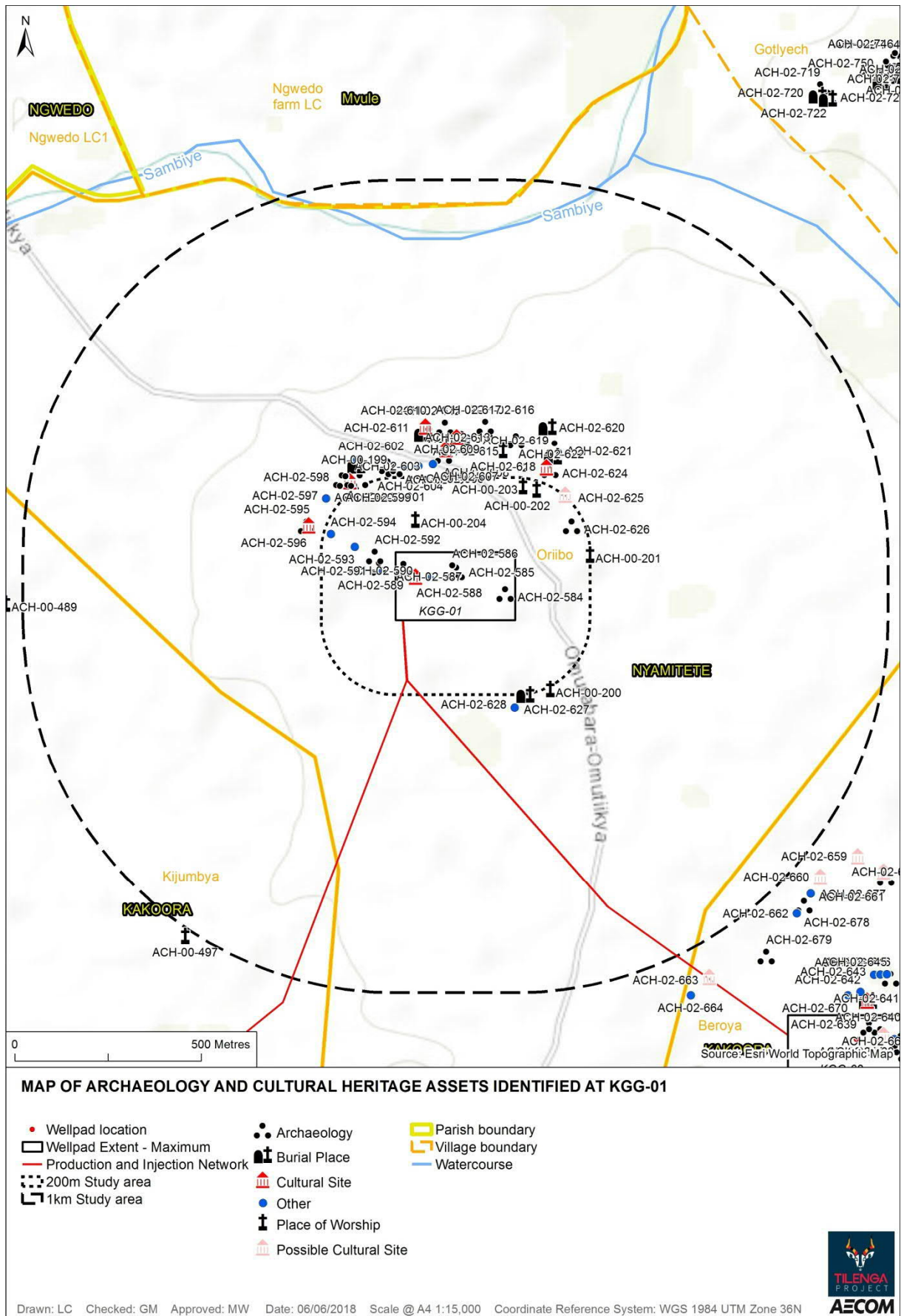


Figure 17-29: Map of archaeology and cultural heritage assets identified at KGG-01

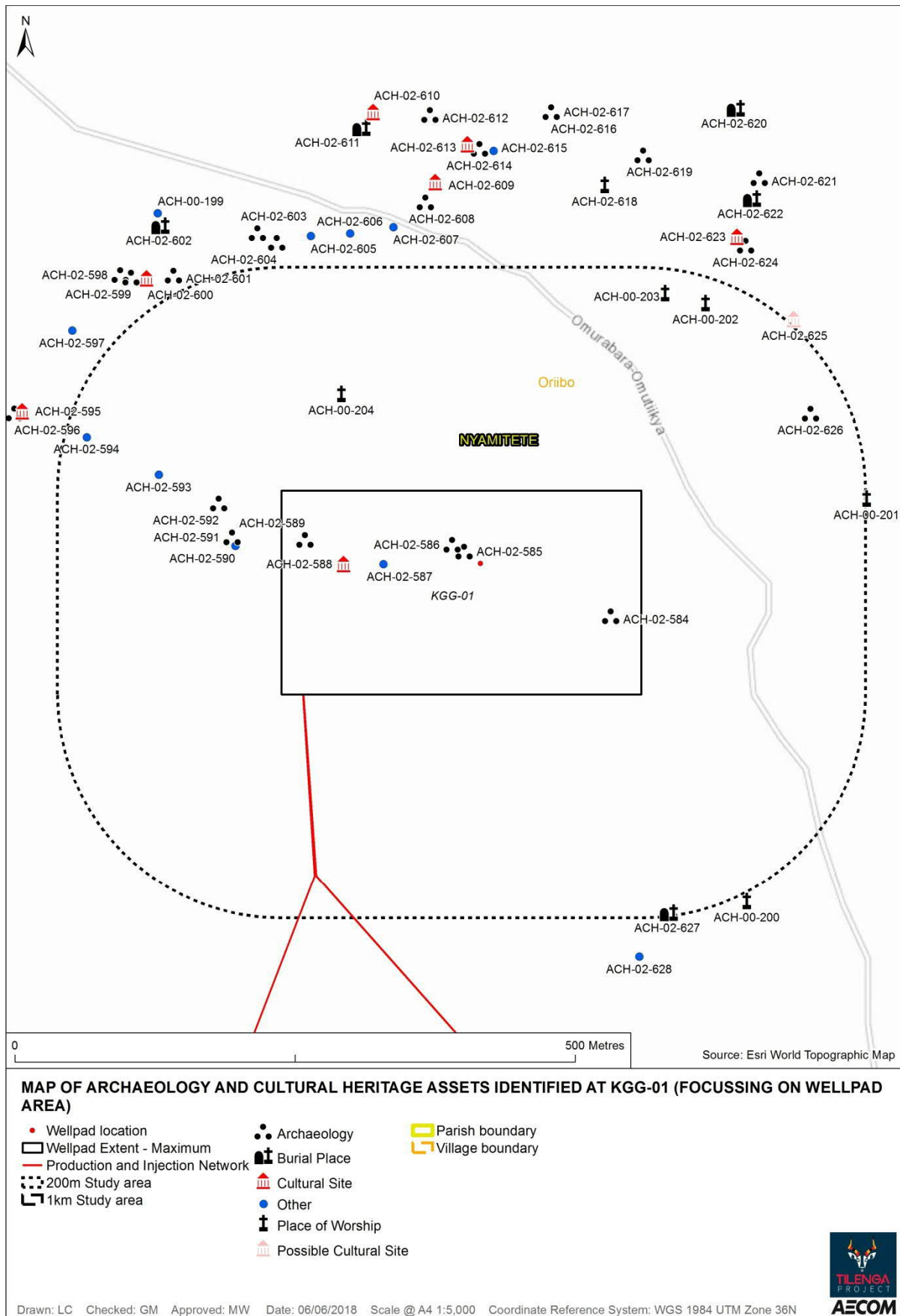


Figure 17-30: Map of archaeology and cultural heritage assets identified at KGG-01 (focussing on wellpad area)

17.6.5.23 Kigogole Field – Well Pad KGG-03 (Beroya) (LA-2)

A single platform core (ACH-02-639) and pottery (ACH-02-669) were identified within the proposed footprint of wellpad KGG-03. A barkcloth tree, possibly a cultural site (ACH-02-638), was also located within the footprint area, although pottery observed in the upcast of a charcoal mound may be modern in date (ACH-02-667).

Three further assets were recorded in the Land Acquisition Extents. These were all lithics and included a quartzite core (ACH-02-637), and basalt core (ACH-02-636) and a flake (ACH-002-633).

The archaeological receptors within KGG-03 are assessed as being of low (local) significance, due to the relative paucity of the isolated materials and proximity to recently abandoned homesteads.

Burial grounds, places of worship and cultural sites within KGG-03 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KGG-03 is located in an area mainly used for cultivation, with some grazing land, with some areas of settlement, in Uriibo village. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA’s Social and Health Baseline Survey (ARTELIA 2015) and on 4th July 2017. The surveyors were assisted by an elder of Uriibo village and a local council executive member to identify the cultural sites and medicinal plants.

Archaeological sites identified in the survey comprise MSA lithic cores and flakes, debitage, an end scraper, a grinding stone, a house rubbing cobble, pottery sherds and a series of abandoned homesteads. The survey also noted charcoal burning mounds and sisal trees used as boundary markers.

One extensive burial ground was recorded, which has been in use since 1977.

Places of worship comprise Ugonio Beroya Church and Kakoora Catholic Church, both located south of the KGG-03 study area.

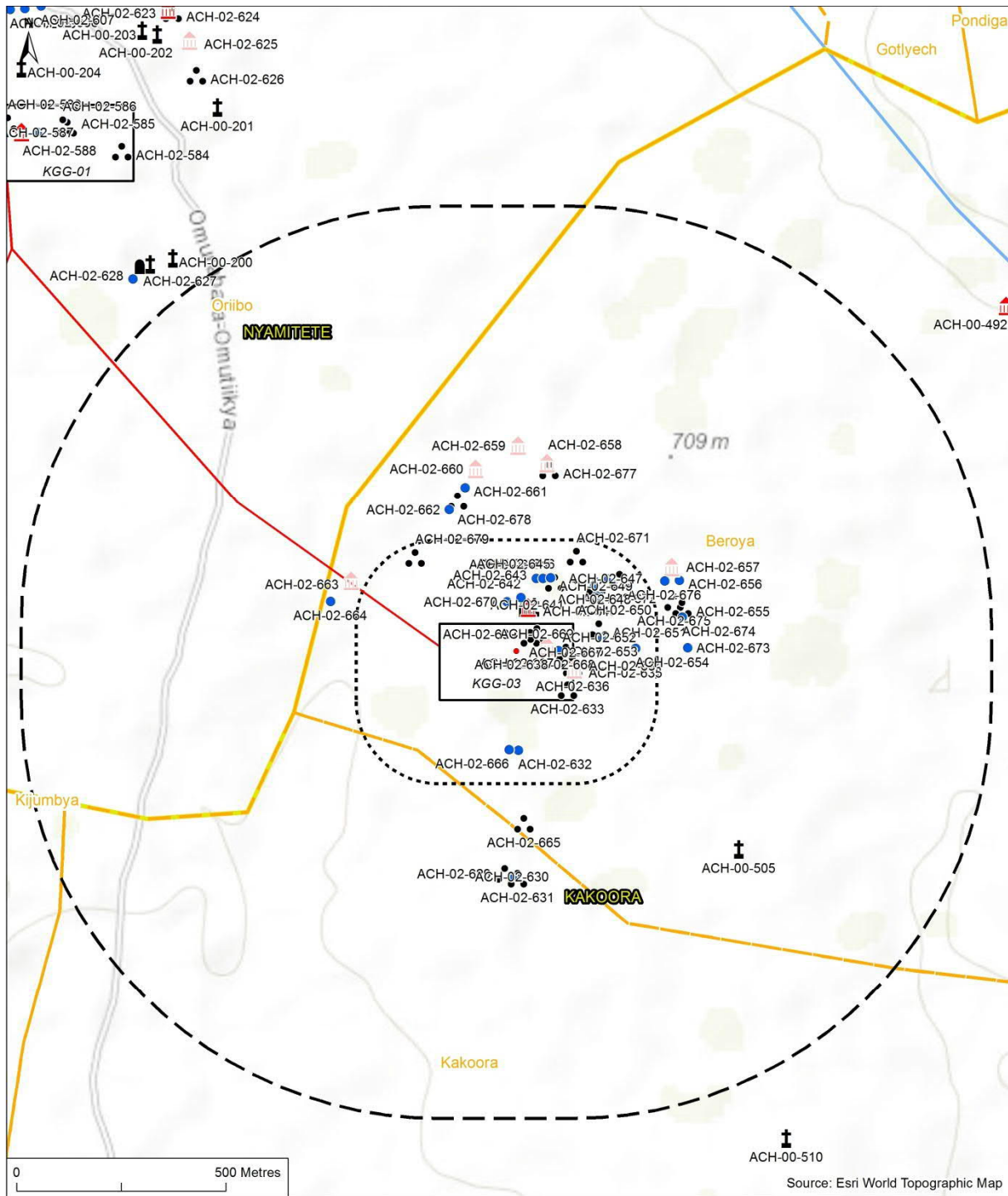
Cultural sites include the Beroya Sacred place at a large tree (location uncertain; ACH-00-492), a community tree meeting point at a large *Mukeeku* tree, and a possible family shrine (*kibila* in *Lugungu*, and *Abila* in *Alur*) in a lenga tree facing a house entrance. Four *Nnonga/Musisiye* trees, called *Muge* in Alur, were noted. *Nnonga/Musisiye* trees are often associated with traditional worship and may be cultural sites. A spear planted in the ground may be a traditional religious site.

Table 17-32: Archaeology and cultural heritage identified at KGG-03

Heritage UID	Description
ACH-02-633	Whole struck stone flake with a prepared platform (Middle Stone Age).
ACH-02-636	Lithic core on basalt.
ACH-02-637	Lithic core on quartzite.
ACH-02-629	Abandoned homestead.
ACH-02-631	Two abandoned homesteads with a lot of <i>Uduk</i> trees at one of the homesteads making a line.
ACH-02-655	Abandoned homestead with the plants used as soap; the owner of the house left it because it was isolated and built another close to people.
ACH-02-639	Basalt lithic core. Prepared platform of a single platform core.
ACH-02-646	Lithic grinding stone and medicinal plant (<i>Mukeeku</i> tree).
ACH-02-651	Lithic house rubbing cobble for smoothing mud on walls.
ACH-02-649	Metal object – spear. Possible traditional religious site (<i>kibila</i>).
ACH-02-677	Pottery sherd.
ACH-02-678	Pottery sherd, plain and slipped.
ACH-02-679	Lithic debitage in quartz.
ACH-02-671	End scraper in quartz.
ACH-02-672	Slipped pottery sherd.
ACH-02-675	Lithic flake in quartz.
ACH-02-664	Abandoned homestead.

Heritage UID	Description
ACH-02-667	Charcoal burning point (modern) with plain pottery and burnished.
ACH-02-669	Pottery neck and shoulder but plain.
ACH-02-665	Pottery sherd.
ACH-02-641	Burial ground. Graves are not cemented; two are clear but there was a burial to take place the following day, 5th July 2017. Graveyard used since 1977, the care takers do not know the number of graves present.
ACH-00-505	Ugonio Beroya Church, in a settlement.
ACH-00-510	Kakoora Catholic Church, built in 1994.
ACH-00-492	Beroya Sacred place. There is a great tree, localisation is not sure.
ACH-02-640	Cultural site - community tree. Meeting point in a big Mukeeku tree.
ACH-02-635	Probable cultural site. The lenga tree directly facing the house entrance may be kibila.
ACH-02-658	Nnongo/Musisiye trees usually also associated with traditional worship.
ACH-02-659	Nnongo/Musisiye trees usually also associated with traditional worship.
ACH-02-660	Nnongo/Musisiye trees usually also associated with traditional worship.
ACH-02-663	Nnongo/Musisiye or Muge in Alur, trees usually also associated with traditional worship.

The location of archaeology and cultural heritage assets identified at the Wellpad KGG-03 are shown on Figure 17-31 and Figure 17-32.



MAP OF ARCHAEOLOGY AND CULTURAL HERITAGE ASSETS IDENTIFIED AT KGG-03

- Wellpad location
- ◻ Wellpad Extent - Maximum
- Production and Injection Network
- ⋯ 200m Study area
- ⊞ 1km Study area
- Archaeology
- ⊞ Burial Place
- ⊞ Cultural Site
- Other
- ⊞ Place of Worship
- ⊞ Possible Cultural Site
- ▭ Parish boundary
- ▭ Village boundary
- Watercourse

Drawn: LC Checked: GM Approved: MW Date: 06/06/2018 Scale @ A4 1:15,000 Coordinate Reference System: WGS 1984 UTM Zone 36N



Figure 17-31: Map of archaeology and cultural heritage assets identified at KGG-03

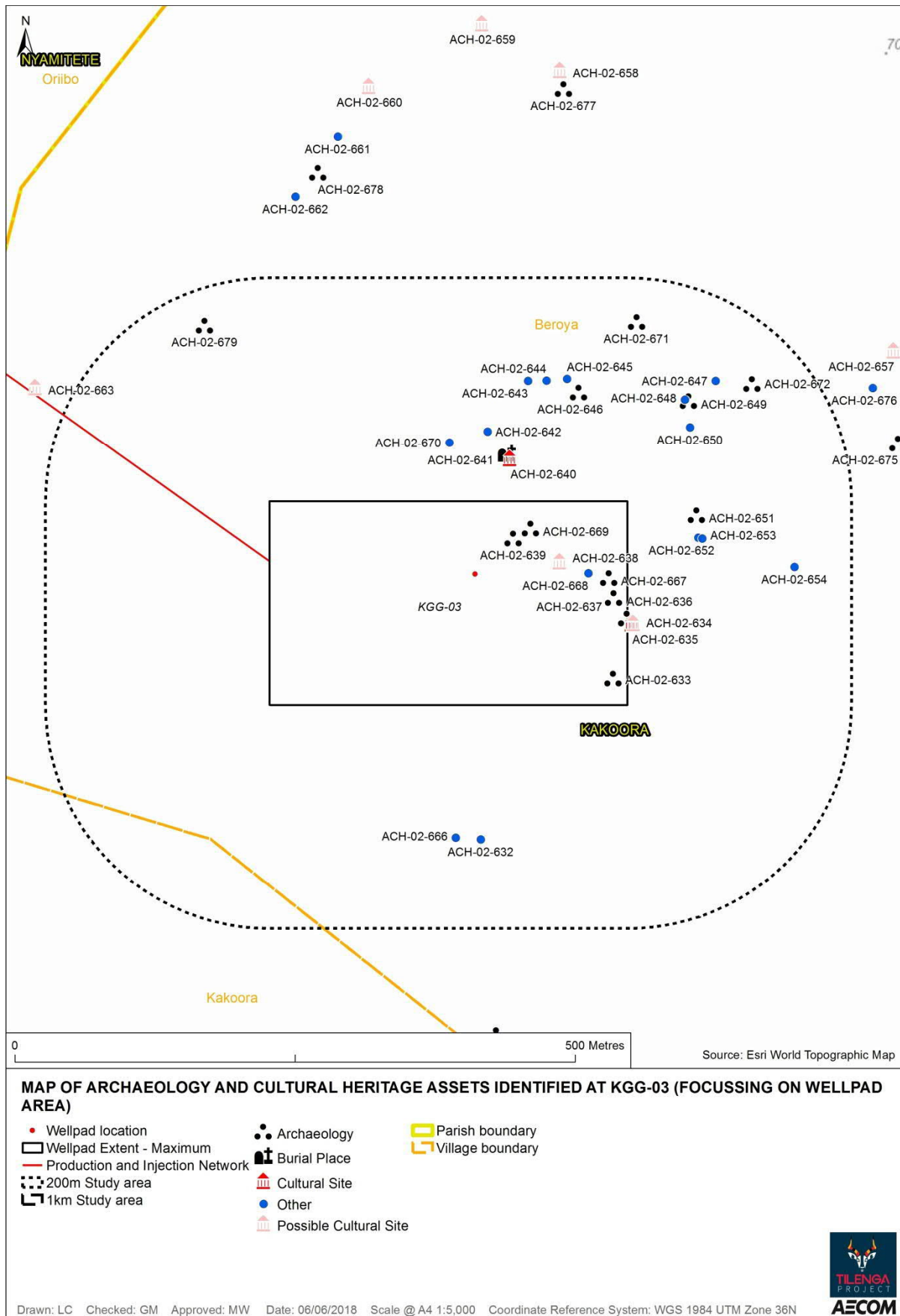


Figure 17-32: Map of archaeology and cultural heritage assets identified at KGG-03 (focussing on wellpad area)

17.6.5.24 Kigogole Field – Well Pad KGG-04 (Kijumbya) (LA-2)

A plain pottery sherd (ACH-02-680) was recorded within the proposed footprint of the wellpad.

The archaeological receptors within KGG-04 are assessed as being of low (local) significance, due to the relative paucity of materials.

Burial grounds, places of worship and cultural sites within the wider KGG-04 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KGG-04 is located in an area largely used for cultivation and grazing in Kijumbya village. The wellpad area was subject to archaeology and cultural heritage survey in the course of ARTELIA's Social and Health Baseline Survey (ARTELIA 2015) and on 4th July 2017. This survey was accompanied by the Kijumbya village chairperson and an elder.

Archaeological sites comprise pottery sherds.

A burial ground of the Abira clan has been in use since 1964.

One cultural site and sacrificial place was noted. Surveys noted several modern charcoal burning points and a Barkcloth tree (*Mutooma*).

One place of worship was noted, Kijumbya Church of Uganda.

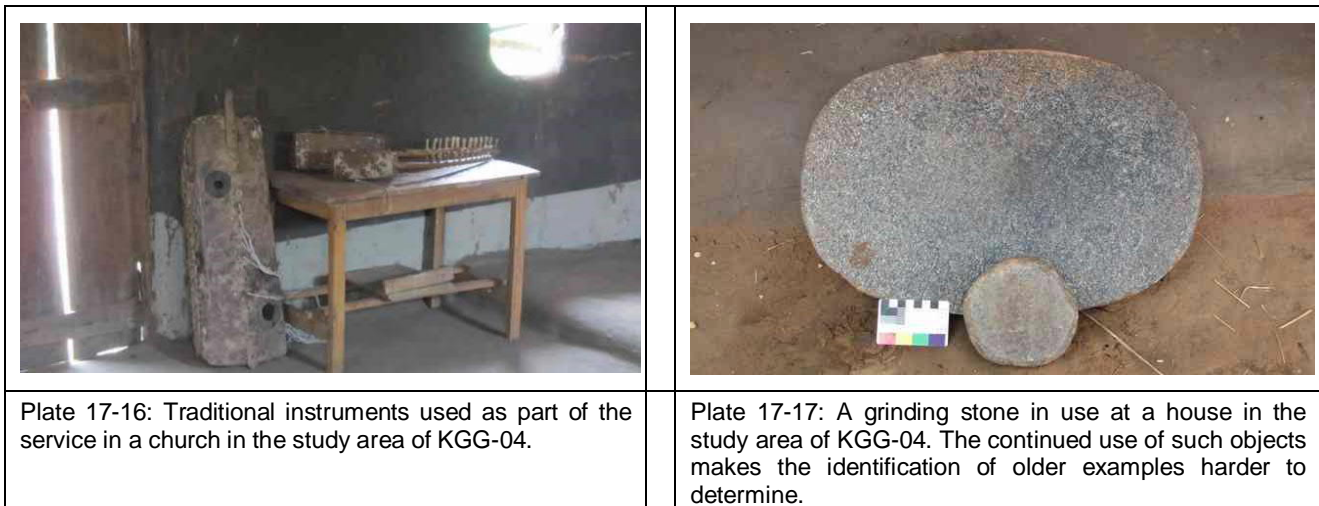


Table 17-33: Archaeology and cultural heritage identified at KGG-04

Heritage UID	Description
ACH-02-680	Plain pottery sherd.
ACH-02-688	Charcoal burning point (modern) with plain pottery.
ACH-02-690	Pottery sherd.
ACH-02-692	Pottery sherds - rim and body.
ACH-02-693	Pottery sherd.
ACH-02-694	Burial place since 1964, but many graves can't be seen properly. Nelson Ovata is the caretaker. Abira clan.
ACH-00-205	Kijumbya Church of Uganda.
ACH-02-684	Cultural site and sacrificial place. <i>Chaw</i> (Tamarind tree) cultural site, where they sacrifice six chickens of different colours.
ACH-02-691	<i>Mutooma</i> (Barkcloth tree)

The location of archaeology and cultural heritage assets identified at the Wellpad KGG-04 are shown on Figure 17-33 and Figure 17-34.

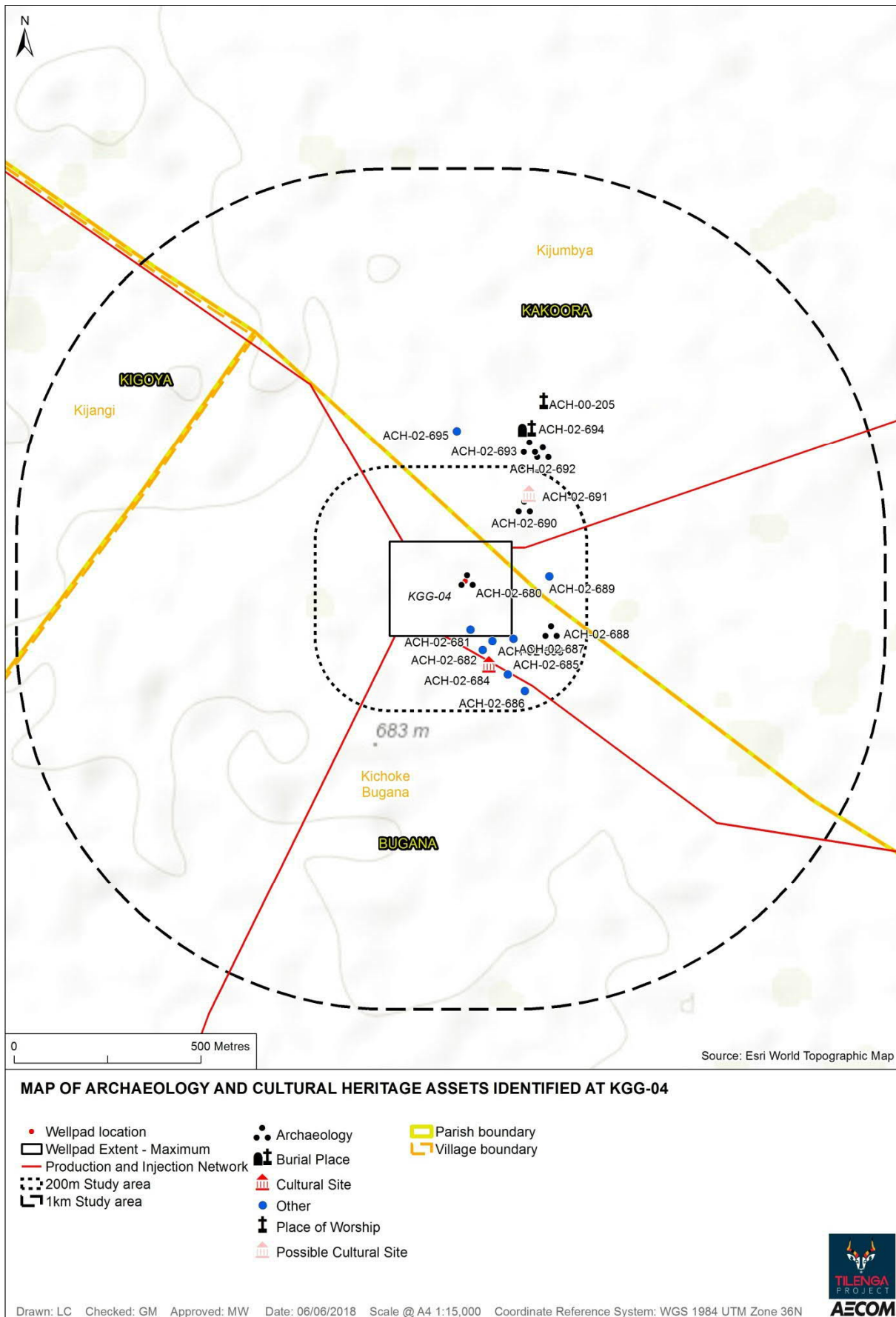


Figure 17-33: Map of archaeology and cultural heritage assets identified at KGG-04

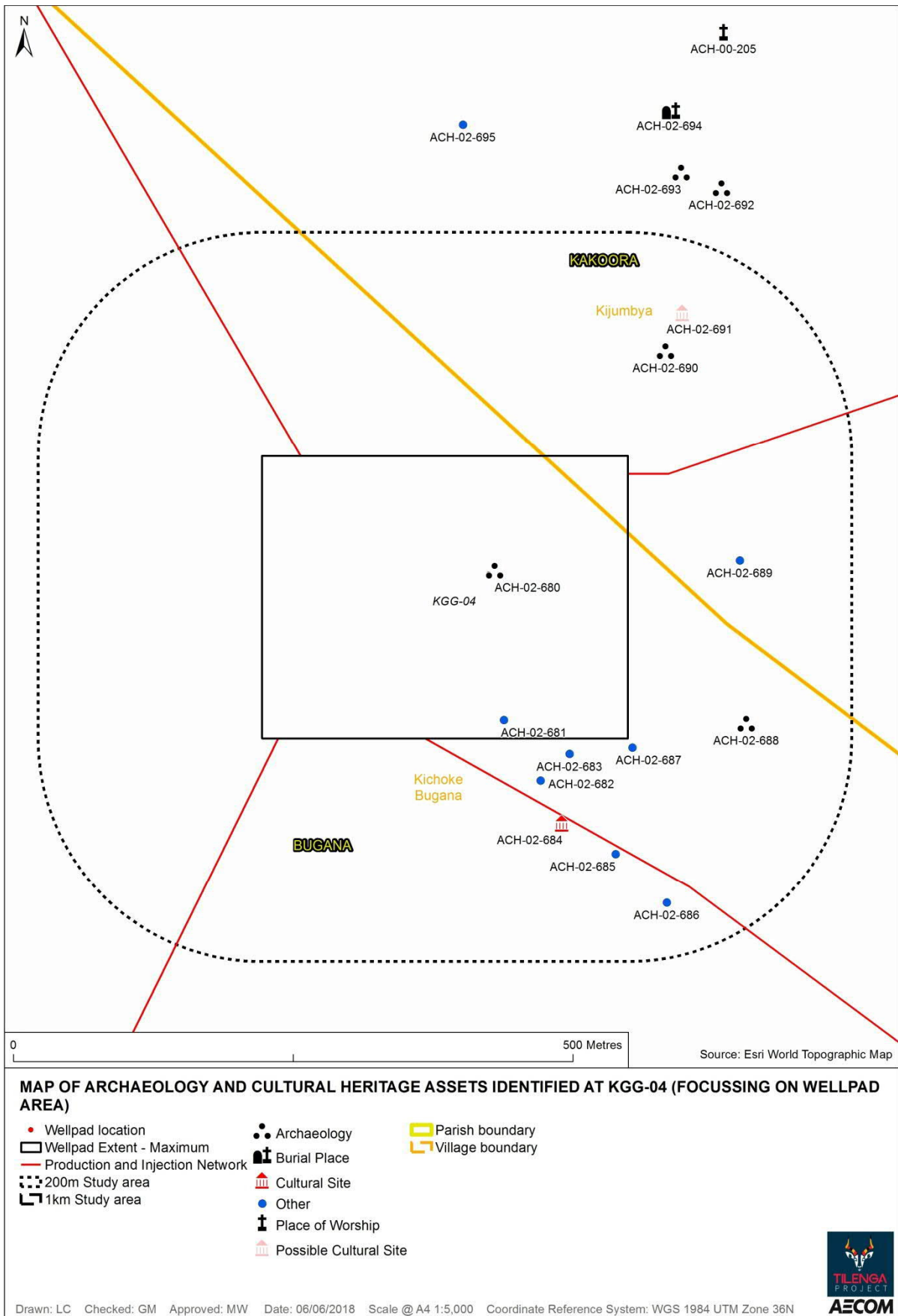


Figure 17-34: Map of archaeology and cultural heritage assets identified at KGG-04 (focussing on wellpad area)

17.6.5.25 Kigogole Field – Well Pad KGG-05 (Pandiga) (LA-2)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad. A single quartz flake was recorded within the Land Acquisition Extent area (ACH-02-714).

The archaeological receptors within the wider KGG-05 study area are assessed as being of low (local) significance, due to the relative paucity of materials. Burial grounds and places of worship at KGG-05 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KGG-05 is located in an area of cultivation and grazing land in the villages of Pandiga and Gotlyech. The wellpad area was subject to archaeology and cultural heritage survey in the course of Social Screening survey (ARTELIA 2013) and on 6th July 2017. The surveyors consulted the chairpersons of Pandiga and Gotlyech villages.

Gotlyech means a place where elephants lived. It is said elephants used to live in the area. KGG-05 is located on the slope towards Sambye River's eastern side. The land cover is mixed with arable and large areas of mature long grass, some pockets of shrub making some parts of the site inaccessible due to vegetation.

Archaeological sites comprise lithics, pottery sherds, concentrations of pottery sherds, daub, and the ruins of demolished or abandoned homesteads. Surveys noted several modern charcoal burning points. Roulette-decorated pottery dates to the Late Iron Age, while dense pottery scatters may reflect ritual activities.

Burial places within KGG-05 comprise six burials under a *Mutooma* tree and a Mango tree, a graveyard marked by five large Mango trees and a number of additional small burial grounds.

One place of worship was noted in the study area, Ngwedo Farm church.

Medicinal plants not seen at the other wellpad sites comprise *Olwedo* tree and *Urweti* plants.

Table 17-34: Archaeology and cultural heritage identified at KGG-05

Heritage UID	Description
ACH-02-696	Daub found in a demolished structure.
ACH-02-697	Plain pottery sherd with thick body tempered with sand and grog.
ACH-02-700	Plain pottery and medicinal plant (Musingabakazi tree).
ACH-02-701	Single quartz platform core.
ACH-02-702	Plain pottery sherd found in the bed of the seasonal Sambye River.
ACH-02-703	Roulette-decorated pottery sherd found in the bed of the seasonal Sambye River.
ACH-02-706	Pottery sherd and medicinal plant (Mukwakwa).
ACH-02-714	Quartz flake.
ACH-02-711	Shell (modern). One decorated rim sherd. Very thin.
ACH-02-719	Pottery sherd.
ACH-02-721	Three pottery sherds, one with mamiliated decoration, one with cross hatching, one plain. Modern.
ACH-02-723	Roulette-decorated pottery sherd with a thick body.
ACH-02-724	Roulette-decorated pottery sherds from same vessel.
ACH-02-725	Plain, medium-sized pottery sherd, burnished, grey, in fine paste.
ACH-02-726	Plain, burnished thin-bodied pottery sherd.
ACH-02-727	Two pottery sherds.
ACH-02-728	Tiny, plain black pottery sherds.
ACH-02-729	Concentration of pottery sherds in a newly cultivated cassava garden. Samples taken.
ACH-02-730	Plain, thin bodied and burnished pottery sherd.
ACH-02-733	Plain, dark pottery sherd.
ACH-02-734	Small pottery sherd, structure of abandoned homestead with no roof.
ACH-02-735	Burnished, thin bodied and plain pottery sherd.

Heritage UID	Description
ACH-02-736	Plain pottery sherd.
ACH-02-737	Concentration of pottery sherds.
ACH-02-738	Pottery sherds on a mound.
ACH-02-739	Charcoal burning mound (modern), basalt cobble.
ACH-02-742	Pottery sherd, plain and burnished.
ACH-02-746	Reddish burnished pottery sherd.
ACH-02-748	Pottery rim sherd, neem trees and pineapples.
ACH-02-750	Abandoned homestead structure.
ACH-02-751	Roulette-decorated pottery sherd.
ACH-02-752	Plain pottery sherd.
ACH-02-720	Burial place. Six burials under a Mutooma tree and a Mango tree. Matuugo Charles is the caretaker.
ACH-02-722	Burial ground. The caretaker is Bigirwa Eid.
ACH-02-740	Burial ground. One cemented. The dead are: Augustino Mbiya (1936-2011) the husband of Wekotho Terezina, Okaba Yosefu, Byaruhanga (child not yet baptised) and a miscarried baby.
ACH-02-745	Burial place. Five large mango trees mark the graveyard, two graves. All graves are uncemented and one name of Nyabigambo is known.
ACH-02-749	Burial ground. Five burials. Not clearly marked or cemented. Angulata Abalo, born in 1973, claimed she had buried five of her children here.
ACH-00-206	Ngwedo Farm church. Ngwedo was a name of the first Alur who settled in the place.
ACH-02-368	Burial ground with seven uncemented graves.
ACH-02-361	Two uncemented graves.

The location of archaeology and cultural heritage assets identified at the Wellpad KGG-05 are shown on Figure 17-35 and Figure 17-36.

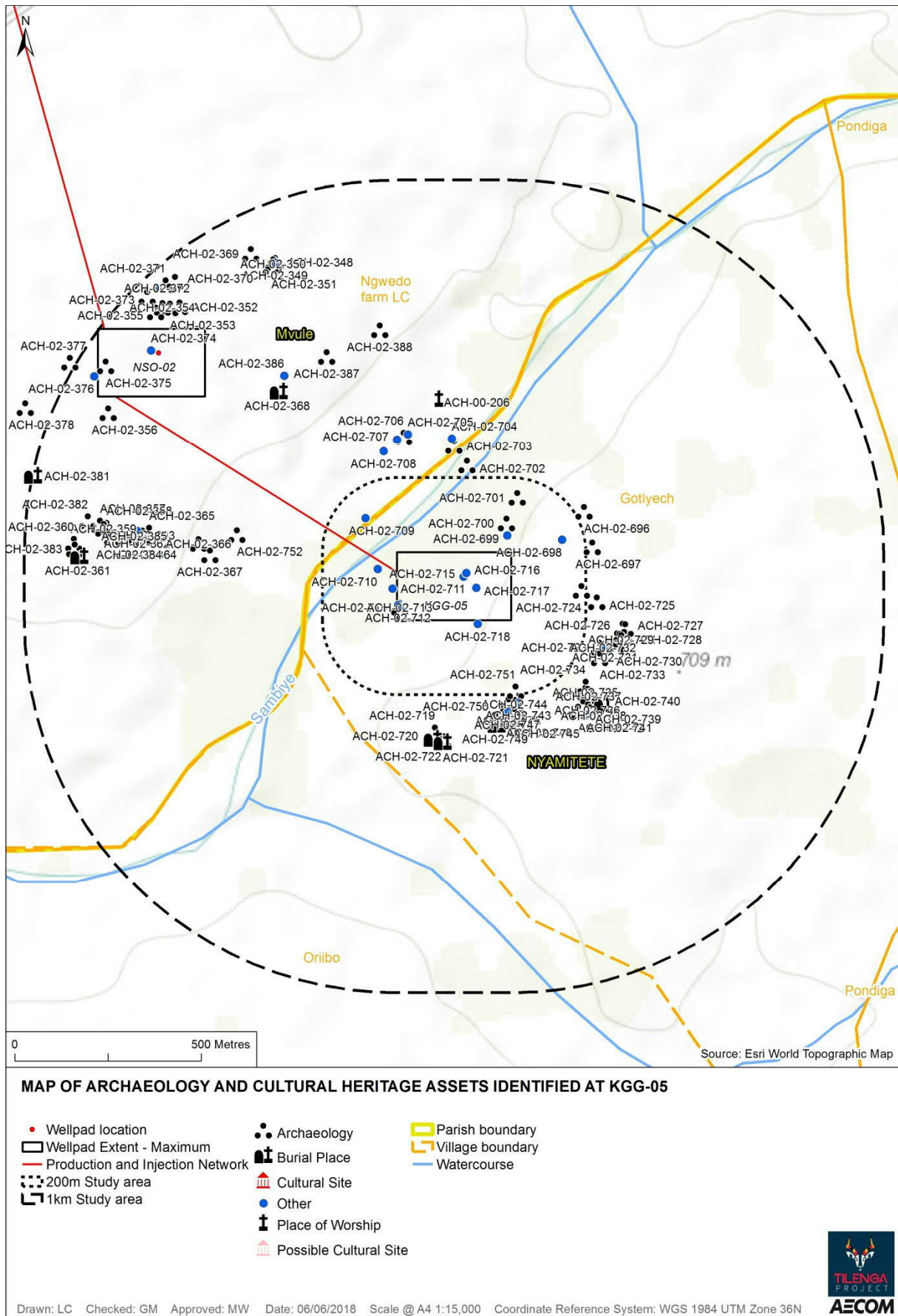


Figure 17-35: Map of archaeology and cultural heritage assets identified at KGG-05

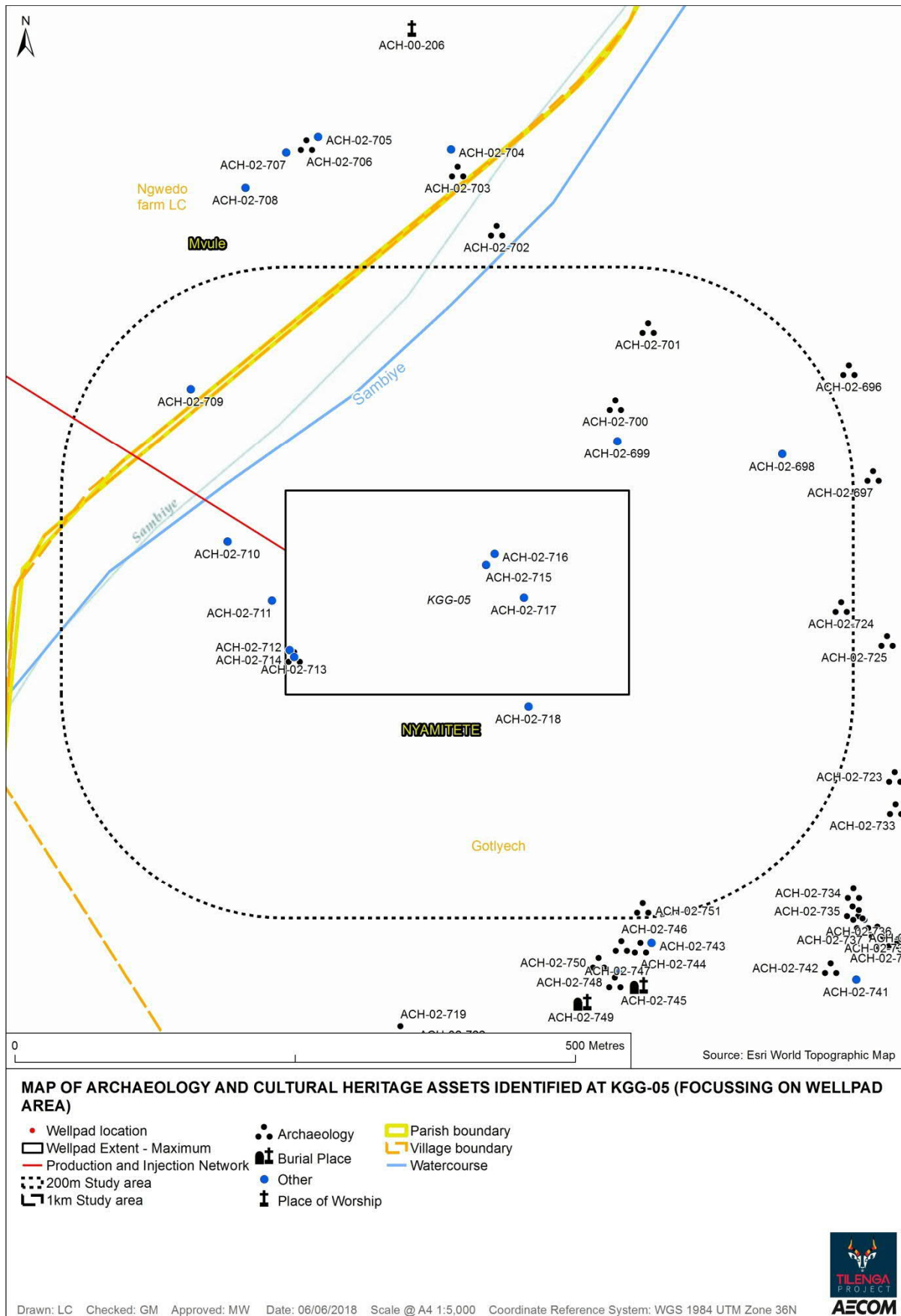


Figure 17-36: Map of archaeology and cultural heritage assets identified at KGG-05 (focussing on wellpad area)

17.6.5.26 Kigogole Field – Well Pad KGG-06 (Bugana-Kichoke) (LA-2)

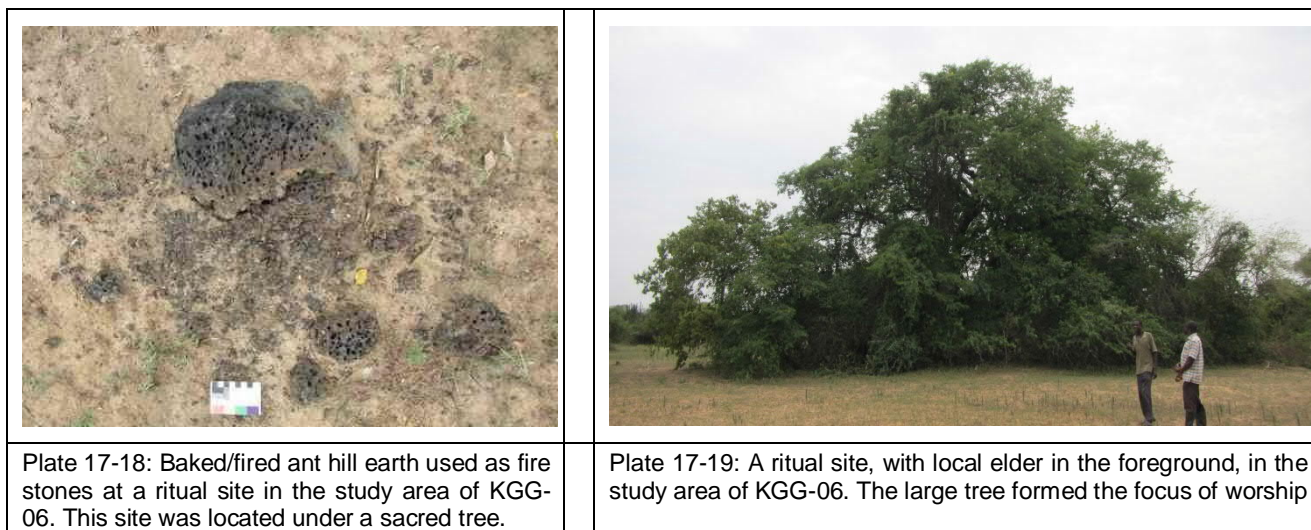
Plain and decorated pottery sherds (ACH-02-777; ACH-02-783; ACH-02-793) have been identified within the proposed footprint of wellpad KGG-06.

The archaeological receptors within the wider KGG-06 study area are assessed as being of low (local) significance, due to the relative paucity of materials. Cultural sites at KGG-06 are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KGG-06 is located in an area of grazing land in Bugana Kichoke village. The wellpad area was subject to archaeology and cultural heritage survey on 3rd July 2017. Surveys were accompanied by the Chairman of Ngwedo Farm and Bugana-Kichoke cultural leaders were consulted.

Archaeological sites identified in the survey comprise pottery sherds and daub. The survey noted numerous recent charcoal burning mounds.

A cultural site called *Chwa*, used for rain making, is located at the site of a burned tamarind tree. Further possible cultural sites noted in the survey, but not verified by practitioners, comprise a fire place in a *Munongo* tree, cooking stones in *Nnongo* and *Musingabakazi* trees, a possible sacrificial place in a tamarind tree, an *Amarula* tree, and a large tamarind tree.



Medicinal plants noted include *Musingabakazi*, *Mudidiyo*, *Mukodoyi*, *Mukabyakabya*, *Musonge*, *Mutuula/Amarula*, *Mukondwe*, *Kulumbero*, *Lenga*, cactus and tamarind.

Table 17-35: Archaeology and cultural heritage identified at KGG-06

Heritage UID	Description
ACH-02-760	Charcoal burning mound (modern), pottery sherd.
ACH-02-766	Charcoal burning mound (modern), pottery sherds.
ACH-02-768	Daub.
ACH-02-770	Large fragment of pottery in a modern charcoal burning mound.
ACH-02-772	Charcoal burning mound (modern), three plain red potsherds, slipped, with sand temper.
ACH-02-777	Plain pottery sherd, thin bodied and well-burnished.
ACH-02-783	Plain pottery sherd.
ACH-02-793	Incised pottery sherd with black slip and sand temper; Musingabakazi tree.
ACH-02-762	Cultural site. Fire place in a Munongo tree like those for the Sambye River sites with chicken feathers.
ACH-02-765	Cultural site. Fire cooking stones, in Nnongo tree and Musingabakazi.
ACH-02-767	Cultural site. Sacrificial place in a tamarind tree, interior is very clean with animal bones.
ACH-02-769	Cultural site. Amarula tree with black chicken feathers and red ones too.

Heritage UID	Description
ACH-02-787	Sacrificial place. Very big tamarind tree with chicken bones and feathers.
ACH-02-802	Cultural site. It is called Chwa and was in a tamarind tree but that had been burnt. The site is used for rain making processes where they take chicken of six different colours) the site is widely known in the village.

The location of archaeology and cultural heritage assets identified at the Wellpad KGG-06 are shown on Figure 17-37 and Figure 17-38.

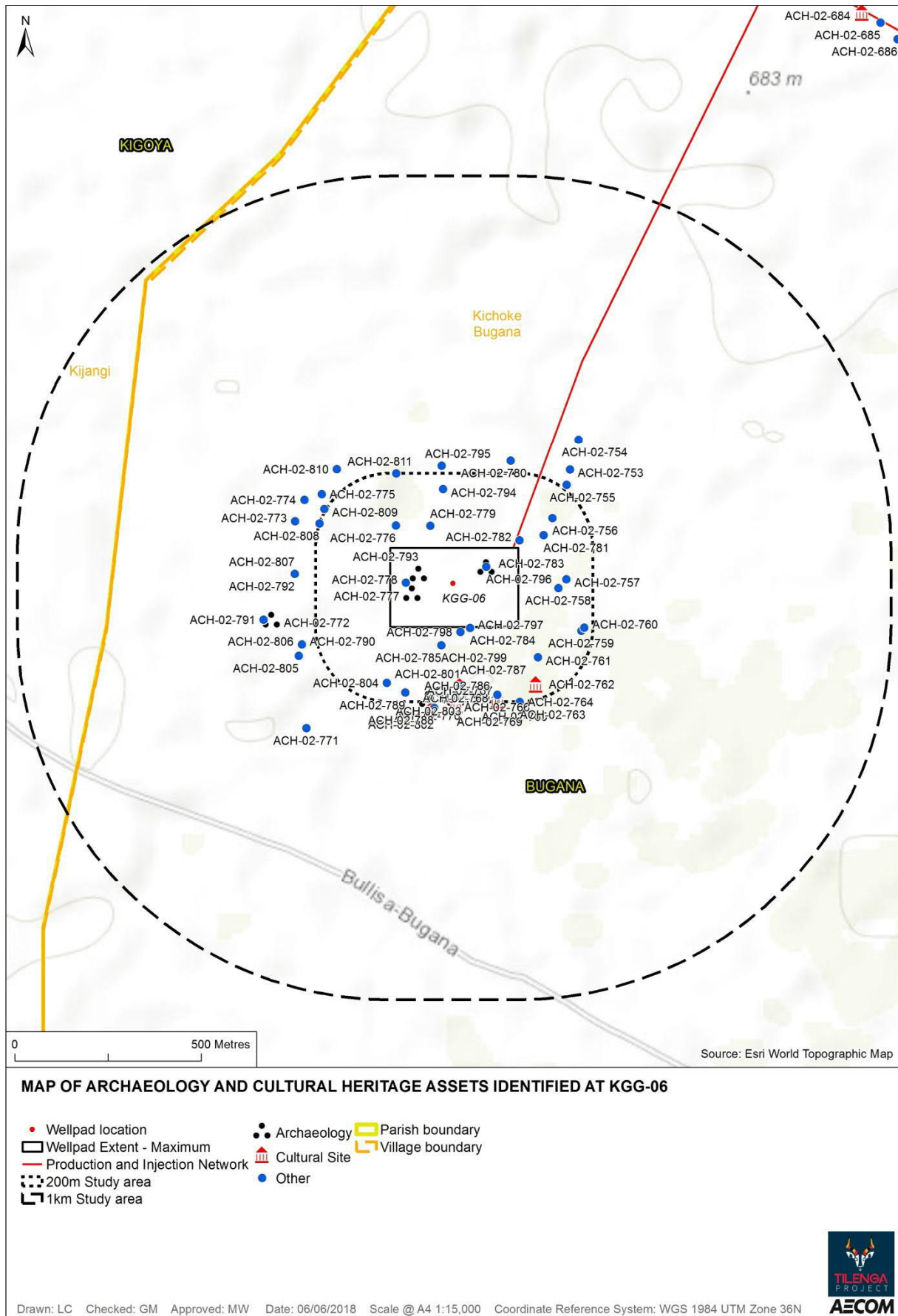


Figure 17-37: Map of archaeology and cultural heritage assets identified at KGG-06

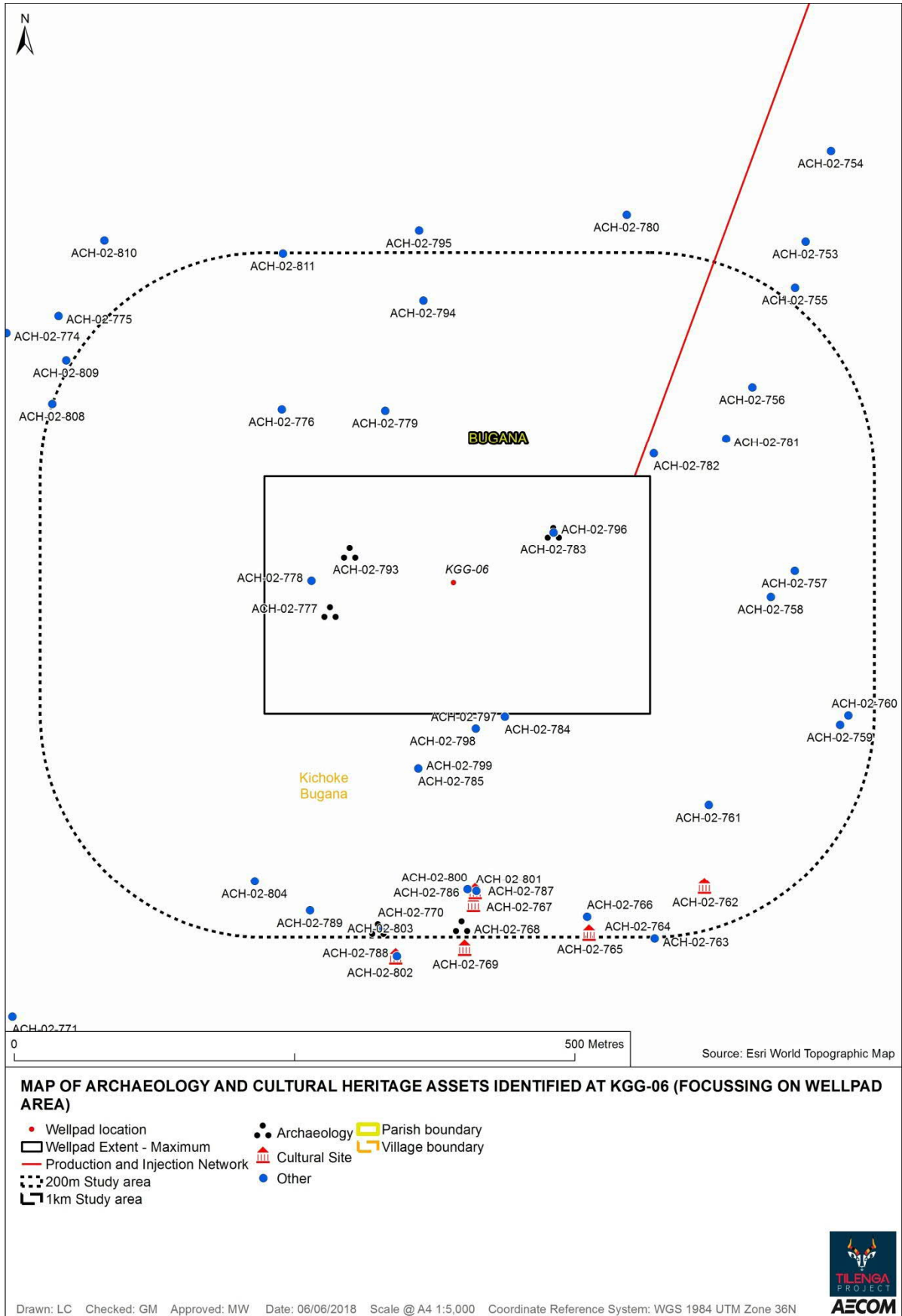


Figure 17-38: Map of archaeology and cultural heritage assets identified at KGG-06 (focussing on wellpad area)

17.6.5.27 Kigogole Field – Well Pad KGG-09 (Kijumbya) (LA-2)

A single receptor has been identified during walkover surveys in the KGG-09 proposed wellpad area. This is an undecorated pottery sherd (ACH-02-847). In addition to this a large potter vessel, used for water collection under a jackfruit tree, was observed in the Land Acquisition Extents (ACH-02-822).

The archaeological receptors identified within the wider KGG-09 study area are assessed as being of low (local) significance, due to the relative paucity of materials. No places of worship or sacred sites were noted.

Wellpad KGG-09 is located at Kijumbya. The wellpad area was subject to archaeology and cultural heritage survey on 5th July 2017. This survey was accompanied by cultural leaders of Kijumbya Village.

The central point of the wellpad survey area was in an undulating arable landscape with extensive areas of overgrown, inaccessible scrub. The north western quadrant is also highly vegetated. Archaeological remains were visible in upcast soil in some areas of cultivation. They comprise lithics, lithic cores and flakes, pottery sherds, a large water collecting vessel, and an overgrown area of abandoned homesteads. Pottery was plain, thick bodied, burnished and tempered with sand with roulette decoration.



Plate 17-20: Pottery identified in the mud walls of a structure in KGG-09. The pottery had been excavated from a clay pit nearby during the construction of the house.

Plate 17-21: An example of a tree being used for rainwater collection in KGG-09. Note the broken pottery still being utilised.

The survey noted numerous recent charcoal burning mounds. Surveyors noted that sisal plants were used as boundary markers.

The site has a number of medicinal plants such as *Mbumbuula*, *Uduk*, *Musingabakazi*, cactus, mangoes, *Mulolo* (sausage tree), tamarind and *Marula* which are also common in other surveyed areas.

Table 17-36: Archaeology and cultural heritage identified at KGG-09

Heritage UID	Description
ACH-02-812	Lithic core.
ACH-02-813	Three plain pottery sherds, thick bodied, burnished and tempered with sand, fine paste.
ACH-02-814	Plain pottery sherd.
ACH-02-815	Pottery sherd.
ACH-02-816	Brick-red roulette-decorated pottery built into a house wall.
ACH-02-818	Quartz lithic core of an axe, dihedral platform, and periphery worked.
ACH-02-822	Large pottery vessel used to collect water. It is under a jack fruit tree. There are three jack fruit trees here, pawpaws and mangoes. The pot is highly abraded may have been in use for a long time.
ACH-02-823	Two pottery sherds, one red and one ash grey.
ACH-02-824	Plain black pottery sherd.
ACH-02-825	Thick-bodied, burnished pottery sherd, possibly from a beer making pot.
ACH-02-826	Plain thin-bodied pottery sherds. One rim sherd and other plain sherds.
ACH-02-829	Two abraded body sherds.
ACH-02-830	Plain body sherd, reddish grey and sand-tempered.
ACH-02-831	Quartz lithics.
ACH-02-832	Sausage tree, plain medium sized pottery sherd tempered with sand.
ACH-02-833	Scatter of plain, thin-bodied potsherds.
ACH-02-834	Two pottery sherds.
ACH-02-835	Plain pottery sherd noted in road cutting.
ACH-02-836	Plain, blackish pottery sherd and a reddish pottery sherd.
ACH-02-837	Very thick pottery rim sherd.
ACH-02-838	Plain pottery sherd.
ACH-02-839	Prepared quartz core. Dihedral platform and periphery worked.
ACH-02-840	Pottery sherd.
ACH-02-841	Quartz flake.
ACH-02-842	Abraded pottery sherd with sand and grog temper.
ACH-02-843	Pottery sherd.
ACH-02-847	Plain pottery sherd.
ACH-02-848	Pottery sherd with roulette decoration.
ACH-02-851	Very black, rouletted pottery found at modern charcoal burning point.
ACH-02-853	Pottery sherds and bone (modern)
ACH-02-854	Thin-bodied plain pottery sherd
ACH-02-862	Pottery sherd with red exterior.
ACH-02-863	Plain pottery sherd.
ACH-02-864	Pottery sherd, reddish brown in colour.
ACH-02-866	Plain pottery, clayish colour.
ACH-02-867	Thick bodied pottery sherd, possibly from a beer-making pot.
ACH-02-868	Abandoned homesteads located in thick vegetation.

The location of archaeology and cultural heritage assets identified at wellpad KGG-09 are shown on Figure 17-39 and Figure 17-40.

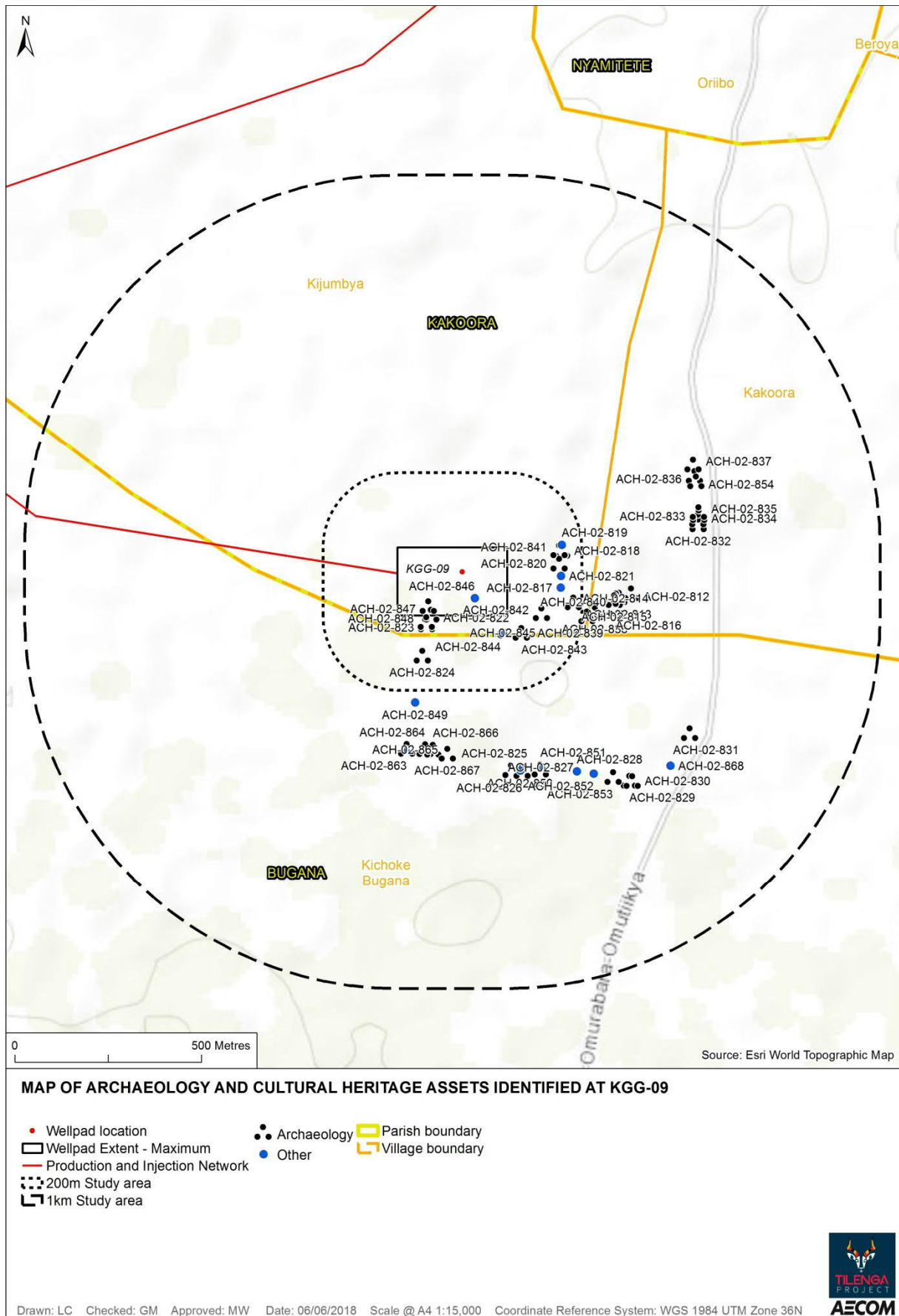


Figure 17-39: Map of archaeology and cultural heritage assets identified at KGG-09

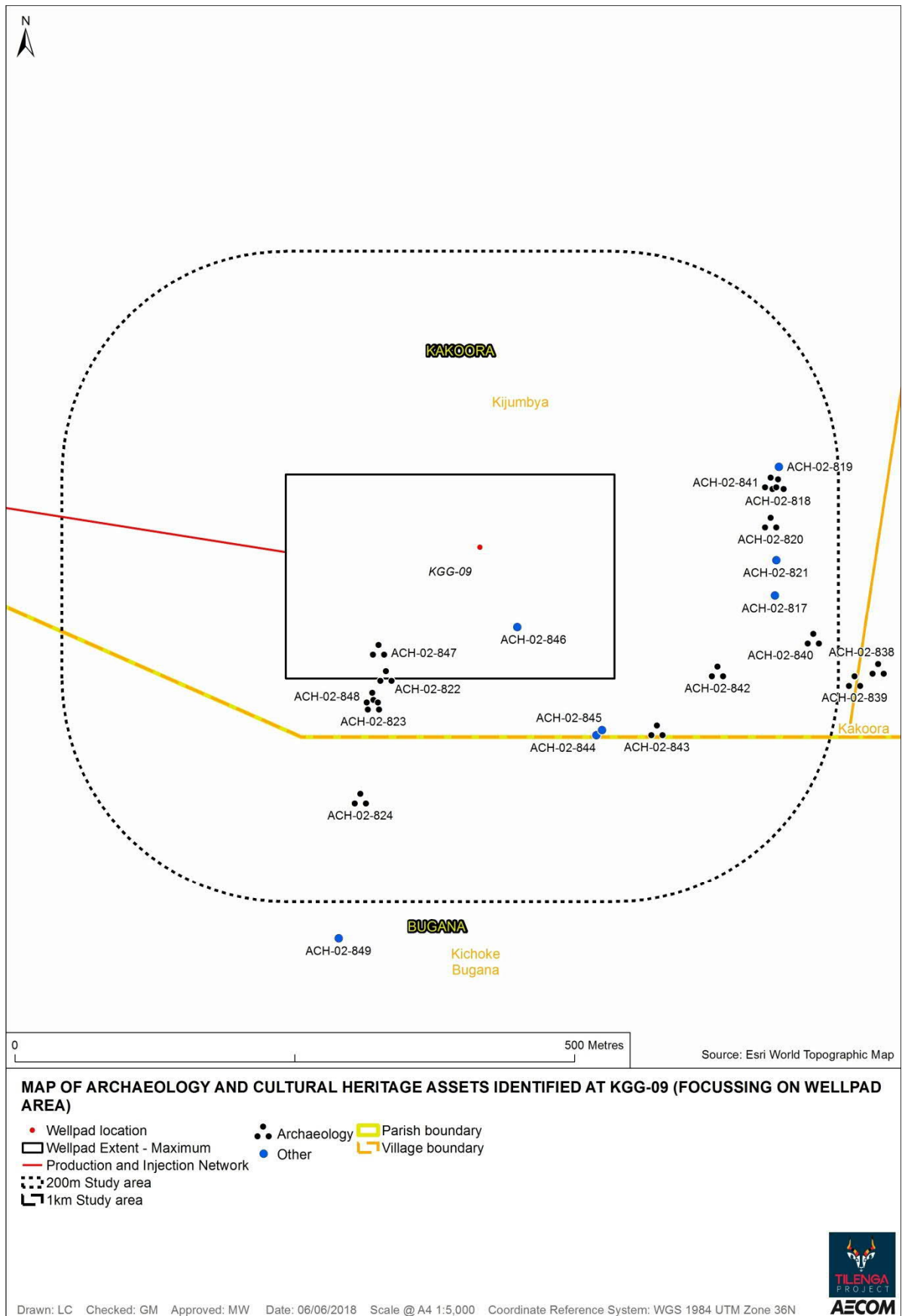


Figure 17-40: Map of archaeology and cultural heritage assets identified at KGG-09 (focussing on wellpad area)

17.6.5.28 Ngiri Field – Well Pad NGR-01 (Kasinyi) (CA-1)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad.

It is not certain that the shell recovered from NGR-01 is of any antiquity or archaeological or palaeontological significance. In the absence of any other evidence, the find is assessed as being of negligible significance.

Wellpad NGR-01 is located at in an area of cultivation with some grazing land. Ngiri is the local name for a warthog. The wellpad area was reportedly subject to archaeology and cultural heritage survey, referred to in the Well Pads Geophysical and Geotechnical Surveys reporting (Eco & Partner, 2014). A single shell is reported from the site (ACH-00-024).

The quantity of material noted within this site is very low compared to other wellpads surveyed in the area and it is recommended that further archaeological walkover survey and cultural heritage consultation, followed by test pit evaluation if warranted, is undertaken prior to construction.

Table 17-37: Archaeology and cultural heritage identified at NGR-01

Heritage UID	UTM 36N Easting	UTM 36N Northing	Description
ACH-00-024	328470	245037	Shell.

The location of the archaeology and cultural heritage asset identified at the Wellpad NGR-01 is shown on Figure 17-41.

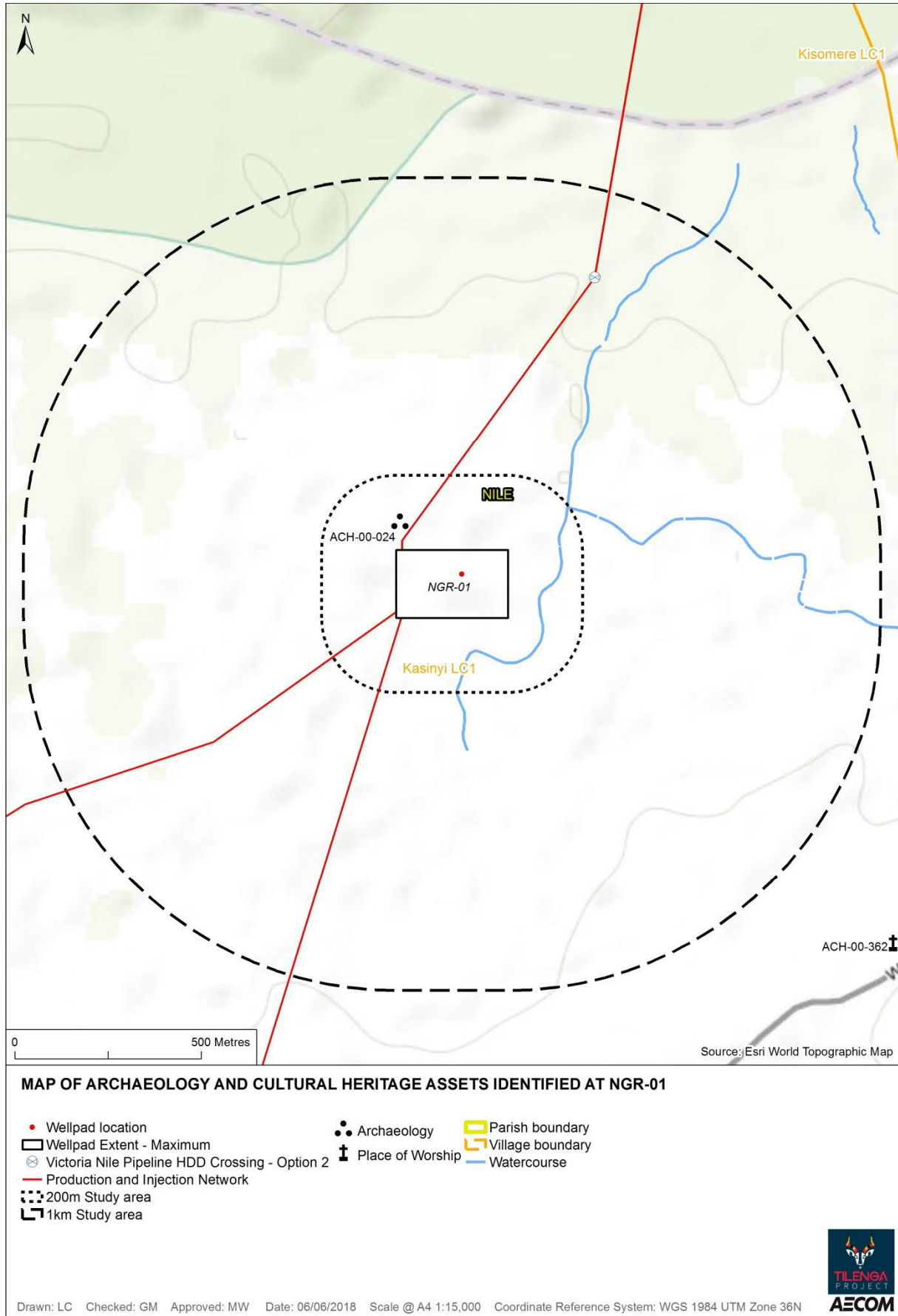


Figure 17-41: Map of archaeology and cultural heritage assets identified at NGR-01

17.6.5.29 Ngiri Field – Well Pad NGR-02 (Kasinyi) (CA-1)

No receptors were recorded within the footprint of the proposed wellpad area. However, two areas of plain pottery sherds (ACH-02-102 and ACH-02-113) were identified within the proposed footprint of the Land Acquisition Extents.

The archaeological receptors within NGR-02 are assessed as being of low (local) significance, due to the relative paucity of materials.

Burial places and cultural sites within the wider NGR-02 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NGR-02 is located at in an area of grazing land with scattered houses. Archaeology and cultural heritage survey of NGR-02 was undertaken in the course of ARTELIA’s Social Screening survey (ARTELIA 2013) and survey results are also reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014). The area was subject to further survey on 26th June 2017, accompanied by a member of the Kasinyi village executive and soldiers from the local base.

The site is located in Kasinyi and within there is a UPDF barracks within the site buffer. The site is within grazing land that belongs to the Balima clan. Charcoal burning is common in NGR-02.

Archaeological sites identified comprise lithics, pottery sherds, and concentrations of pottery sherds. A furnace and slag were noted south of the study area. The survey also noted several charcoal burning mounds. The pottery was all plain and was close to the UPDF barracks and the existing NGR pad. The pottery is sooted indicating that it was used for cooking. The ceramic traditions and relative dates of the site could not be established since the pottery was not decorated.

A cluster of burial places are located south of the study area.

A cultural site, *mutwa*, of the Balima clan was recorded. Two possible sacred tamarind trees were noted, although their sacred character was not confirmed by local informants. Medicinal and useful plants included *Aloe vera*, *Kulumbero*, cactus, tamarind and *Nyakatiga* plants.



Plate 17-22: Evidence of a failed attempt at brick production in the NGR-02 study area. The use of brick in the study area is extremely rare/non-existent due to the lack of suitable raw materials.



Plate 17-23: The survey team recording recent evidence of charcoal production in the NGR02 study area.



Plate 17-24: The survey team recording the location of graves with members of the local community in NGR-02. The small spread on concrete in the foreground marks the grave.

Table 17-38: Archaeology and cultural heritage identified at NGR-02

Heritage UID	Description
ACH-00-383	Furnace and slag
ACH-02-102	Plain pottery sherds.
ACH-02-107	Concentration of pottery. Animal bone (modern).
ACH-02-108	Pottery sherd.
ACH-02-109	Concentration of pottery sherds across a 4m area.
ACH-02-110	Lithics made from quartz.
ACH-02-111	Pottery sherd.
ACH-02-113	Pottery sherd.
ACH-00-025	Kasinyi Mudendemule Cultural and burial site for Balima clan.
ACH-00-027	Burial site for Basiita and Bamooli clan.
ACH-00-384	Individual grave site.
ACH-00-385	Individual grave site.
ACH-00-388	4 graves.
ACH-00-379	Single burial site.
ACH-00-382	3 graves.
ACH-00-396	Cemetery. According to Ms Miandu Javuru Kato, a close relative of the deceased and the person currently residing at the centre of the proposed drill pad location, the first and second cemeteries contain three and twelve bodies buried in the 1960's and 1970's respectively.
ACH-00-398	Cemetery. According to Ms Miandu Javuru Kato, a close relative of the deceased and the person currently residing at the centre of the proposed drill pad location, the first and second cemeteries contain three and twelve bodies buried in the 1960s and 1970s respectively.
ACH-02-112	Cultural site, mutwa; the land belongs to Basiita clan for this site under Kakura Kiiza Samson. Kakura Kiiza Samson settled in 1965. He is the heir of the Basiita clan.
ACH-02-117	Sacred tree (tamarind (<i>Tamarindus indica</i> L.)).
ACH-02-118	Sacred tree (tamarind (<i>Tamarindus indica</i> L.)).

The location of archaeology and cultural heritage assets identified at the Wellpad NGR-02 are shown on Figure 17-42 and Figure 17-43.

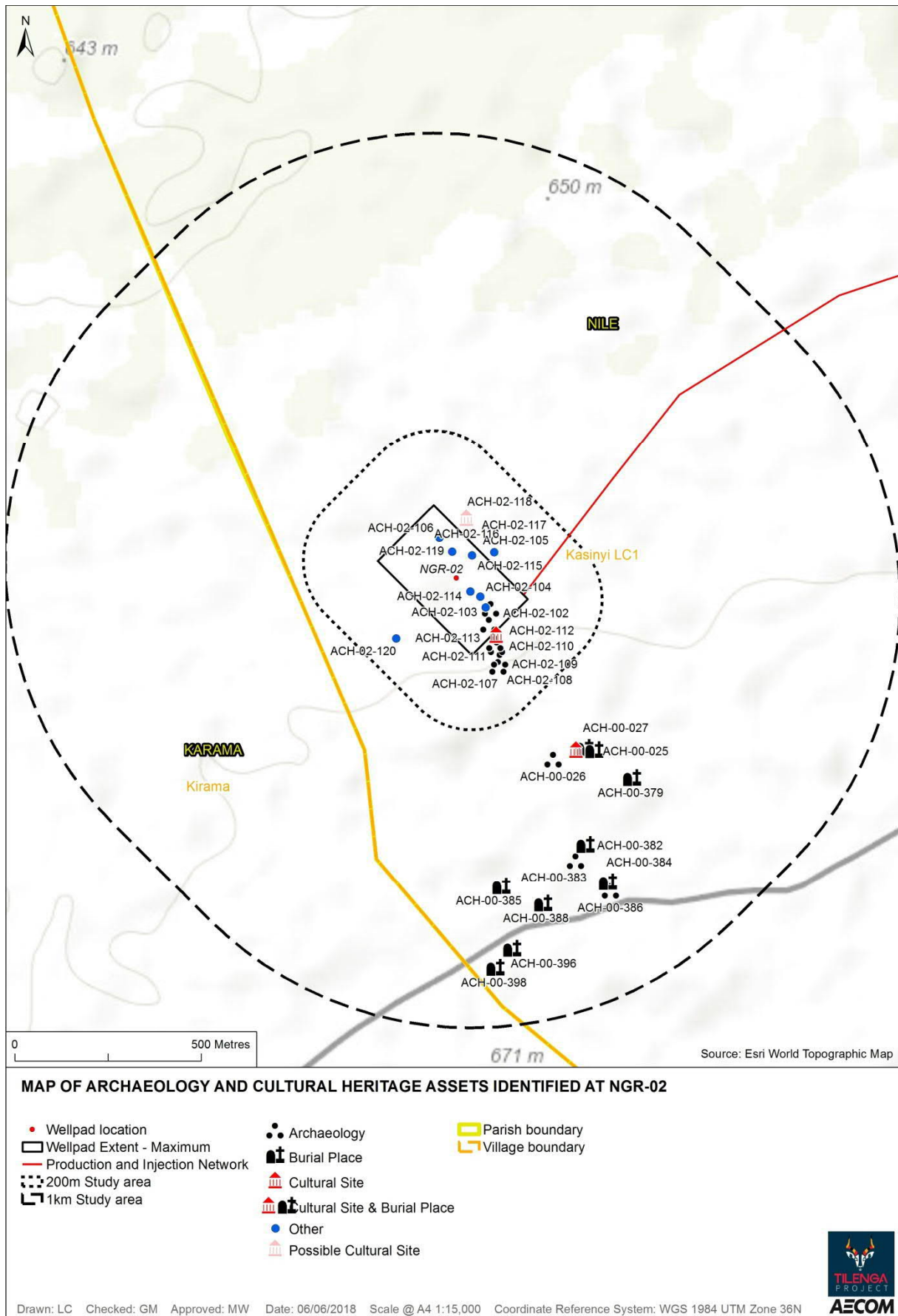


Figure 17-42: Map of archaeology and cultural heritage assets identified at NGR-02

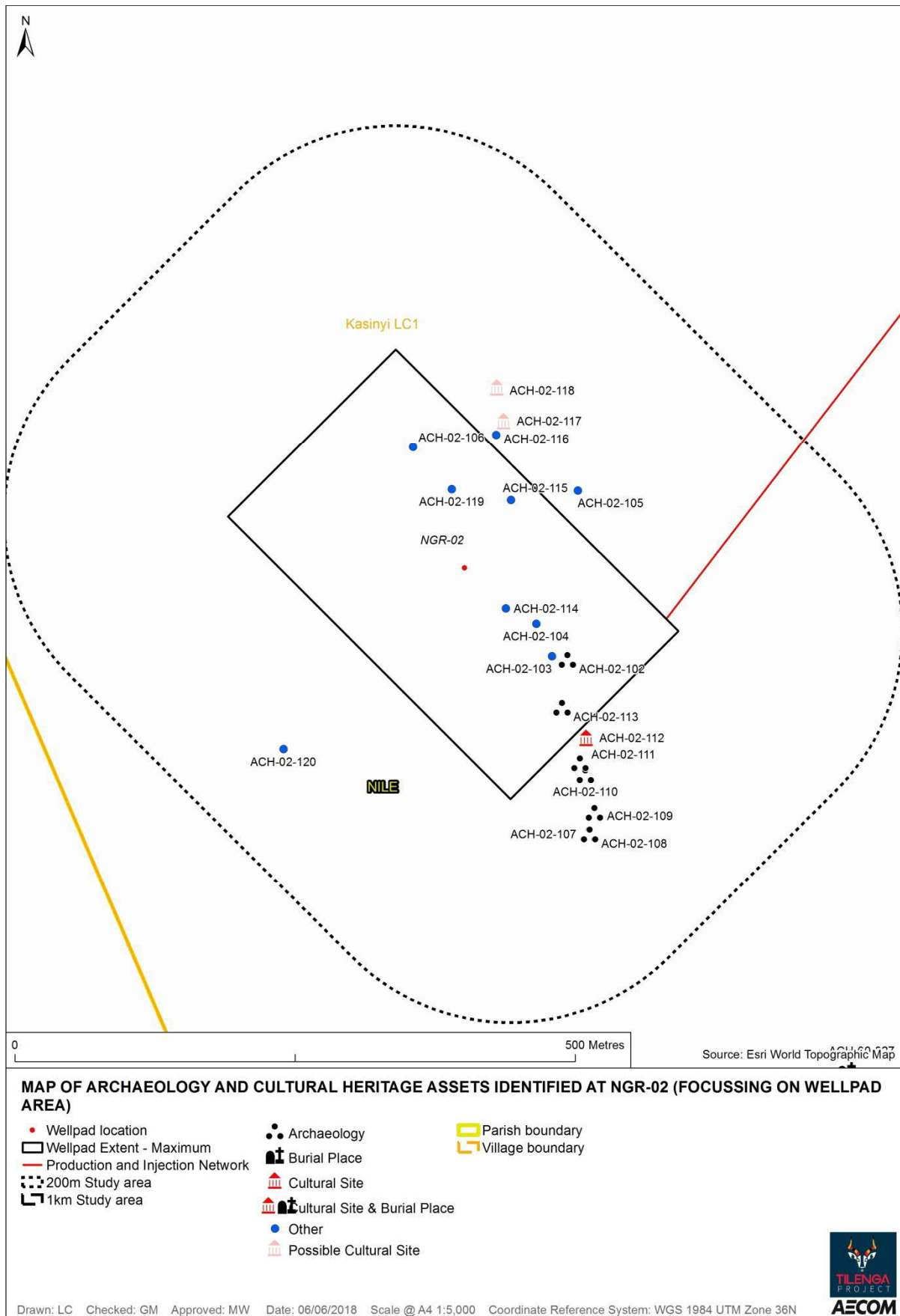


Figure 17-43: Map of archaeology and cultural heritage assets identified at NGR-02 (focussing on wellpad area)

17.6.5.30 Ngiri Field – Well Pad NGR-03A (Kichoke) (CA-1)

The location of wellpad NGR-03 was moved after the archaeological walkover surveys had taken place, and was renamed NGR-03A. As a result, no walkover survey has taken place, although data has been used from adjacent walkover surveys where possible.

No receptors were identified within the proposed footprint of the wellpad. However, a full archaeological walkover survey is yet to be undertaken.

The archaeological receptors within the NGR-03A study area are assessed as being of low (local) significance, due to the relative paucity of materials.

Burial places, places of worship and cultural sites within NGR-03A are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NGR-03 is located in an area of grazing land with cattle corridors and scattered houses, near Kirama village. Archaeology and cultural heritage survey of NGR-03 is reported in ARTELIA’s Social Screening survey report (ARTELIA 2013) and survey results the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014). The area was also subject to further survey on 30th June 2017. The survey consulted the chairperson of Kirama village and was accompanied by the cultural leader of the village, who assisted in identifying a series of cultural sites.

The topography is sloping and most of the wellpad area is used for grazing animals, particularly cattle. Brick-making mounds were noted during the survey.

Archaeological sites in the study area comprise limited lithics, pottery sherds, and a number of weights for fishing. These latter finds could be modern in date as stones are still used as fishing weights.

A large number of burial sites were recorded, with concentrations to the southwest of the proposed wellpad site. These included individual graves as well as grounds of up to ten.

A number of places of worship were also recorded within the study area, while sacred trees, and trees with crosses carved on were identified. The former home of a traditional healer was also located during the walkover survey. Anecdotally, there are four additional notable sites called *Mpoluma* for *kuwonga* (sacrifices) within the wider NGR-03 study area. Additional cultural sites include the family shrine or *kibila* of Byenkyamukona, and a *kihara* for Bahemaiso. The *kihara* is used for sending away sicknesses that affect family members. A sacrificial site of the Bakindwa clan under a tree is located northeast of the survey area, and a Balokoli clan sacrificial site is located south of the study area. Three possible sacred tamarind trees were noted, although their sacred character was not confirmed by local practitioners. Medicinal and sacred plants identified include *Mabaale*, cactus, *Tungotungo*, *Mukwakwa*, *Musingabakazi*, *Mutete*, *Alongo*, *Munonde* (tamarind) and *Kulumbero*.

The swamps of Matwe, Kanyuri, Taagi, Kalyamukwanzi are water catchment areas and sources of natural springs/wells. The Kanyuri swamp had particular ritual prohibitions. There is a forested area within Kirama where people are not allowed to fetch firewood. For more information, see Appendix 17 (Annex A: Stakeholder Consultation - Meeting with Elders of Kirama Village).

Table 17-39: Archaeology and cultural heritage identified at NGR-03

Heritage UID	Description
ACH-00-420	Bone.
ACH-00-422	Kirama Catholic Church, a semi-permanent structure.
ACH-00-040	Neolithic bored glass stone used for fishing weight.
ACH-00-041	MSA Quartz discoid.
ACH-00-443	Burial site. Four graves.
ACH-00-045	Scatter of bones.
ACH-00-047	Burial place. Six graves.
ACH-00-048	Burial place. Four graves.
ACH-00-049	Clan burial site (Bamooli Clan) with about six graves
ACH-00-050	Individual grave site

Heritage UID	Description
ACH-00-051	Burial site. Three graves.
ACH-00-052	Single grave.
ACH-00-053	Burial site. Four graves.
ACH-00-054	Burial site. Four graves.
ACH-00-055	Individual grave site.
ACH-02-153	Pottery sherd.
ACH-02-154	Pottery sherd.
ACH-02-164	Plain pottery sherd.
ACH-02-165	Pottery sherd and bone.
ACH-02-166	Pottery sherd and bone.
ACH-02-167	Stone fishing weight and pottery sherd.
ACH-02-168	Pottery sherd.
ACH-02-169	Pottery sherd.
ACH-02-170	Pottery sherd.
ACH-02-171	Pottery sherd.
ACH-02-172	Pottery sherd.
ACH-02-173	Pottery sherd.
ACH-02-174	Pottery sherd.
ACH-02-175	Pottery sherd.
ACH-02-176	Individual grave.
ACH-02-200	Plain cooking pot with sooted exterior.
ACH-02-201	Pottery sherd with roulette decoration.
ACH-02-202	Stone fishing weight.
ACH-02-203	Burial ground with more than ten graves.
ACH-02-204	Burial ground. Four graves.
ACH-02-205	Burial ground. Six graves.
ACH-02-206	Cultural site. Mpuloma for the Balyambwa Clan.
ACH-02-177	Sacred tree – Tamarind. Village meeting place.
ACH-02-196	Sacred site. Two barkcloth trees and an Amarula tree. One with a cross carved on to it.
ACH-02-197	Abandoned houses of traditional medial practitioner.
ACH-02-198	Moringa tree with cross carved on.
ACH-02-199	Moringa tree with cross carved on.
ACH-00-425	Kichoke Church of Uganda.

The location of archaeology and cultural heritage assets identified at the Wellpad NGR-03 are shown on Figure 17-44.

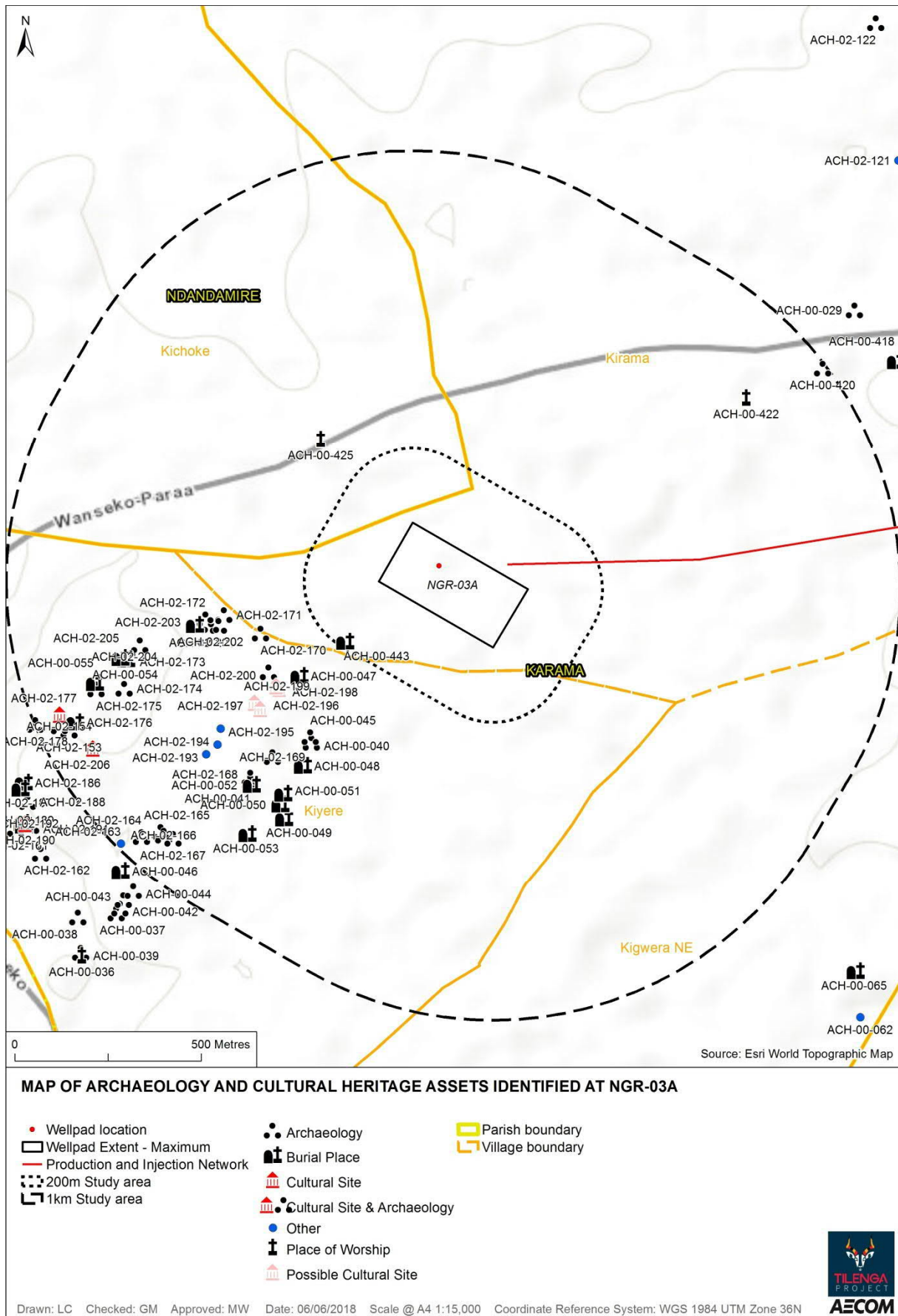


Figure 17-44: Map of archaeology and cultural heritage assets identified at NGR-03A

17.6.5.31 Ngiri Field – Well Pad NGR-05A (Kasinyi) (CA-1)

The proposed location of wellpad site NGR-05A was moved after the archaeological walkover surveys were undertaken, and as a result some parts of the study area have not been subject to an archaeological walkover survey. However, data collected during other walkover surveys identified one asset within the proposed wellpad, a potential sacred tamarind tree (ACH-02-211). In addition to this, a further four assets were recorded within the Land Acquisition Extent, all of which were pottery sherds (ACH-02-212, ACH-02-213, ACH-02-226, and ACH-02-227).

The archaeological receptors within NGR-05A are assessed as being of low (local) significance.

Cultural sites within the wider NGR-05A study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NGR-05 is located in an area of grazing land near Kasinyi and Kirama villages. Archaeology and cultural heritage survey of NGR-05 is reported in the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014). The area was subject to further survey on 29th June 2017, accompanied by the chairpersons of the villages of Kasinyi and Kirama.

Archaeological remains identified in the NGR-05 study area comprise lithics, pottery sherds, and an abandoned homestead. Surveys also noted recent animal bone, shell and charcoal burning mounds.

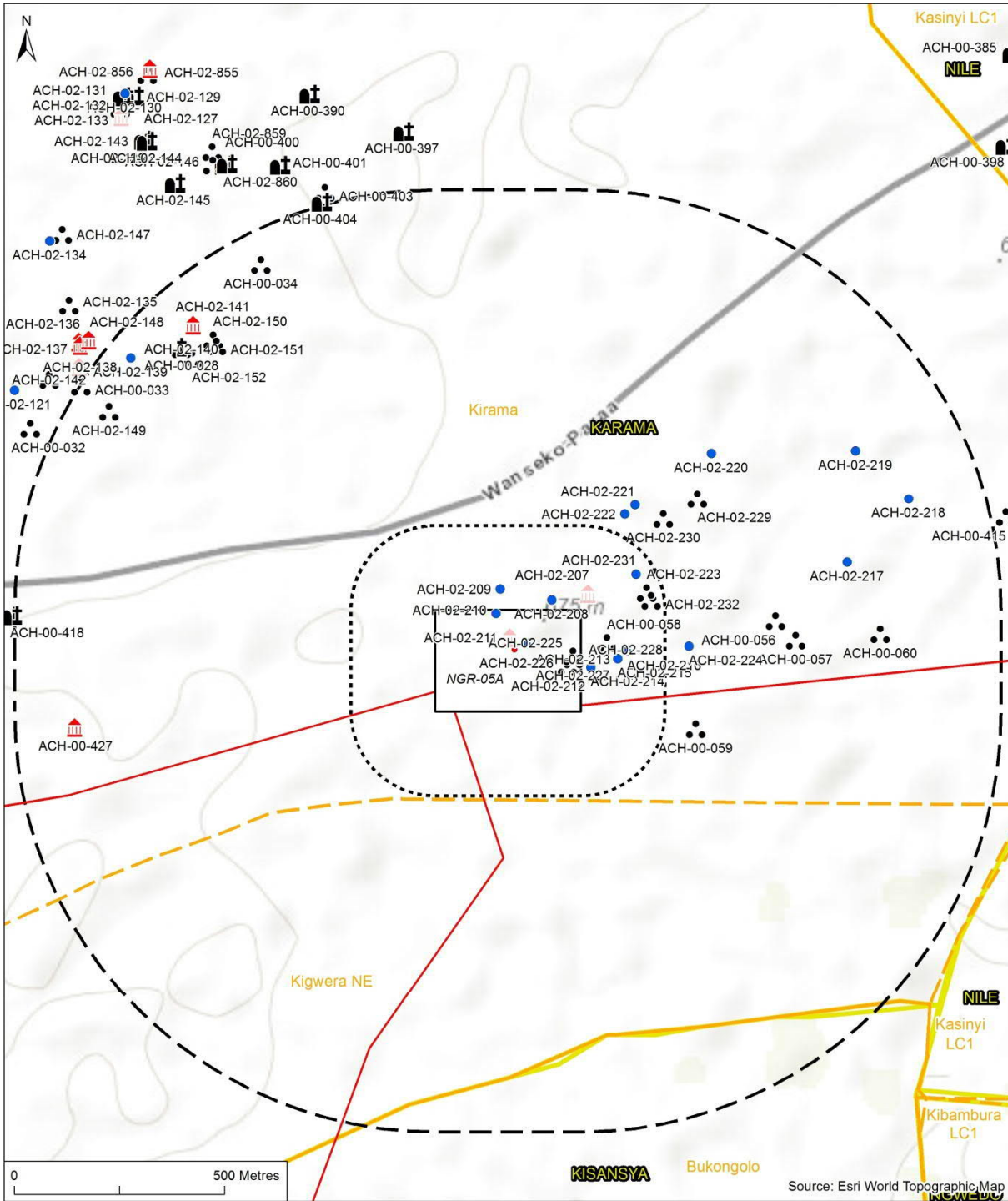
A sacred site was identified to the west of the proposed wellpad site. This is a tree under which the Balokoli Clan carry out sacrifices. A second cultural site was also recorded where the sacrifices take place under a Mudendemule Tree before the procession moves on. Two churches were also recorded.

There are two possible sacred tamarind trees, although their sacred character was not confirmed by local practitioners. Medicinal and culturally important plants identified included *Mabaale*, *Marula*, sisal, *Musingabakazi*, *Mbumbuula* and *Muzinge*. *Muzinge* is said to be rare. There was evidence that trees were tapped for sap with which to catch birds.

Table 17-40: Archaeology and cultural heritage identified at NGR-05

Heritage UID	Description
ACH-00-427	Cultural site where the Balokoli Clan carry out sacrifices.
ACH-02-212	Pottery sherds, black and burnished.
ACH-02-213	Pottery sherd.
ACH-02-223	Lithic core.
ACH-02-226	Pottery sherd.
ACH-02-227	Pottery sherd.
ACH-02-229	Pottery sherd.
ACH-02-230	Pottery sherd.
ACH-02-232	Pottery sherd.
ACH-02-222	Abandoned home (modern).
ACH-02-207	Possible sacred tree (tamarind), sisal plant.
ACH-02-211	Possible sacred tree (tamarind), medicinal plant (amarula).
ACH-00-034	Long bone.
ACH-02-141	Cultural site. Mudendemule Tree were sacrifices take place before other rituals.
ACH-02-150	Plain and slipped pottery
ACH-02-151	Pottery sherds
ACH-00-028	Bukindwa Church of God.
ACH-02-152	Pottery sherd
ACH-02-140	Former Church of God Kirama
ACH-02-149	Pottery sherds.

The location of archaeology and cultural heritage assets identified at the Wellpad NGR-05A are shown on Figure 17-45 and Figure 17-46.



MAP OF ARCHAEOLOGY AND CULTURAL HERITAGE ASSETS IDENTIFIED AT NGR-05A

- Wellpad location
- ▭ Wellpad Extent - Maximum
- Production and Injection Network
- ⋯ 200m Study area
- ⊞ 1km Study area
- Archaeology
- ⚰ Burial Place
- ⚰ Cultural Site
- Other
- ⚰ Place of Worship
- ⚰ Possible Cultural Site
- ▭ Parish boundary
- ▭ Village boundary
- Watercourse

Drawn: LC Checked: GM Approved: MW Date: 06/06/2018 Scale @A4 1:15,000 Coordinate Reference System: WGS 1984 UTM Zone 36N



Figure 17-45: Map of archaeology and cultural heritage assets identified at NGR-05A

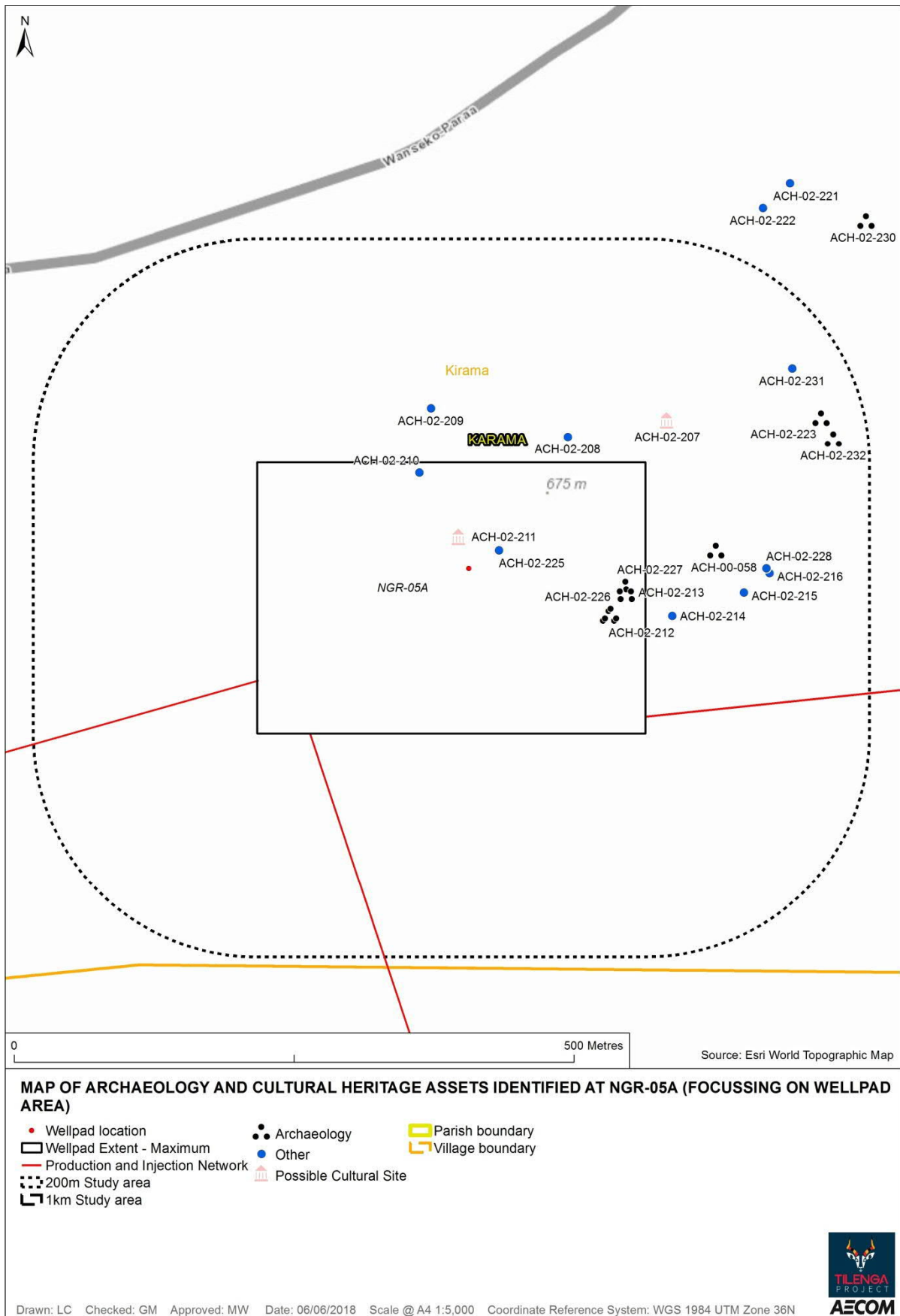


Figure 17-46: Map of archaeology and cultural heritage assets identified at NGR-05A (focussing on wellpad area)

17.6.5.32 Ngiri Field – Well Pad NGR-06 (Kigwera North East) (CA-1 & LA-2)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad.

Burial places and cultural sites within the wider NGR-06 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad NGR-06 is located in an area of grazing land with cattle corridors. Archaeology and cultural heritage survey of NGR-06 is reported in ARTELIA’s Social screening (ARTELIA 2013) and the Well Pads Geophysical and Geotechnical Surveys report (Eco & Partner, 2014).

Archaeological surveys only noted recent animal bone.

Two family burial places were recorded.

A cultural site was recorded.

The quantity of archaeological material noted within this wellpad study area is very low compared to other wellpads surveyed in the area and further survey will be undertaken prior to construction. Only cultural sites have been recorded, with no evidence of archaeological survey. An archaeological survey, and if warranted, test pit evaluation should be undertaken prior to construction.

Table 17-41: Archaeology and cultural heritage identified at NGR-06

Heritage UID	Description
ACH-00-064	Family burial site.
ACH-00-065	Family burial site.
ACH-00-453	Although this place is still in existence, the practice of offering sacrifices has reduced due to conversion to Christianity. However, practitioners of traditional religion are not willing to cut it down.

The location of cultural heritage assets identified at the Wellpad NGR-06 are shown on Figure 17-47.

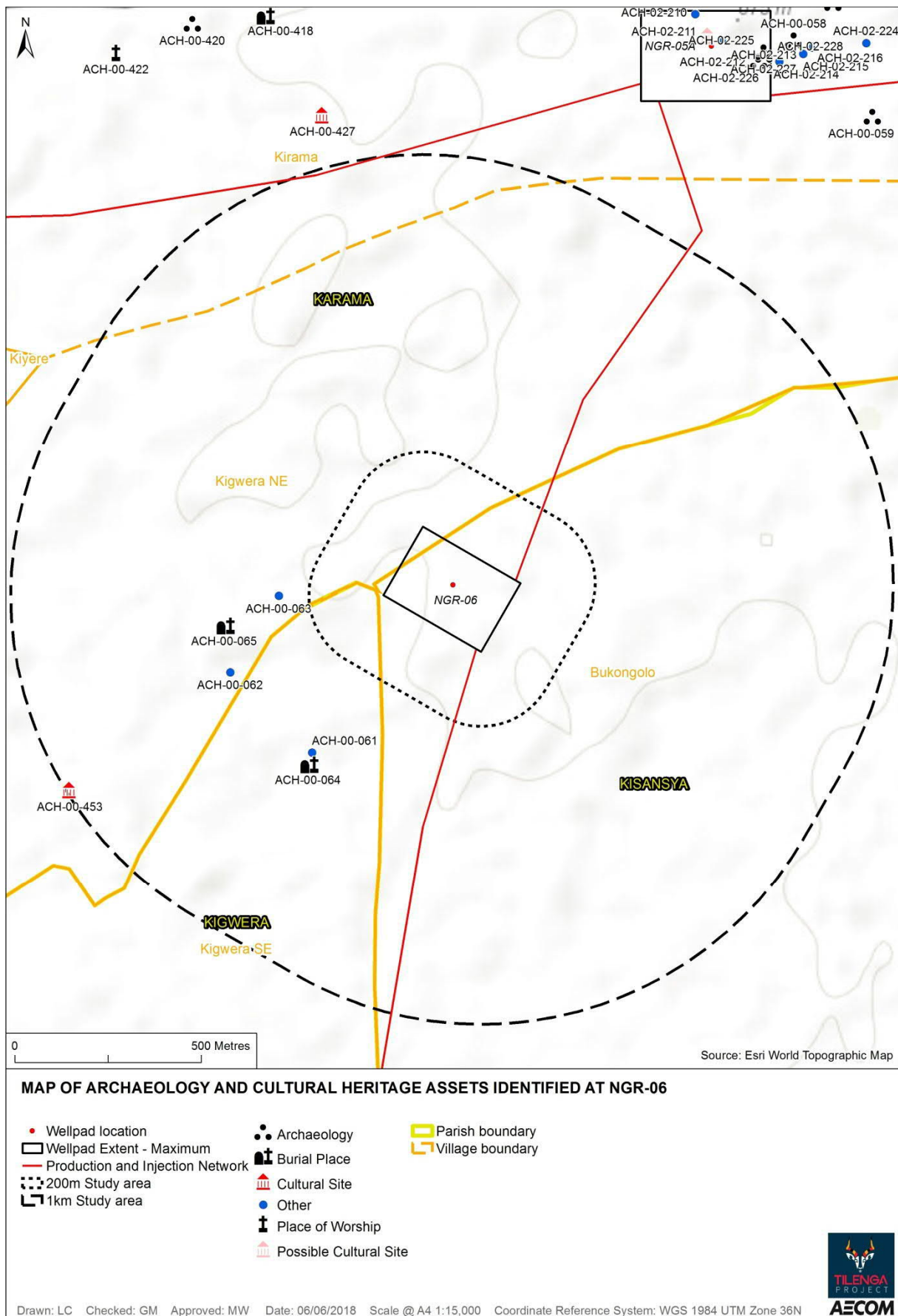


Figure 17-47: Map of archaeology and cultural heritage assets identified at NGR-06

17.6.5.33 Kasamene Field – Well Pad KW-01 (Kisansya East) (LA-2)

No archaeological or cultural heritage assets have been identified within the proposed footprint of the wellpad.

The archaeological receptors within the wider KW-01 study area are assessed as being of moderate (regional) significance, due to the potential chronological sequence of pottery identified in the area. Burial places, places of worship and cultural sites in the KW-01 study area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KW-01 is located in an area of grazing land with cattle corridors. It is located mainly in Kisimo cell but some parts are located in Kityanga and Kizongi Cell. Archaeology and cultural heritage survey was undertaken on 6th December 2016 and during the Tilenga ESIA socio-economic survey in December 2016.

Walkover survey was impeded by the swampy nature of the area, which was generally waterlogged at the time of survey. Another obstacle was the Sambye River.

Archaeological remains identified within the study area comprise pottery sherds. Some of the pottery sherds had been incorporated into the walls of current houses, and the places used to get mud to daub houses also contained deposits of pottery. Pottery was red burnished, slipped on the surface, and tempered with grog and sand. Decorative elements comprised string knotted roulette (LIA) and wavy line (Kansyore period). Two burial places were recorded.

Places of worship identified within the KW-01 study area comprise Kalolo Catholic Church, Covenant Pentecost Church, Full Gospel Church and a Seventh-day Adventist Church.

There are two cultural sites, a *Mpuluma* for the Bakibiro clan in a forested area and a medicinal tree (*Mukwakwa*).

Medicinal plants and plants with cultural uses included cactus, *Kamunye*, *Ntale Ya Ddungu*, neem tree, tamarind and *Aloe vera*.

Table 17-42: Archaeology and cultural heritage identified at KW-01

Heritage UID	Description
ACH-01-036	Pottery sherd with red burnished finish and grog and sand temper.
ACH-01-167	Pottery sherd.
ACH-01-168	Pottery sherd with string knotted roulette decoration, found a few meters from the lake.
ACH-01-169	Plain small pottery sherd.
ACH-01-170	Source of soil for smearing houses, with large pottery sherds and faunal remains.
ACH-01-171	Pottery sherd found in a toilet area.
ACH-01-172	Pottery sherd.
ACH-01-173	Pottery scatter, a 5x5m area of slip-finished sherds.
ACH-01-035	Reputed burial location at Kityanga village on the road to Walindi site.
ACH-01-037	Burial.
ACH-01-165	Kalolo Catholic Church and School.
ACH-S-TEMP-009	Covenant Pentecost Church.
ACH-S-TEMP-011	Full Gospel Church. They have a new church under construction.
ACH-S-TEMP-015	Seventh-day Adventist Church.
ACH-S-TEMP-002	Cultural site (<i>Mpuluma</i>). For the Bakibiro clan, they sacrificed goats, sheep to get rain mainly. Forested area.
ACH-S-TEMP-003	Cultural site (<i>Mpuluma</i>).
ACH-S-TEMP-014	Medicinal tree (<i>Mukwakwa</i>).

The location of archaeology and cultural heritage assets identified at the Wellpad KW-01 are shown on Figure 17-48.

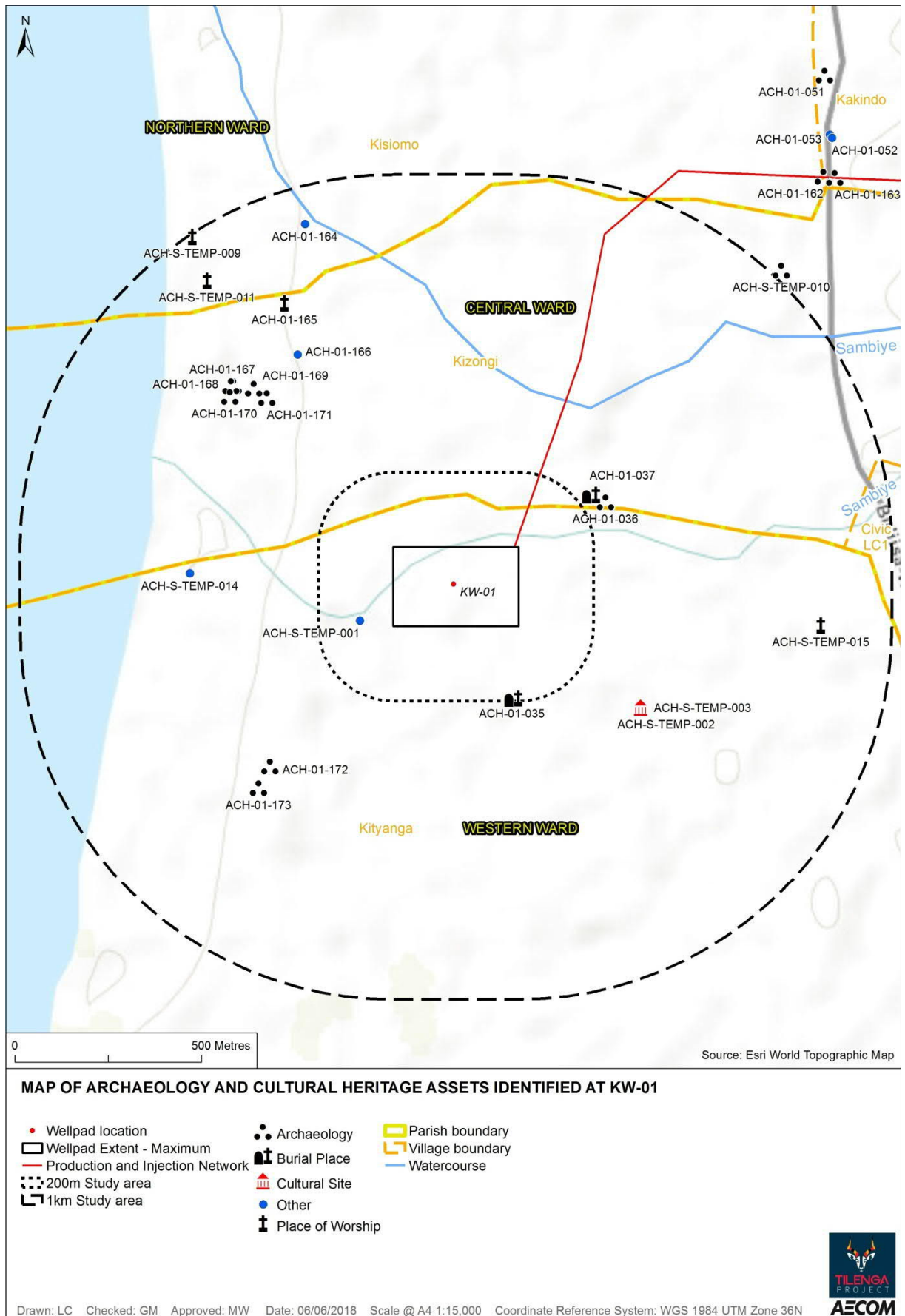


Figure 17-48: Map of archaeology and cultural heritage assets identified at KW-01

17.6.5.34 Kasamene Field – Well Pad KW-02A (Kisimo) (LA-2)

The proposed location of wellpad site KW-02A was moved after the cultural heritage and archaeological walkover surveys were undertaken, and as a result some parts of the study area have not been subject to walkover survey. A further Site walkover survey will be undertaken prior to any site works being undertaken.

The archaeological receptors known from KW-02A are assessed as being of low (local) significance, due to the paucity of remains and proximity to places of recent settlement.

Burial places, places of worship and cultural sites in the vicinity of KW-02A are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Wellpad KW-02A is located in an area of grazing land. Archaeology and cultural heritage survey was undertaken northwest of KW-02A at wellpad KW-02 in December 2016 and June-July 2017 and during the ESIA socio-economic survey in December 2016. The survey was accompanied by the Chairperson of Kakindo Cell.

Archaeological remains identified within the study area comprise numerous pottery sherds and two quartz cores. Pottery decoration includes rouletting, possibly indicating a LIA date.

There are two clusters of burial places, west of and northwest of KW-02A.

There is one place of worship in the study area, Kakindo Miracle Church.

Cultural sites noted in the surveys comprise a *kibila* for the Banyomo sub-clan of the *Sagalamusansi* clan, for family sacrifice, a *Mpuluma* called Muchwezi in a big barkcloth tree, three sacrificial places and a sacred place with burials. There is a large Tamarind tree which may be a sacred tree, but this was not confirmed by local populations.

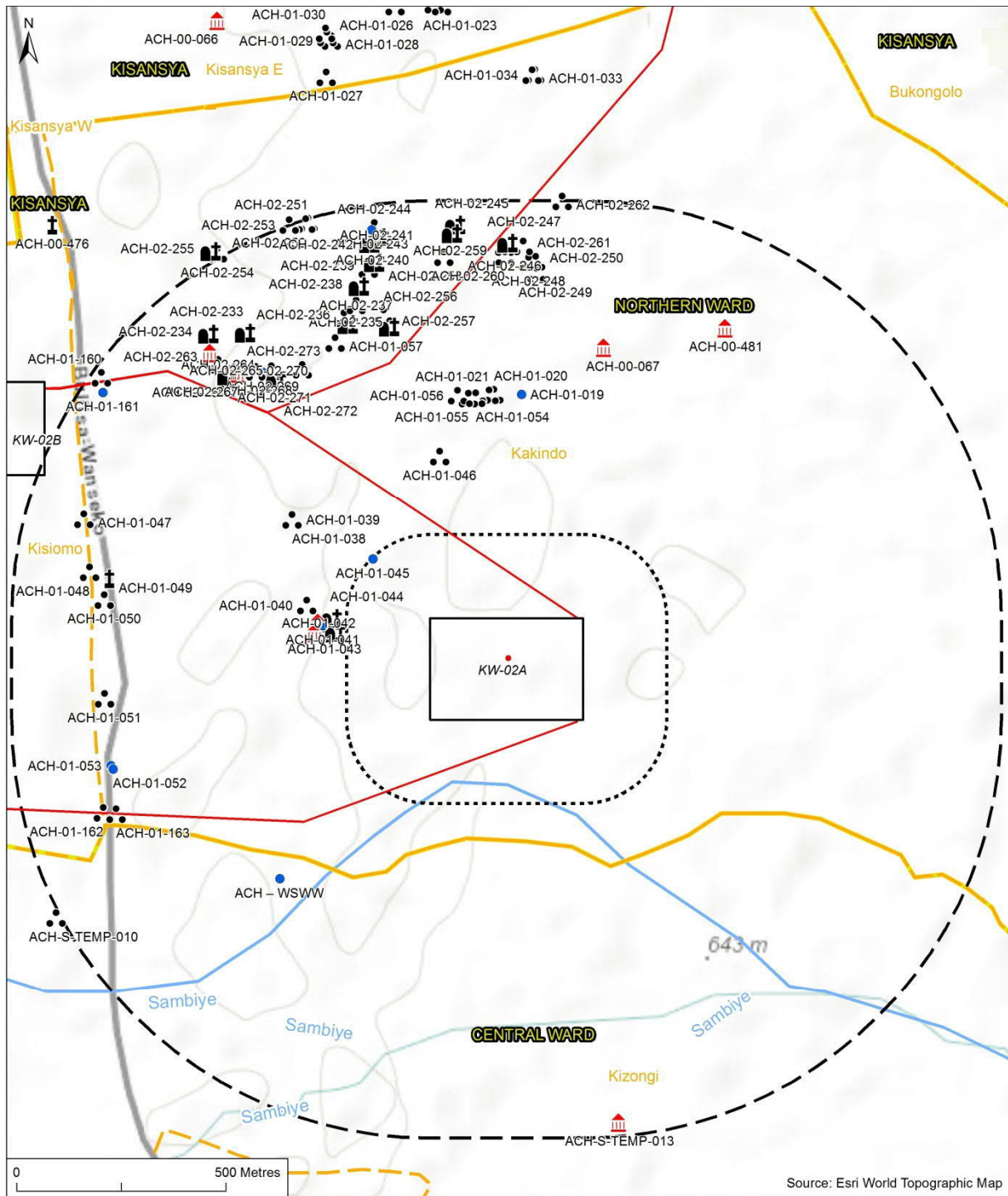
Table 17-43: Archaeology and cultural heritage identified in the vicinity of KW-02A

Heritage UID	Description
ACH-01-020	Ceramic with slip and burnished surface finish and sand, mica and grog temper. Body sherd with rouletted decoration.
ACH-01-021	Neem tree medicinal plant and two pottery sherds.
ACH-01-038	Pottery sherd with slipped finish and horizontal oblique grooved decoration.
ACH-01-039	Pottery sherd.
ACH-01-040	Three pottery sherds with burnished surface and grog and sand temper.
ACH-01-046	Thin bodied, slipped ceramics with sand and grog temper.
ACH-01-047	Slipped pottery sherd with grog temper and string knotted decoration.
ACH-01-048	Sand and grog tempered pottery sherd.
ACH-01-050	Ceramics.
ACH-01-054	Slipped pottery sherd decorated with a band of string knotted roulette.
ACH-01-055	Burnished pottery shed with sand temper.
ACH-01-056	Two Pottery sherds with red slip inside and out and sand and grog temper.
ACH-01-162	Slip-finished, mica tempered pottery rim sherd. Close to water ponds and cactus bushes, in Kisimo village.
ACH-01-163	Slip-finished pottery rim sherd.
ACH-01-051	Two sherds of red slipped ceramics with sand and grog temper.
ACH-02-236	Pottery sherds. One is plain, grey, thin bodied and another is reddish possibly for storage.
ACH-02-237	Pottery sherd.
ACH-02-239	Polished cobble stone for sharpening, shaped like half of a grinding stone.
ACH-02-243	Stone, natural core.
ACH-02-244	Pottery sherd.

Heritage UID	Description
ACH-02-246	Pottery sherds at the home of Mugasa Alone, red interior, abraded, temper sand and grog.
ACH-02-248	Quartz core.
ACH-02-250	Quartz core next to the Kasemene 1 crude oil storage site materials in secondary context.
ACH-02-251	Plain and burnished pottery sherds.
ACH-02-252	Pottery sherd.
ACH-02-253	Pottery sherd.
ACH-02-256	Pottery sherd.
ACH-02-262	Pottery sherd under a Mutooma plant.
ACH-02-260	Plain pottery sherd.
ACH-02-261	Pottery sherd.
ACH-02-264	Former house foundation of Balijunaki Stephen. Pottery sherds are plain, one grey, one red, burnished, very thin-bodied but one was thick bodied and grey.
ACH-02-269	Black cooking pot (modern).
ACH-02-270	Plain red pottery sherds.
ACH-02-273	Pottery sherds, black inside and out, slipped and sand-tempered. Found at the former house of Beyaza Gladys who moved to another place in Kakindo.
ACH-00-067	Tree where goats are sacrificed on path heading east from K1.
ACH-00-481	Sacrifice site – tree.
ACH-01-041	Location of Basiita clan heir Kakura Kiiza Samson.
ACH-01-042	Medicinal plant and sacrificial place.
ACH-01-043	11 graves and sacred place.
ACH-02-263	Cultural site. Kibila for the Banyomo sub-clan of the <i>Sagalamusansi</i> clan, for family sacrifice.
ACH-02-267	Cultural site. Mpuloma called muchwezi in a big barkcloth tree with a lot of medicinal plants esp. Ntale ya ddungu, the cultural site addresses barrenness, blessings, employment, fishing and cultivation.
ACH-02-272	Sacred tree. Large tamarind.
ACH-01-049	Kakindo Miracle church.
ACH-01-044	Burial place.
ACH-02-233	Burial place. Two graves, of Birungi born 25th January 1959, died 28/01/2016 & Kisembo Yebazi born 1955 and died 1989 all are cemented. Under Rwamukaaga Yoweri as caretaker.
ACH-02-234	Burial place. Four graves. All cemented for (1) Julyeri Matong born 25/5/1948 and died 29/12/2012 (2) Kato, J. 01/10/2016-02/01/2016 (3) Matongo Perezi 9/6/1900-20/8/1990 (4) Mazinga Dorothy 10/5/1975-20/8/1990.
ACH-02-235	Burial place. Grave for Julius Kwikya.
ACH-02-238	Two graves, not cemented, for Asaba Zunguluuka and Kabayisane Marion with no markstones.
ACH-02-240	Grave of Kiiza Bahemurwaki Wilson who died on 24/01/2008.
ACH-02-241	Grave, not cemented, for Nsekunabo Jennipher.
ACH-02-242	Two graves, not cemented, of Buswa Blasio and Nyamugeya Dorica. Byakala Marios is the caretaker.
ACH-02-245	Graveyard comprising several graves. The site is marked by two big barkcloth trees at Mzee Wandigali Aduda, close to Kasemene 1, where he claims to have 10 graves enclosed in Kasemene and 3 outside.
ACH-02-247	Grave yard with six burials, comprising Nyangoma (child) Makrisi Muhumuza, Kwikiriza Edifensi, Rosemary Kabagenyi, Arinaitwe Angel, Kyomugisha Precious in the home of Mukasa Alone in Kakindo. A quartz multplatform core was noted.
ACH-02-265	Burial place. Ten burials. The caretaker is Mr. Wandigali Aguda, aged 85.

Heritage UID	Description
ACH-02-271	Five graves, not cemented. One is for Isingoma Mukundu (21/4/1941-6/9/2016), close is a fence made of Lukoni shrub.
ACH-01-052	Kakindo grinding mill.
ACH-01-053	Treaty Primary school bordering Kisimo and Kakindo.
ACH-01-045	Home of Asera Mulinda.
ACH-01-019	Homesteads.

The location of archaeology and cultural heritage assets in the vicinity of Wellpad KW-02A are shown on Figure 17-49.



MAP OF ARCHAEOLOGY AND CULTURAL HERITAGE ASSETS IDENTIFIED AT KW-02A

- Wellpad location
- Wellpad Extent - Maximum
- Production and Injection Network
- ⊘ 200m Study area
- ⊠ 1km Study area
- Archaeology
- ⊕ Burial Place
- Ⓜ Cultural Site
- Ⓜ⊕ Cultural Site & Burial Place
- Other
- ⊕ Place of Worship
- Ⓜ Possible Cultural Site
- ▬ Parish boundary
- ▬ Village boundary
- Watercourse

Drawn: LC Checked: GM Approved: MW Date: 04/02/2019 Scale: at A4 1:15,000 Coordinate Reference System: WGS 1984 UTM Zone 36N



Figure 17-49: Map of archaeology and cultural heritage assets identified at KW-02A

17.6.5.35 Kasamene Field – Well Pad KW-02B (Kisimo) (LA-2)

The proposed location of wellpad site KW-02B was moved after the archaeological walkover surveys were undertaken, and as a result some parts of the study area have not been subject to an archaeological walkover survey. A further Site walkover survey will be undertaken prior to any site works being undertaken.

The archaeological receptors in the vicinity of KW-02B are assessed as being of low (local) significance, due to the paucity of remains and proximity to places of recent settlement.

Burial places, places of worship and cultural sites in the vicinity of KW-02B are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes. A further Site walkover would be required ahead of any on-site works.

Wellpad KW-02B is located in an area of grazing land. Archaeology and cultural heritage survey by Tilenga ESIA Team was undertaken east of KW-02B at wellpad KW-02 in December 2016 and June-July 2017 and during the socio-economic survey in December 2016. The survey team was accompanied by the Chairperson of Kakindo Cell.

Archaeological remains identified within the study area comprise numerous pottery sherds, pestle rubbers, a Levallois side and end scraper a hone stone.

There is one burial place west of Wellpad KW-02B, and there are a series of burial grounds to the east of the Wellpad area.

There are two places of worship in the study area, Kisansya East St Paul Church of Uganda and Kisansya East Town Church.

Cultural sites noted in the surveys comprise two cultural sites of the Basansyabalindambura clan and a Mpuloma called Muchwezi in a big barkcloth tree, which addresses barrenness, blessings, employment, fishing and cultivation. There is a large Tamarind tree and a pair of large *Muteete* trees which may be sacred trees, but this was not confirmed by local populations.

Medicinal and cultural plants noted in the area include *Ntale ya ddungu*, Musagalamasansi, neem and cactus.

Table 17-44: Archaeology and cultural heritage identified in the vicinity of KW-02B

Heritage UID	Description
ACH-01-027	Lithic core scraper within Bugungu Senior Secondary School.
ACH-01-147	Pottery sherd.
ACH-01-148	Two pestle rubbers, one Levallois side and end scraper and four pottery sherds. Also faunal remains and medicinal plants.
ACH-01-149	Pottery sherd.
ACH-01-151	Musagalamasansi totem plant and pottery rim sherd.
ACH-01-153	Slipped, sand and grog-tempered pottery sherds in a very fine, paste-like fabric, wheel-made and coiled.
ACH-01-160	Slip-finished pottery sherds on a cattle route in silted soils.
ACH-01-162	Slip-finished, mica tempered pottery rim sherd. Close to water ponds and cactus bushes, in Kisimo village.
ACH-01-163	Slip-finished pottery rim sherd.
ACH-02-236	Pottery sherds. One is plain, grey, thin bodied and another is reddish possibly for storage.
ACH-02-237	Pottery sherd.
ACH-02-239	Polished cobble stone for sharpening, shaped like half of a grinding stone.
ACH-02-243	Stone, natural core.
ACH-02-244	Pottery sherd.
ACH-02-251	Plain and burnished pottery sherds.
ACH-02-252	Pottery sherd.
ACH-02-253	Pottery sherd.

Heritage UID	Description
ACH-02-254	Pottery sherd.
ACH-02-268	Pottery sherds - burnished, internally abraded, sand-tempered and slipped.
ACH-02-270	Plain red pottery sherds.
ACH-02-273	Pottery sherds, black inside and out, slipped and sand-tempered. Found at the former house of Beyaza Gladys who moved to another place in Kakindo.
ACH-00-465	This belongs to the Basansyabalindambura clan. It is used by various people to perform cultural rituals.
ACH-00-066	This belongs to the Basansyabalindambura clan. It is used by various people to perform cultural rituals.
ACH-02-267	Cultural site. Mpuloma called Muchwezi in a big barkcloth tree with a lot of medicinal plants esp. Ntale ya ddungu, the cultural site addresses barrenness, blessings, employment, fishing and cultivation.
ACH-02-272	Sacred tree. Large tamarind.
ACH-00-476	Kisansya East St Paul Church of Uganda.
ACH-00-467	Kisansya East Town Church. This belongs to the Charismatics and was started in 2012.
ACH-02-233	Burial place. Two graves, of Birungi born 25th January 1959, died 28/01/2016 & Kisembo Yebazi born 1955 and died 1989 all are cemented. Under Rwamukaaga Yoweri as caretaker.
ACH-02-234	Burial place. Four graves. All cemented for (1) Julyeri Matong born 25/5/1948 and died 29/12/2012 (2) Kato, J. 01/10/2016-02/01/2016 (3) Matongo Perezi 9/6/1900-20/8/1990 (4) Mazinga Dorothy 10/5/1975-20/8/1990.
ACH-02-235	Burial place. Grave for Julius Kwikya.
ACH-02-238	Two graves, not cemented, for Asaba Zunguluuka and Kabayisane Marion with no markstones.
ACH-02-240	Grave of Kiiza Bahemurwaki Wilson who died on 24/01/2008.
ACH-02-241	Grave, not cemented, for Nsekunabo Jennipher.
ACH-02-242	Two graves, not cemented, of Buswa Blasio and Nyamugeya Dorica. Byakala Marios is the caretaker.
ACH-02-255	Burial place. Grave, cemented, for Kwesiga Nelson. There are 15 burials here. The caretaker has been Nyamuhenda Richard for 45 years.
ACH-02-257	Grave for Owadi Katusime. The caretaker is Mrs Kiiza Jolly Myapulanga.
ACH-02-271	Five graves, not cemented. One is for Isingoma Mukundu (21/4/1941-6/9/2016), close is a fence made of Lukoni shrub.
ACH-S-TEMP-004	Bayaga Clan burial place.
ACH-01-150	Two huge muteete trees.
ACH-01-152	Cactus (medicinal plant).
ACH-01-161	Neem trees (medicinal plants).
ACH-02-269	Black cooking pot (modern).
ACH- WSWW	Wansamba Sacred water well

The location of archaeology and cultural heritage assets in the vicinity of Wellpad KW-02B are shown on Figure 17-50.

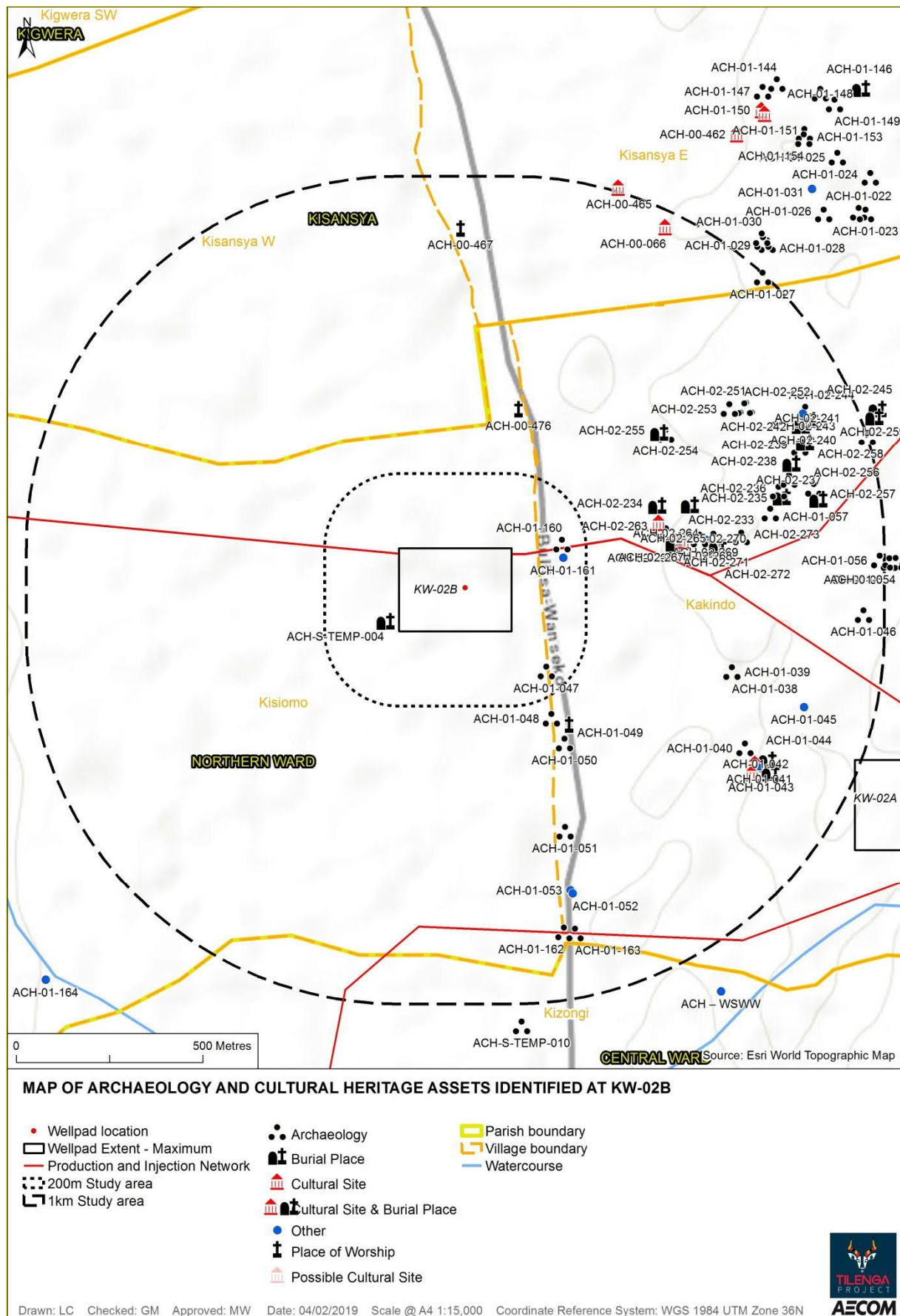


Figure 17-50: Map of archaeology and cultural heritage assets identified at KW-02B

17.6.5.36 Industrial Area/ CPF (Kasinyi) (CA-1)

The Industrial/ CPF area contains extensive pottery sherds and scatters, struck stone flakes and scrapers, grinding stones and daub indicating past occupation and settlement in the area.

The CPF / Industrial Area contains a large number of burial places, located both within and immediately outside the CPF / Industrial Area boundary.

The CPF / Industrial Area contains a relatively high number of cultural sites, including family shrines or kibila and a clan shrine of the Babala clan for good fortune in fishing.

The archaeological receptors within the CPF/Industrial Area are assessed as being of moderate (regional) significance, due to the presence of in situ materials and artefact scatters.

Burial places and cultural sites within CPF / Industrial Area are assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

The CPF / Industrial Area is located in Kasinyi village. Archaeology and cultural heritage survey was undertaken during social screening (ARTELIA 2013), on 4th December 2016 and in the course of Social & Resettlement Services for Contract Area 1 & Licensed Area 2 (North) Development Project (Proposed Industrial Area and N1 Access Road) in April and May 2017 (Atacama 2017). During the December 2016 survey the area was highly vegetated, which may have limited visibility during surface walkover survey. As a result, this survey focussed on open areas and footpaths. The subsequent survey in April 2017 noted additional sites which had been obscured by vegetation during the earlier survey, and was accompanied by Mr. Alex Wakitinti, Chairman of Cultural Leaders, and by Mr. Mzee Jonathan Mwakali, a renowned herbalist Hereditary Priest of the Balima Clan.

Archaeological findspots comprise lithics, a stone pick-axe, grinding stones, a stone pestle, numerous pottery sherds, two extensive pottery scatters and an in situ pottery scatter, ironworking tuyères, cooking stones, daub, a hearth and old house foundations. The surveys also noted recent charcoal burning mounds.

Pottery temper included grog, sand, and mica and stone. Most of the pottery was highly abraded inside and outside, indicating extensive post-depositional disturbance, perhaps by ploughing or cultivation. The pottery showed coil breakage, indicating that it was made by coiling, one of the oldest methods of making pottery in Africa.

Burial places include a graveyard with ten burials and a Bachwa clan graveyard. Forty-nine graves were noted during the RAP survey (Atacama Consulting 2017).

The CPF / Industrial Area contains a relatively large number of cultural sites. These include a spear *kibila* surrounded by Lenga plants, the *kibila* of Tundulu Bidindwa of the Bachwa clan, located in a Musingabakazi tree close to the clan graveyard, a shrine for the Kirunga spirit – a big Musingabakazi tree with a small thatched hut, the *kibila* of Kabagambe, the *kibila* of the Babala clan, the Balyambwa shrine a *kibila* in a Barkcloth tree, the *kibila* of Aeron Katogole, two family shrines in tamarind trees, a family shrine for healing, three family shrines and two cultural sites. At the entrance to Kabagambe's compound, there are two sets of triple stone piles said to be for protection, to detect evil and prevent anybody with bad intentions passing by them and proceed to the main theatre of worship (Atacama 2017, 132). A ritual structure is located within Kabagambe's compound adjacent to a mortar that is used for pounding medicine. The structure comprises a line of seven groups of three stones. At each point the stones are for: cooking; ghosts cooking; cooking for the whites; cooking for the fishers; cooking for soldiers (protection); solving problems such that black turns into white meaning from worse to better conditions; and for fishermen and hunters.

A large tamarind tree is used as a medicinal plant for Kasinyi village, and has also been used as the site of a school and a polling station. Sacred trees and medicinal plants identified include tamarind, cactus for the treatment of *amakebe* in young cows, neem trees, *Kamunye*, *Musumu*, mahogany (*Muvule*) and mango trees.

A cultural site immediately northwest of the CPF / Industrial Area is Munyagi, used by the Basiita clan throughout the entire Bunyoro region. It is located in a *Musingabakazi* tree.

Table 17-45: Archaeology and cultural heritage identified at Industrial Area

Heritage UID	Description
ACH-00-102	Burnished in and out, black, tempered with mica and sand.
ACH-00-103	Ceramics.
ACH-00-104	Ceramics.
ACH-00-110	Ceramics.
ACH-00-111	Ceramics.
ACH-00-112	Ceramics.
ACH-00-113	Small bowl, slip surface, burnish, reddish brown, tempered with mica and sand.
ACH-00-114	Ceramics.
ACH-00-115	Ceramics.
ACH-00-116	Ceramics.
ACH-00-122	Ceramics.
ACH-00-123	Roulette with 2 bevels, and plain open mouthed dependent pot slip surface, reddish brown, tempered with mica and sand.
ACH-00-124	Ceramics.
ACH-00-125	Ceramics.
ACH-00-127	Ceramics.
ACH-00-128	Ceramics.
ACH-00-129	Ceramics.
ACH-00-130	Ceramics.
ACH-00-131	Slip surface, light grey, tempered with mica and sand.
ACH-00-132	Slip surface, burnish tempered with mica and sand.
ACH-00-135	Smooth surface, light grey, tempered with sand.
ACH-00-136	Slip surface, light grey, tempered with sand.
ACH-00-137	Abraded, reddish brown, tempered with sand and grog.
ACH-00-138	Plain surface, roulette decoration black, tempered with sand and grog.
ACH-00-139	Ceramics.
ACH-00-141	Burnish, reddish brown, tempered with mica and sand.
ACH-00-142	Ceramics.
ACH-00-143	Slip surface, roulette decoration dark grey, tempered with mica and sand.
ACH-00-144	Ceramics.
ACH-00-146	Burnished in and out light grey, tempered with mica and sand.
ACH-00-149	Ceramics.
ACH-00-150	Ceramics.
ACH-00-152	Slip surface, roulette decoration, reddish brown, tempered with sand.
ACH-00-153	Black slip surface, tempered with mica and sand.
ACH-00-154	Ceramics.
ACH-00-155	Ceramics.
ACH-00-156	Ceramics.
ACH-00-157	Ceramics.
ACH-00-158	Ceramics.
ACH-00-159	Pick axe (sandstone material).
ACH-00-160	Three cooking stones.
ACH-00-161	Scraper (quartz material).
ACH-00-162	Grinding stone.
ACH-00-163	Grinding stone (basalt material).
ACH-00-164	Flake.

Heritage UID	Description
ACH-00-165	Flake.
ACH-00-166	Flake.
ACH-00-167	Grinding stone (basalt).
ACH-00-392	Ceramics.
ACH-00-410	Ceramics.
ACH-00-411	Ceramics.
ACH-00-412	Ceramics.
ACH-00-423	Abraded, reddish brown, tempered with mica and sand.
ACH-01-107	Heavily abraded pottery sherd.
ACH-01-108	Pottery rim sherd and stone pestle rubber.
ACH-01-109	Slipped pottery sherd, braided internally.
ACH-01-110	Extensive pottery scatter c. 500m in diameter, including red slip and sooted ceramics with roulette decoration, heavily abraded.
ACH-01-111	Slipped pottery sherd, roulette decoration.
ACH-01-112	Abraded pottery sherd, evidence of cooking in locality.
ACH-01-113	Pottery sherd.
ACH-01-114	Pottery sherds found in (modern) charcoal burning clamp remains.
ACH-01-116	Red, thin bodied, burnished pottery sherds and medicinal plants.
ACH-01-117	Extensive pottery scatter, including rim sherd in red slipped ware with sand and grog temper.
ACH-01-118	Daub.
ACH-01-120	In situ pottery scatter.
ACH-01-121	Evidence of charcoal burning (modern) and cactus (medicinal plant).
ACH-01-140	Slip-finished pottery sherd with grog, sand, mica and grit temper and evidence of coil breakage.
ACH-01-141	Pottery scatter and tuyères. Roulette-decorated, slipped pottery.
ACH-01-142	Lithic scraper and pottery rim sherd.
ACH-01-143	Pottery sherd, black slip and small body.
ACH-RAP-001	Thick bodied, interior abraded, reddish brown, tempered with sand and grog.
ACH-RAP-002	Slip surface, red in and out, tempered with mica and sand.
ACH-RAP-006	Ceramics.
ACH-RAP-007	Ceramics.
ACH-RAP-008	Burnish surface, reddish brown, tempered with mica and sand.
ACH-RAP-009	Ceramics.
ACH-RAP-010	Ceramics.
ACH-RAP-018	Ceramics.
ACH-RAP-019	Ceramics.
ACH-RAP-020	Ceramics.
ACH-RAP-021	Ceramics.
ACH-RAP-022	Ceramics.
ACH-RAP-027	Ceramics.
ACH-RAP-034	Plain surface, light grey, tempered with mica and sand.
ACH-RAP-035	Plain surface, reddish brown, tempered with mica and sand.
ACH-RAP-041	Ceramics.
ACH-RAP-046	Ceramics.
ACH-RAP-048	Grey abraded surface, tempered with mica and sand.
ACH-RAP-049	Ceramics.
ACH-RAP-052	Ceramics.
ACH-RAP-083	Ceramics.

Heritage UID	Description
ACH-RAP-089	Ceramics.
ACH-01-115	10 burials, pottery sherds and cactus (medicinal plant). Burial of the father of Isingom.
ACH-00-394	This is used by the Basiita clan throughout the entire Bunyoro region.
ACH-00-168	Kibila, spear (family shrines), the shrine is seen from a spear that is in the ground and surrounded by <i>Lenga</i> plants.
ACH-00-169	Family shrine.
ACH-00-170	Shrine for Kirunga (I don't fear) spirit, a big <i>Musingabakazi</i> tree with a small grass thatched hut.
ACH-00-171	Kibila of the Babala clan. Clan members pick leaves of <i>Lenga</i> plant for good fortune in fishing, clan members also slaughter white chicken to appease the gods. In case of good fish catch, members bring the first and last fish in the net for offering). The only item present at the shrine are the <i>Lenga</i> plants.
ACH-00-172	Kibila of Kabagambe. Located in a huge shrub with a prominent Mutora tree and other medicinal plants, there is a two-mouthed pot.
ACH-00-173	Family shrine. Located within a house, where prescriptions take place for the sick.
ACH-00-175	Kibila.
ACH-00-176	Cultural site.
ACH-00-177	Kibila (family shrines). Three stones, chicken legs, aloe vera plant, chicken feathers, Barkcloth tree, rope-like pieces that open for the Mbandwa spirits), head of a bird (orapi), and <i>Lenga</i> plant were at the site.
ACH-00-178	Kibila of Aeron Katongole.
ACH-00-179	Shrine (family shrine).
ACH-00-180	In the Munywamizi is the Balyambwa shrine, this had a small grass thatched hut with chicken feathers.
ACH-00-181	Cultural site - Mbumbuula, Munywamizi.
ACH-00-393	Tamarind tree (family shrines).
ACH-00-399	<i>Kibila</i> of Tundulu Bidindwa of the Bachwa clan in a <i>Musingabakazi</i> tree and close to it is a graveyard for the clan.
ACH-RAP-075	<i>Kibila</i> (family shrines).
ACH-RAP-084	Tamarind tree, meeting point.
ACH-RAP-087	Munyagi is the Mbandwa for the Basiita/Balima clan. Located in a <i>Musingabakazi</i> tree. A cow and a goat are slaughtered annually for their celebrations. The goat must have black and white colours. Because the munyagi is a green snake, they regard all green snakes for that matter, as their relatives so they do not kill them. Under the care of Mzee Jonathan Mwakali, a renowned herbalist and resident of Kasinyi village. Munyagi is a green snake that rests in this tree. The site is in a huge <i>Musingabakazi</i> tree and is close to the tamarind meeting tree which is slightly north of the project area.
ACH-RAP-117	Grave.
ACH-RAP-122	Graves.
ACH-RAP-123	Grave.
ACH-RAP-124	Grave.
ACH-RAP-125	Grave.
ACH-RAP-126	Grave.
ACH-RAP-127	Grave.
ACH-RAP-128	Grave.
ACH-RAP-148	Grave.
ACH-RAP-149	Grave.
ACH-RAP-150	Grave.
ACH-RAP-151	Grave.
ACH-RAP-115	Burial place. Ten graves.
ACH-RAP-104	Grave.
ACH-RAP-105	Grave.
ACH-RAP-106	Grave.

Heritage UID	Description
ACH-RAP-107	Grave.
ACH-RAP-108	Grave.
ACH-RAP-109	Grave.
ACH-RAP-110	Grave.
ACH-RAP-111	Grave.
ACH-RAP-112	Grave.
ACH-RAP-113	Grave.
ACH-RAP-114	Grave.
ACH-RAP-147	Grave.

The location of archaeology and cultural heritage assets identified at the Industrial Area (including the CPF/Industrial Area) are shown on Figure 17-51 and Figure 17-52.

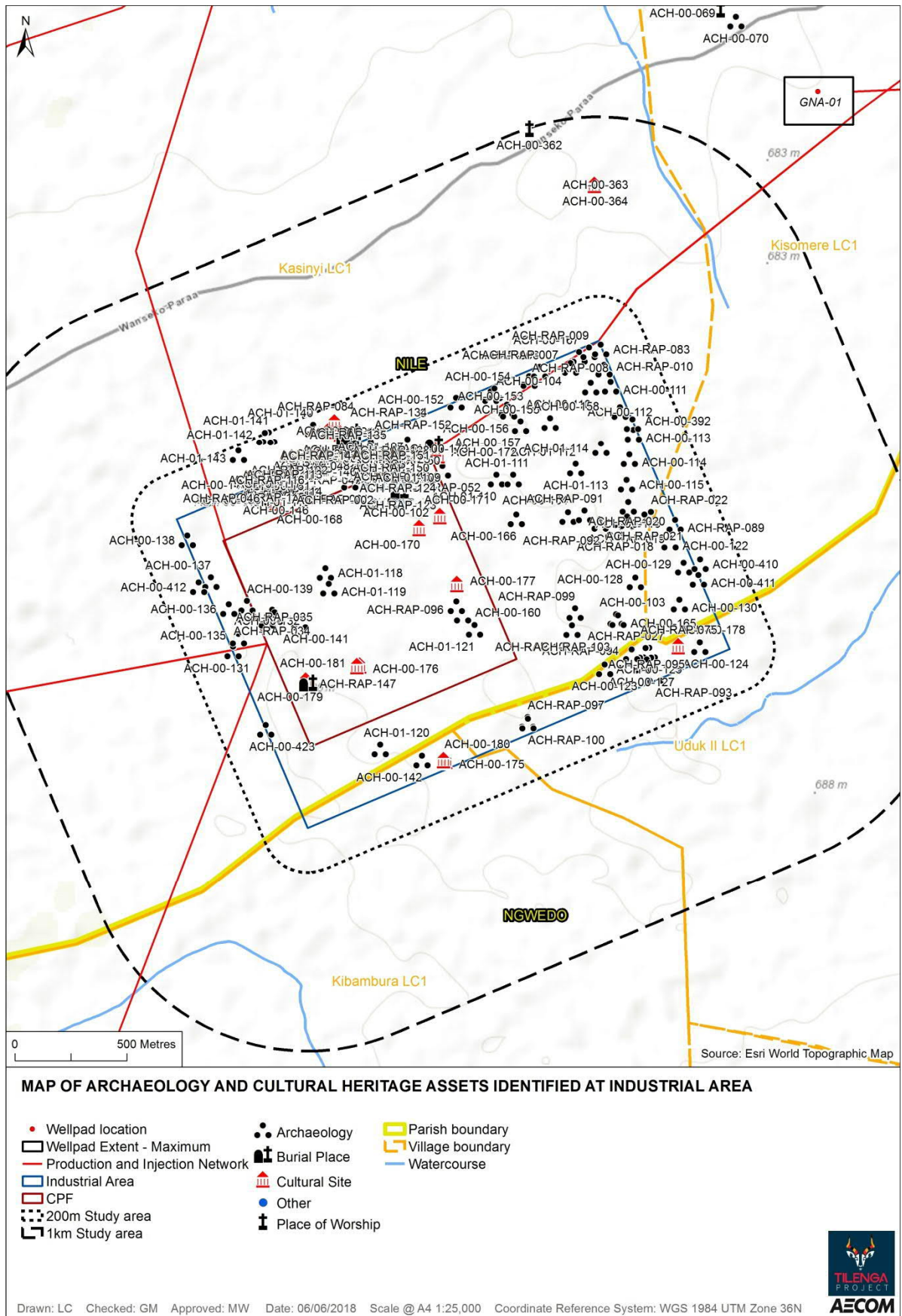


Figure 17-51: Map of archaeology and cultural heritage assets identified at Industrial Area (including CPF / Industrial Area)

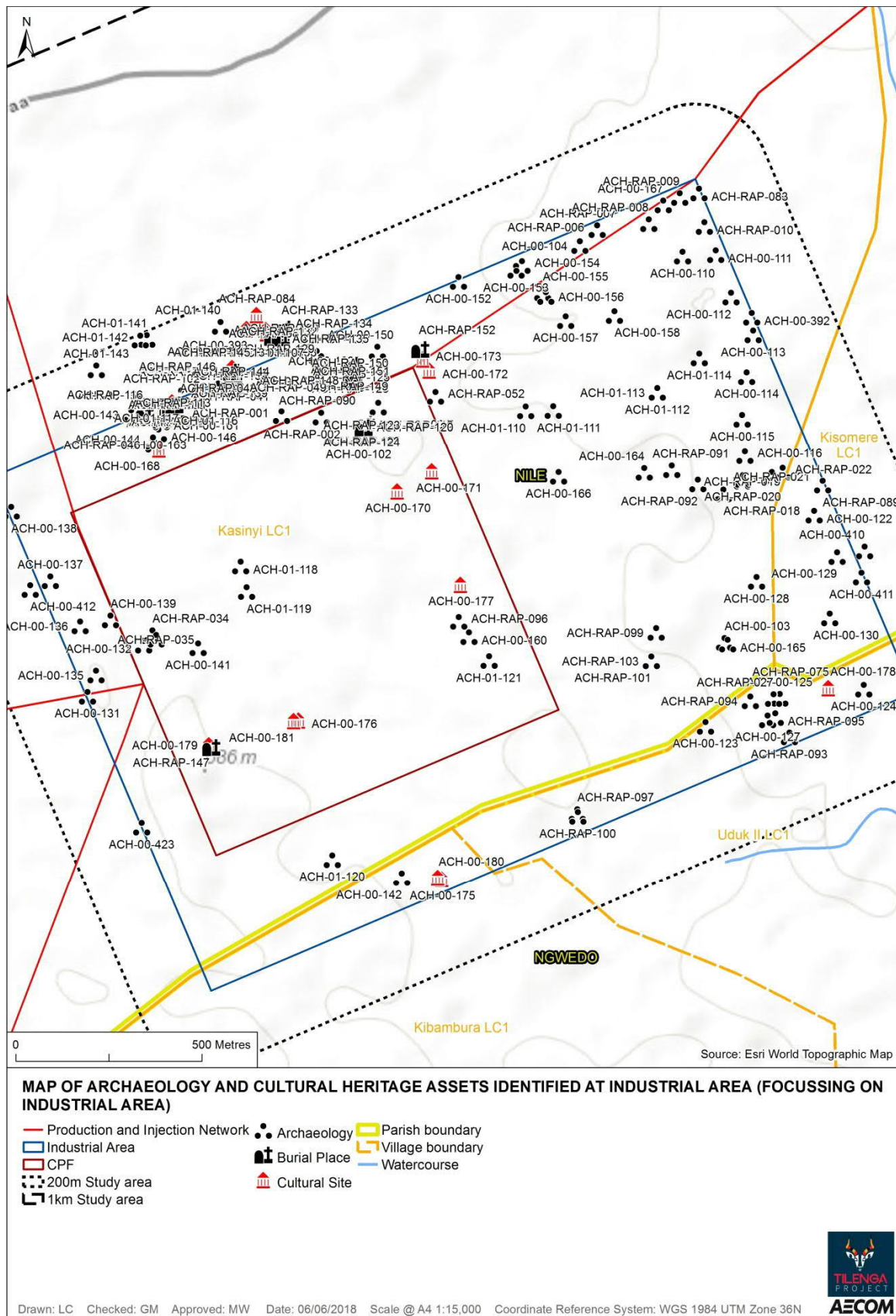


Figure 17-52: Map of archaeology and cultural heritage assets identified at Industrial Area (including CPF / Industrial Area) (focussing on wellpad area)

17.6.5.37 Water Abstraction System (Kisiimo Cell) (LA-2)

The proposed location of the Water Abstraction System (WAS) was not subject to cultural heritage and archaeological walkover survey in 2017 since the designs had not progressed to the point of specifying the location of the various system facilities at the time of the surveys. A site walkover survey will be undertaken prior to any site works being undertaken.

Any burial places, places of worship and cultural sites would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

Cultural heritage receptors in the wider vicinity were identified in the course of the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016.

Receptors listed below represent those nearest to the Water Abstraction System. However, all receptors listed below fall outside of the 1km Water Abstraction System study area.

Table 17-46: Archaeology and cultural heritage identified in the vicinity of the Water Abstraction System

Heritage UID	Description
ACH-S-TEMP-005	Worship place, Kisiimo Cell. Waluhoiza Church of Uganda.
ACH-S-TEMP-006	Sacred Tree, Kisiimo Cell. Bibaale tree.
ACH-S-TEMP-007	Burial place, Kisiimo Cell. Katuugo Cemetery.
ACH-S-TEMP-008	Burial place, Kisiimo Cell. Katuugo Cemetery.
ACH-S-TEMP-009	Worship place, Kisiimo Cell. Covenant Pentecostal Church.
ACH-S-TEMP-011	Worship place, Kisiimo Cell. Full Gospel Church.
ACH-01-164	Landing site, Kisiimo Cell.
ACH-01-165	School & church, Kisiimo Cell.
ACH-01-166	Medicinal plant, Kisiimo Cell.

The location of known cultural heritage assets identified in the vicinity of the Water Abstraction System are shown on Figure 17-53.

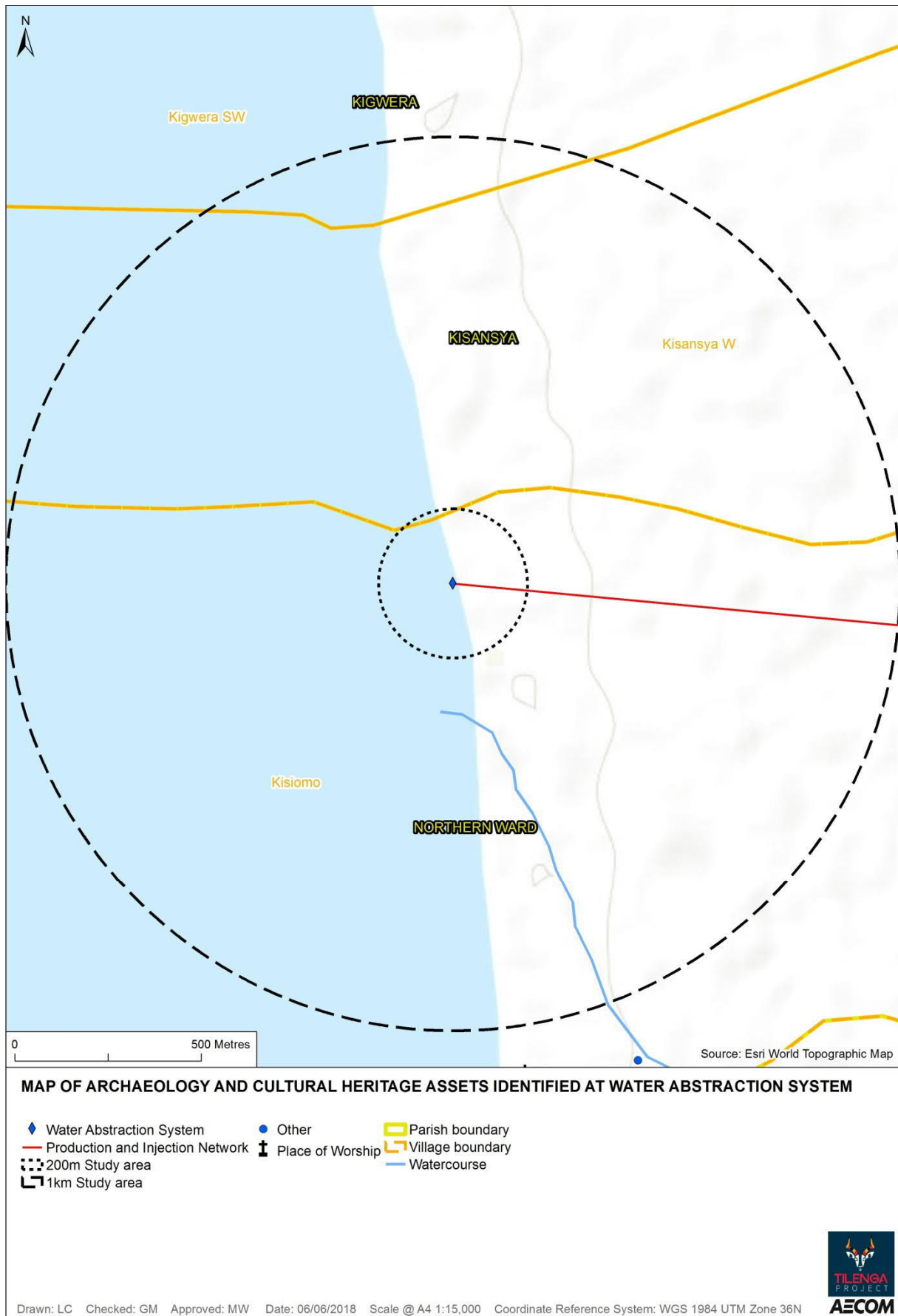


Figure 17-53: Map of archaeology and cultural heritage assets in the vicinity of the Water Abstraction Point

17.6.5.38 Flowline and Pipeline Routes NSO and KGG wellpad sites (covering flow routes to NSO-01, NSO-02, NSO-03, NSO-04, NSO-05, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, KGG-06 and KGG-09)

The proposed flow routes were not subject to archaeological and cultural heritage walkover surveys as the detailed routing was not available at the time of the surveys. However, some of the routes fall within the area surveyed as part of the wellpad sites, and as a result some data is available.

The limited flow routes that have been covered by wellpad sites contain six receptors on the line of the flow lines, or within a 30m buffer surrounding the proposed flow lines. These include decorated (ACH-01-128) and undecorated pottery (ACH-01-127, ACH-01-129, and ACH-01-134), as well as a possible cultural site in the form of a medicinal Mukolyo plant (ACH-01-126). All of these assets are near the point at which the flow lines split to NSO-05 and NSO-01. The remaining receptor, located within the 200m study area for KGG-04, is a cultural site used for sacrifices (ACH-02-684).

Any burial places, places of worship and cultural sites would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

All presently unsurveyed flowline routes (South Nile) will be surveyed as part of RAP process.

The proposed flow lines serving the NSO and KGG wellpad sites were not subject to survey at the time of the walkover survey because final designs had not been received when fieldwork was being undertaken. Cultural heritage receptors in the wider vicinity were identified in the course of the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017. All presently unsurveyed flowline and Pipeline Routes will be surveyed as part of RAP, prior to the start of on-site works.

The flow lines pass through the lands of a number of villages. These are Kasinyi, Ngwedo, Kibambura, Ngwedo Farm, Uduk I, Kijumbya, Uribo, Gotlyech, Beroya, and Kichoke Bugana. The landscape in this area varies from intensive arable agriculture to areas of more open grazing.

Archaeological sites identified on the flow line route and 30m study area are limited to finds of pottery sherds. Material recovered was both decorated and undecorated.

Two cultural sites were recorded, a tamarind tree used for sacrifice and a mukolyo plant.

It should be noted that a large number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, beyond the the 30m study area. These include burial grounds, places of worship, and sacred sites. Archaeological sites have recorded pottery, lithic scatters and stray finds.

Table 17-47: Archaeology and cultural heritage identified in the vicinity of Flow Routes to NSO and KGG wellpad sites

Heritage UID	Description
ACH-01-126	Daub and Mukolyo plant.
ACH-01-128	Pottery sherd with roulette decoration.
ACH-01-127	Pottery sherd.
ACH-01-129	Pottery sherd.
ACH-01-134	Slipped and burnished pottery.
ACH-02-684	Cultural site and sacrificial place at a Tamarind tree.

17.6.5.39 Flowline and Pipeline Routes KW and NGR south wellpad sites (covering flow routes to NRG-03A, NGR-05A, NGR-06, KW-01, KW-02a and KW-02b)

The proposed flow routes were not subject to cultural heritage and archaeological walkover survey. However, some of the routes fall within the area surveyed as part of the wellpad sites, and as a result some data is available. This work has identified five receptors on the line of the flow lines, or within a 30m buffer surrounding the proposed flow lines. These largely consisted of undecorated pottery (ACH-00-131, ACH-01-160, ACH-01-162 and ACH-01-163), as well as a burial site containing six graves (ACH-02-247). The majority of these receptors are to the south of the area near the flow lines to the KW-02a and KW-02b wellpad sites.

Any burial places, places of worship and cultural sites would be assessed as being of high significance, as

communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

All presently unsurveyed flowline routes (South Nile) will be surveyed as part of RAP process.

The proposed flow lines serving the KW and southern NGR wellpad sites were not subject to survey at the time of the walkover survey. Cultural heritage receptors in the wider vicinity were identified in the course of the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017.

The flow lines pass through the lands of a number of villages. These are Kirama, Kasinyi, Kigwera NE, Ndandamire, Kisansya E, Bikongoro, Kakindo, Kisimo, Kizongi, and Kityanga. The landscape in this area varies from intensive arable agriculture to areas of more open grazing.

Archaeological sites identified on the flow line route and 30m study area are limited to finds of pottery sherds. Material recovered was both decorated and undecorated.

A single cultural site was recorded – a burial ground containing six graves.

It should be noted that a large number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, beyond the 30m study area. These have included burial grounds, places of worship, and sacred sites. Archaeological sites have included pottery and lithic scatters and stray finds.

Table 17-48: Archaeology and cultural heritage identified in the vicinity of Flow Routes to KW and southern NGR wellpad sites

Heritage UID	Description
ACH-00-131	Pottery sherd with slip.
ACH-02-247	Burial ground with six graves.
ACH-01-160	Slip finished pottery.
ACH-01-162	Slip finished pottery.
ACH-01-163	Slip finished pottery.

17.6.5.40 Flowlines and pipeline Routes to GNA and NGR north wellpad sites (covering flow routes to GNA-01, GNA-02, GNA-03, GNA-04, NGR-01, and NGR-02) and to the Victoria Nile

The proposed flow routes were not subject to cultural heritage and archaeology walkover survey. However, some of the routes fall within the areas surveyed as part of the wellpad sites, and as a result some data is available. This work has identified a single receptor on the line of the flow lines, or within a 30m buffer surrounding the proposed flow lines: the find spot of a pottery sherd (ACH-02-335).

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

All presently unsurveyed flowline routes (South Nile) will be surveyed as part of RAP process.

The proposed flow lines serving the GNA, and NGR northern wellpad sites, as well as leading up to the Victoria Nile crossing, were not subject to survey at the time of the 2017 walkover survey. Cultural heritage receptors in the wider vicinity were identified in the course of the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017.

The flow lines pass through the lands of a number of villages. These are Kasinyi, Kisomere, Kilyango, Avogera, and Uduk II. The landscape in this area varies from intensive arable agriculture to areas of more open grazing. It also includes the southern bank of the Victoria Nile.

Archaeological sites identified on the route, and 30m study area, of the flow lines are limited to finds of pottery.

It should be noted that a large number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, outside of the 30m study area. These have included burial grounds, places of worship, and sacred sites. Archaeological sites have included pottery and lithic scatters and stray finds.

Table 17-49: Archaeology and cultural heritage identified in the vicinity of Flow Routes to GNA and NGR north wellpad sites, and to the Victoria Nile

Heritage UID	Description
ACH-02-335	Pottery sherd.

17.6.5.41 Flowline and Pipeline Routes to the JBR wellpad sites (covering flow routes to JBR-01, JBR-02, JBR-03, JBR-04, JBR-05, JBR-06, JBR-07, JBR-08, JBR-09 and JBR-10)

The proposed flow routes were not subject to archaeological and cultural heritage walkover survey. However, some of the routes fall within the area surveyed as part of the wellpad sites, and as a result some data is available. This work has identified a single receptor on the line of the flow lines, or within a 30m buffer surrounding the proposed flow lines: the find spot of a stone object (ACH-02-335).

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

A commitment has been made for walkover surveys to be conducted on all routes prior to the commencement of any on-site works

The proposed flow lines serving the JBR wellpad sites, as well as leading up to Victoria Nile crossing, were not subject to survey at the time of the walkover survey. Cultural heritage receptors in the wider vicinity were identified in the course of the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017.

The flow lines pass through the lands of the MFNP, a landscape that varies from dense vegetation, to open grassland and woodland. It also includes the north bank of the Victoria Nile.

Archaeological sites identified on the flow line route and 30m study area are limited to a lithic findspot.

It should be noted that a large number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, beyond the 30m study area. These largely consisted of pottery and lithic scatters and stray finds.

Table 17-50: Archaeology and cultural heritage identified in the vicinity of Flow Routes to the JBR wellpad sites

Heritage UID	Description
ACH-01-003	Lithic core.

17.6.5.42 New roads proposed north of the Victoria Nile (C1 and C3)

The proposed roads were not subject to archaeological and cultural heritage walkover survey. However, some sections of the roads fall within the area surveyed as part of the wellpad sites, and as a result some data is available. This work identified two receptors on the line of new road C3, these being the find spots of lithics (ACH-02-346 and ACH-02-345).

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

A commitment has been made for walkover surveys to be conducted on all routes prior to the commencement of any on-site works.

The proposed new road north of the Victoria Nile, in the area of the JBR wellpad sites, was not subject to survey at the time of the walkover survey. Some limited areas were covered in the course of earlier works including the December 2016 ESIA walkover survey and the ESIA SBS undertaken in December 2016 and July 2017. However, these works only cover very small sections of the proposed new roads, and specifically around the VNFC.

The roads pass through the lands of the MFNP, a landscape that varies from dense vegetation, to open grassland and woodland.

Archaeological sites identified on the route, and 50m study area buffering the proposed new roads are limited to two lithic findspots from the C3 road near the VNFC.

It should be noted that a number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, outside of the 50m study area. These largely consisted of pottery and lithic scatters and stray finds.

Table 17-51: Archaeology and cultural heritage identified in the vicinity of new roads proposed north of the Victoria Nile

Heritage UID	Description
ACH-02-346	Lithic core
ACH-02-345	Lithics

17.6.5.43 New roads proposed south of the Victoria Nile (N2 and W1)

The proposed roads were not subject to archaeological and cultural heritage walkover survey. However, some very limited sections of the roads fall within the area surveyed as part of the wellpad sites, and as a result some data is available. This work failed to identify receptors on the line of new roads, of within the 50m study area.

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

All presently unsurveyed routes (South Nile) will be surveyed as part of RAP process.

The proposed new roads south of the Victoria Nile, located within the KW, NGR and GNA wellpad areas, were not subject to survey at the time of the walkover survey. Some limited areas were covered in the course of earlier works including the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017. However, these works only cover very small sections of the proposed new roads.

The roads pass through the lands of a number of villages. Road W1 passes through Kisimo Village, while Road N2 passes through the village lands of Kirama, Kigwera NE, Kigwera SE, and, Bikongoro. The landscape in this area varies from intensive arable agriculture to areas of more open grazing.

No archaeological sites identified during previous surveys of wellpad sites fall within the 50m study area of the proposed new roads. However, it should be noted that a number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, outside of the 50m study area. These include cultural sites such as burials, sacred trees, and places of worship. Archaeological sites include pottery and lithic scatters and stray finds.

17.6.5.44 Upgraded roads (A1, A2, A3, A4, B1, and B2)

Proposed upgraded roads were surveyed as part of the Early Works Project Brief (AWE 2017), which identified cultural sites. Some very limited sections of the roads also fall within the area surveyed as part of the wellpad sites, and as a result some data is available. This work identified 28 receptors on the line of roads to be upgraded, or within the 50m study area. These sites included pottery and lithics as well as burial grounds, places of worship, and sacred sites. See Tables 17.52 and 17.53 below for full details.

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

The proposed roads to be upgraded are located throughout the area south of the Victoria Nile, and were not subject to survey at the time of the walkover survey. Some limited areas were covered in the course of earlier works including the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017. However, these works only cover very small sections of the proposed road upgrades. Proposed upgraded roads were surveyed as part of the Early Works Project Brief (AWE 2017), which identified cultural sites.

The current roads to be upgraded are located throughout the area south of the Victoria Nile, and as a result

they are located throughout the lands of a number of villages. The landscape in this area varies from intensive arable agriculture to areas of more open grazing, and coastal plain.

Archaeological sites identified during previous surveys of wellpad sites that fall within the 50m study area of the proposed road upgrades include pottery (both decorated and undecorated) and lithics.

Cultural sites within the 50m study area include trees used for sacrifice.

However, it should be noted that a number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, outside of the 50m study area. These include cultural sites such as burials, sacred trees, and places of worship. Archaeological sites include pottery, lithic scatters and stray finds.

Table 17-52: Archaeology and cultural heritage identified in the vicinity of roads to be upgraded

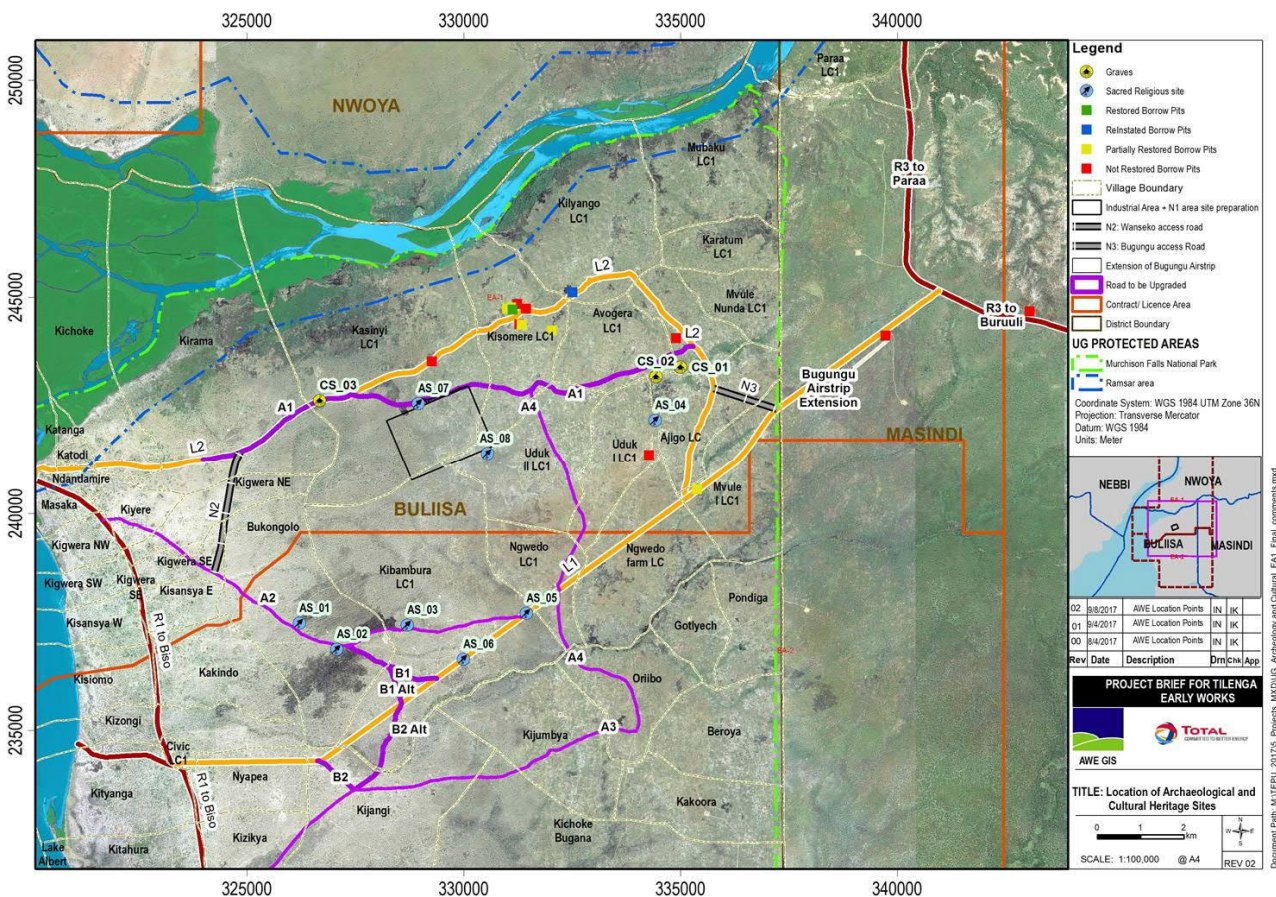
Heritage UID	Description
ACH-00-386	Faunal remains. Jaw bone.
ACH-00-384	Individual grave site.
ACH-00-388	Burial place with four graves.
ACH-01-141	Pottery scatter (decorated with roulette decoration) and tuyeres.
ACH-01-142	Lithic (scraper) and pottery.
ACH-RAP-084	Family shrine at Tarmarine tree.
ACH-00-376	Individual grave site.
ACH-00-377	Graveyard.
ACH-00-095	Avogera Open Heaven Church.
ACH-00-370	Traditional healer.
ACH-00-378	Avogera Church of Uganda.
ACH-00-381	Akichira Catholic Church.
ACH-00-089	Cultural site – Alur sacred tree used for sacrifice.
ACH-01-059	Pottery sherd.
ACH-00-090	Uduk II Church of God.
ACH-00-091	Uduk II Pentecostal Church.
ACH-01-058	Large pottery scatter.
ACH-00-432	Cultural site – Alur sacred tree used for sacrifice.
ACH-00-433	Alur sacred area.
ACH-00-457	Ngwedo Catholic Church.
ACH-00-461	Ngwedo Mosque.
ACH-02-608	Pottery sherd – decorated and undecorated.
ACH-00-497	Kijumbya Catholic Church.
ACH-02-692	Pottery sherds.
ACH-02-691	Possible cultural site – barkcloth tree.
ACH-00-037	LSA quartz cores.
ACH-00-038	LSA quartz core.
ACH-00-042	Bone.

Cultural heritage survey has been undertaken as part of the Tilenga Early Works Project Brief (AWE, September 2017) and results are summarised here. This survey identified cultural sacred sites (clan and family) and graveyards, listed in Table 17-53 below and mapped in Figure 17-55. All the graveyards observed were more than 10m away from route A1.

Table 17-53: Archaeology and cultural heritage identified in the vicinity of upgraded roads (A1, A2, A3, A4, B1, and B2) (AWE 2017)

Heritage ID	Project Component	Heritage Name
AS_01	Proposed Road Upgrade A2	Sacred tree: Kalusyeye site (belonging to Kihongo of Basyabi clan)
AS_02	Proposed Road Upgrade A2	Sacred tree: Gasisa site (belonging to Kihongo of Basyabi)
AS_03	Proposed Road Upgrade A2	Sacred tree: Kamagiinya site (belonging to Kihongo of Batemura clan)
AS_04	Proposed Road Upgrade A4	Sacred ground at Uduk 1
AS_05	Buliisa-Ngwedo Main road	Sacred tree: Kabolwa site (belonging to Kihongo of Batemura clan)
AS_06	Buliisa-Ngwedo Main road	Sacred tree: Lubanga-nyakwata Site (belonging to Kibambura of Batemura clan)
AS_07	Industrial area	Sacred tree: Munyagi site (belonging to Mpuluma of Balima clan)
AS_08	Industrial area	Sacred tree: Nyinabarongo site (belonging to Kihongo of Bateemura clan)
CS_01	Proposed Road Upgrade A1	Avogera: Graves and house hold shrines
CS_02	Proposed Road Upgrade A1	Avogera: Graves and house hold shrines
CS_03	Proposed Road Upgrade A1	Kasenyi: Graves and house hold shrines

Figure 17-54: Map of archaeology and cultural heritage assets identified in the vicinity of upgraded roads (A1, A2, A3, A4, B1, and B2) (AWE 2017)



17.6.5.45 Inter field Access Roads (linking to wellpad sites NGR-01, NGR-02, GNA-01, GNA-02, GNA-03, GNA-04, NSO-01, NSO-02, NSO-03, NSO-04, NSO-05, NSO-06, KGG-05, KGG-03, KGG-06, KGG-09, KW-01, KW-02A, and KW-02B)

The proposed roads were not subject to archaeological or cultural heritage walkover survey. All presently unsurveyed flowline routes (South Nile) will be surveyed as part of RAP process. Interfield Access Roads within the MFNP will use the same route corridors as the flowlines and as such will still need to be surveyed prior to works commencing. However, many sections of the roads fall within the areas surveyed as part of the wellpad sites, and as a result some data is available. This work identified 14 receptors on the line of the inter field roads, or within the 50m study area. These sites included pottery and lithics as well as sacred sites. See Table 17-55 below for full details.

Any burial places, places of worship and cultural sites that might exist would be assessed as being of high significance, as communities use, or have used within living memory, the cultural heritage for long-standing cultural and religious purposes.

The proposed roads to be upgraded are located throughout the area south of the Victoria Nile, and were not subject to survey at the time of the walkover survey. Some limited areas were covered in the course of earlier works including the December 2016 ESIA walkover survey and the ESIA social survey undertaken in December 2016 and July 2017. However, these works only cover very small sections of the proposed new inter field roads.

The inter field roads are spread throughout the lands of a number of villages south of the Victoria Nile. Road W1 passes through Kisimo Village, while Road N2 passes through the majority of the villages that fall within the development area south of the Victoria Nile, and the landscape in this area varies from intensive arable agriculture to areas of more open grazing, and coastal plain.

Archaeological sites identified during previous surveys of wellpad sites that fall within the 50m study area of the proposed road upgrades include pottery (both decorated and undecorated) and lithics.

Cultural sites within the 50m study area include trees used for sacrifice, as well as burial grounds, individual burials, and places of worship.

However, it should be noted that a number of archaeological and cultural sites have been identified in areas that have been subject to archaeological walkover surveys in the surrounding area, outside of the 50m study area. These include cultural sites such as burials, sacred trees, and places of worship. Archaeological sites include pottery and lithic scatters and stray finds.

Table 17-54: Archaeology and cultural heritage identified in the vicinity of new inter field access roads.

Heritage UID	Description
ACH-02-412	Cultural site. Ihongo called Buswa in a tamarind tree.
ACH-02-684	Cultural site and sacrificial place.
ACH-02-663	Possible cultural site. Trees usually associated with worship.
ACH-01-099	Pottery sherd.
ACH-02-307	Pottery sherds.
ACH-02-308	Pottery sherds – sooted.
ACH-02-339	Pottery sherds.
ACH-02-340	Pottery sherds.
ACH-02-107	Concentration of pottery and animal bone.
ACH-02-108	Pottery sherd.
ACH-02-109	Concentration of pottery sherds.
ACH-02-110	Quartz flake fragment.
ACH-02-111	Pottery sherds. Possible Chobi Ware.
ACH-02-112	Cultural site. Mutwa belonging to Balima clan.

17.6.5.46 Bugungu Airstrip, Tangi Operation Support Base, Masindi Check Point and material sourcing areas (borrow pits and quarry sites)

17.6.5.46.1 Bugungu Airstrip

Although borrow pit locations at Bugungu Airstrip have been subject to archaeology and cultural heritage walkover survey (AWE 2017), no systematic archaeology and cultural heritage survey of the Bugungu Airstrip area has been undertaken.

It is not anticipated that the Project will involve any intrusive groundworks at Bugungu Airstrip, although it will result in increased air traffic. For this reason, no archaeology and cultural heritage walkover surveys are proposed in this area.

17.6.5.46.2 Tangi Operation Support Base

The Tangi Operation Support Base area has not been subject to systematic archaeology and cultural heritage walkover survey.

Archaeology and cultural heritage walkover surveys will be conducted at the Tangi Operation Support Base prior to the commencement of any on-site works.

17.6.5.46.3 Masindi Check Point

The Masindi Check Point area has not been subject to systematic archaeology and cultural heritage walkover survey.

Archaeology and cultural heritage walkover surveys will be conducted at the Masindi Check Point prior to the commencement of any on-site works.

17.6.5.46.4 Material sourcing areas (borrow pits and quarry sites)

A number of borrow pits are proposed across the Project Area. The location of these sites is not yet known and as a result they have not been subject to an archaeology and cultural heritage walkover survey.

Archaeology and cultural heritage walkover surveys will be conducted on all material sourcing areas within the Project Area prior to the commencement of any on-site works.

The locations of borrow pits at the Bugungu airstrip and at Kisomere Village were inspected in the course of the Tilenga Early Works Project Brief for the presence of archaeological materials but none were observed (AWE 2017).

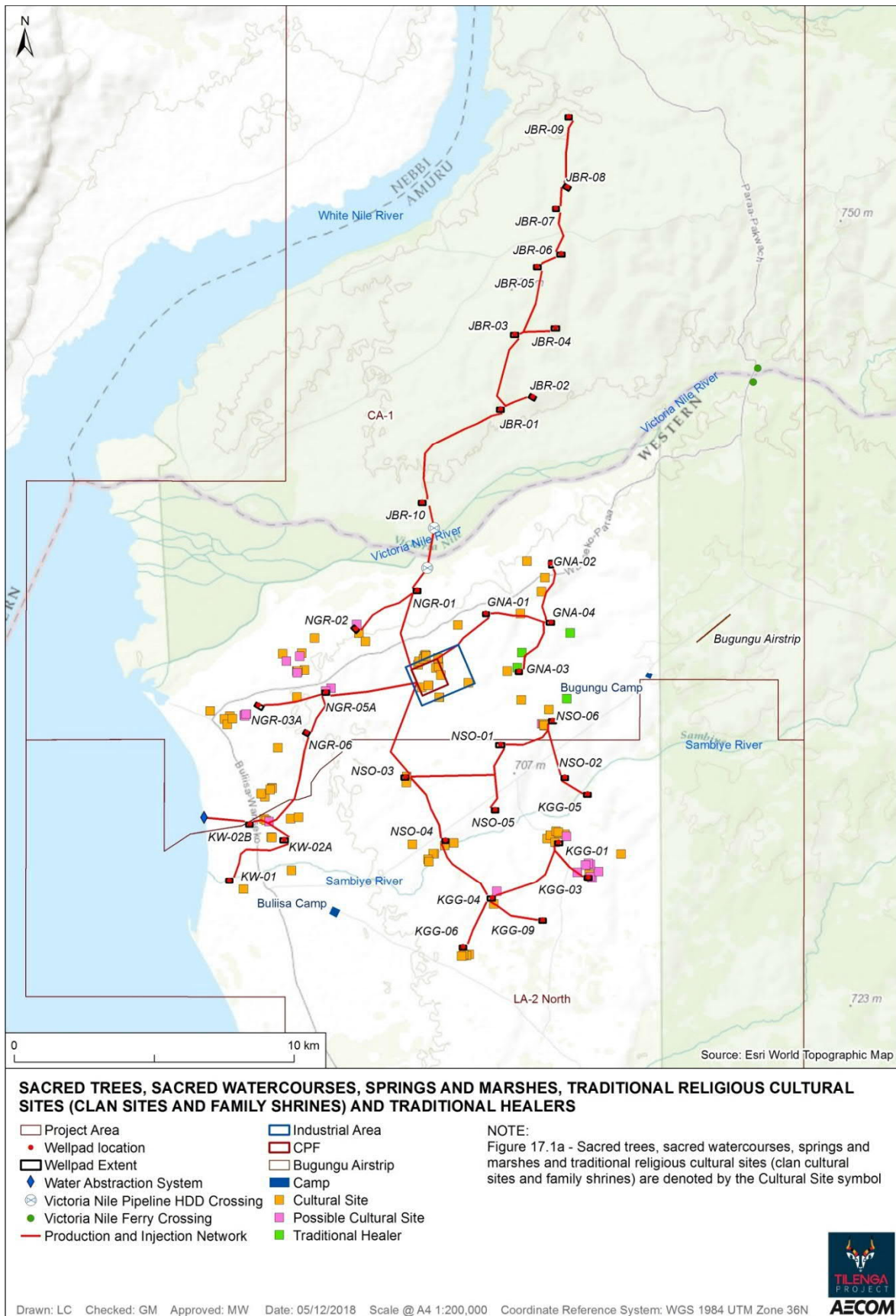


Figure 17-55: Traditional religious cultural sites (clan sites and family shrines, sacred trees, sacred watercourses, springs and marshes) and traditional healers

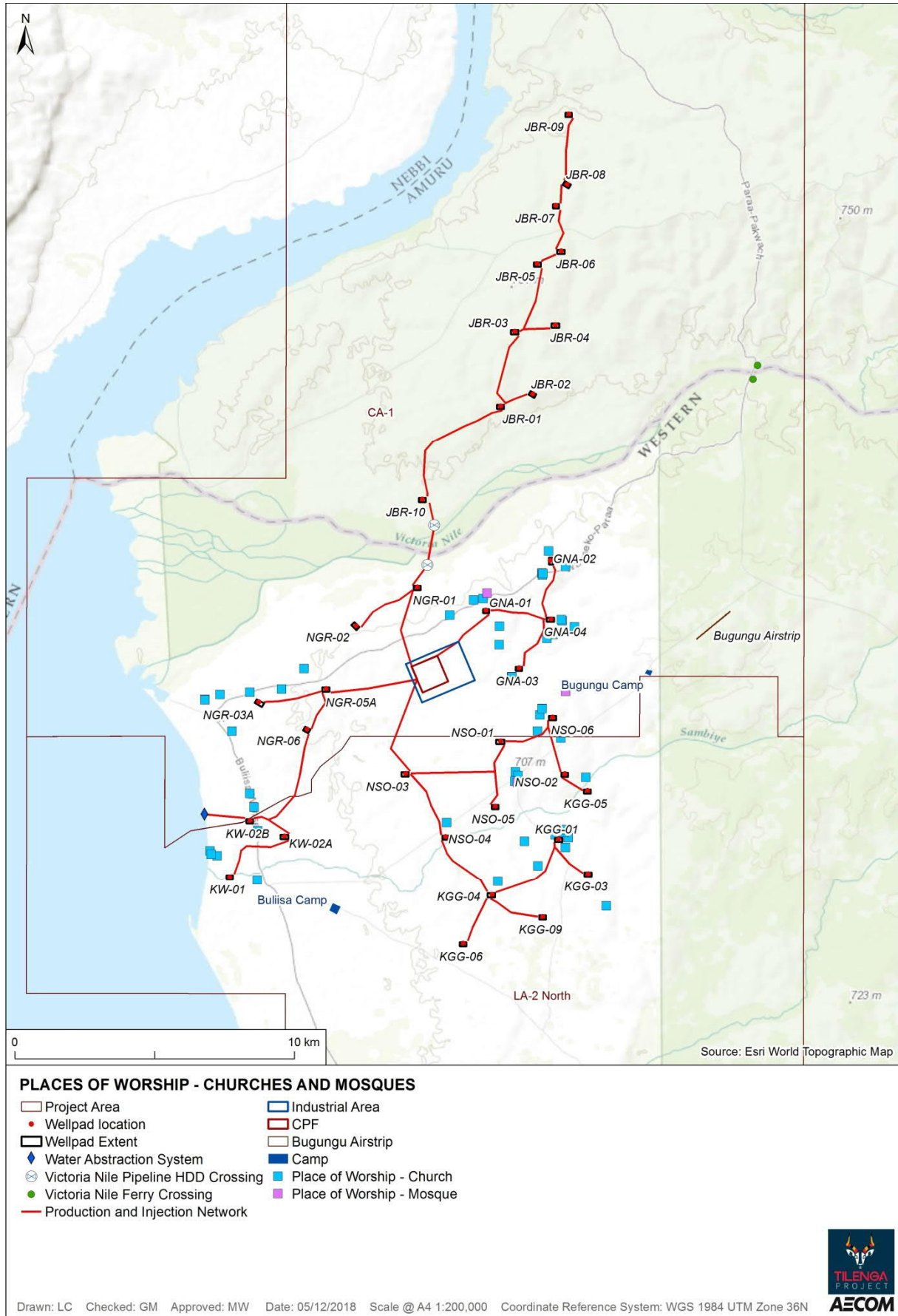


Figure 17-56: Places of worship – churches and mosques

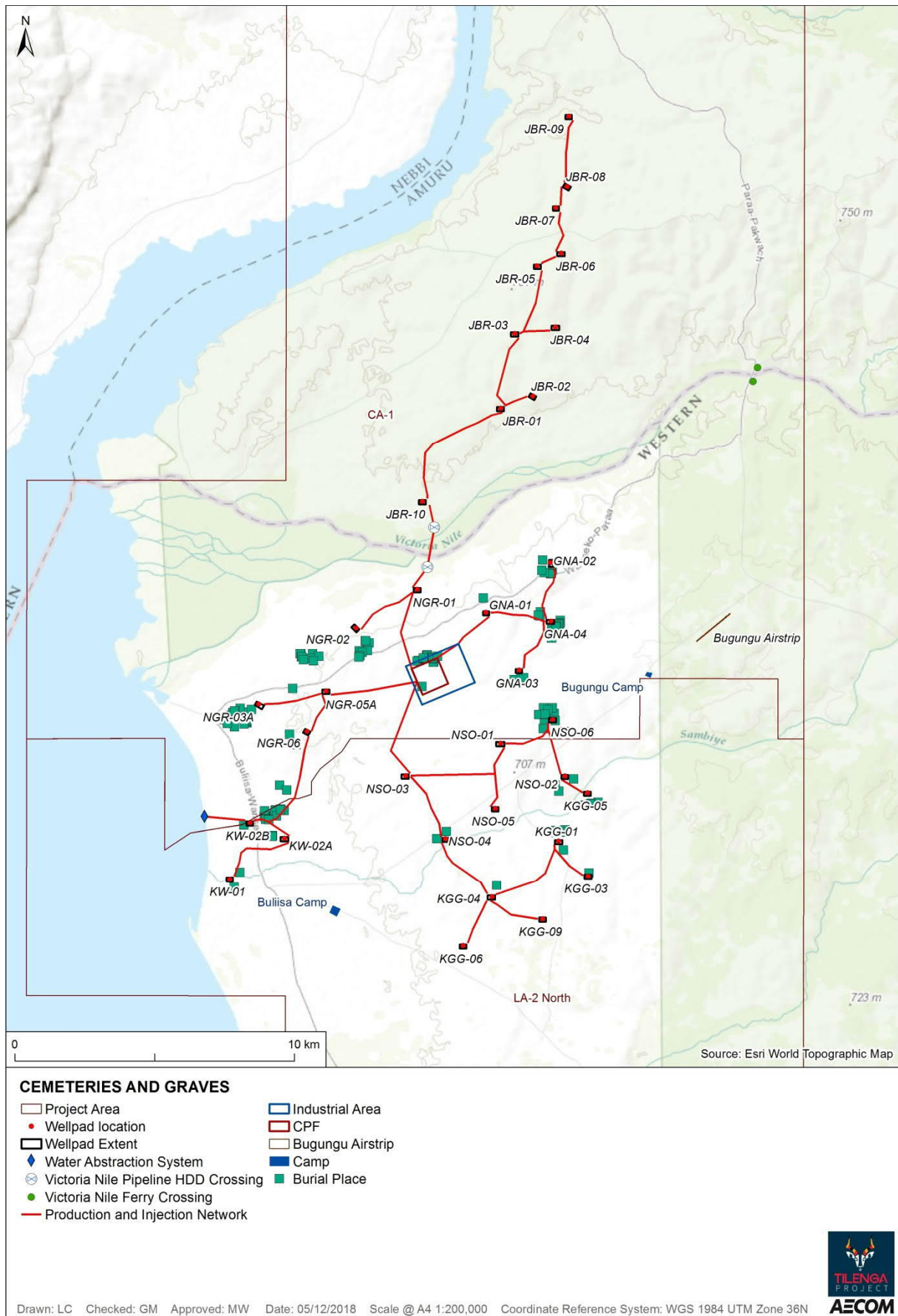


Figure 17-57: Burial places – cemeteries and graves

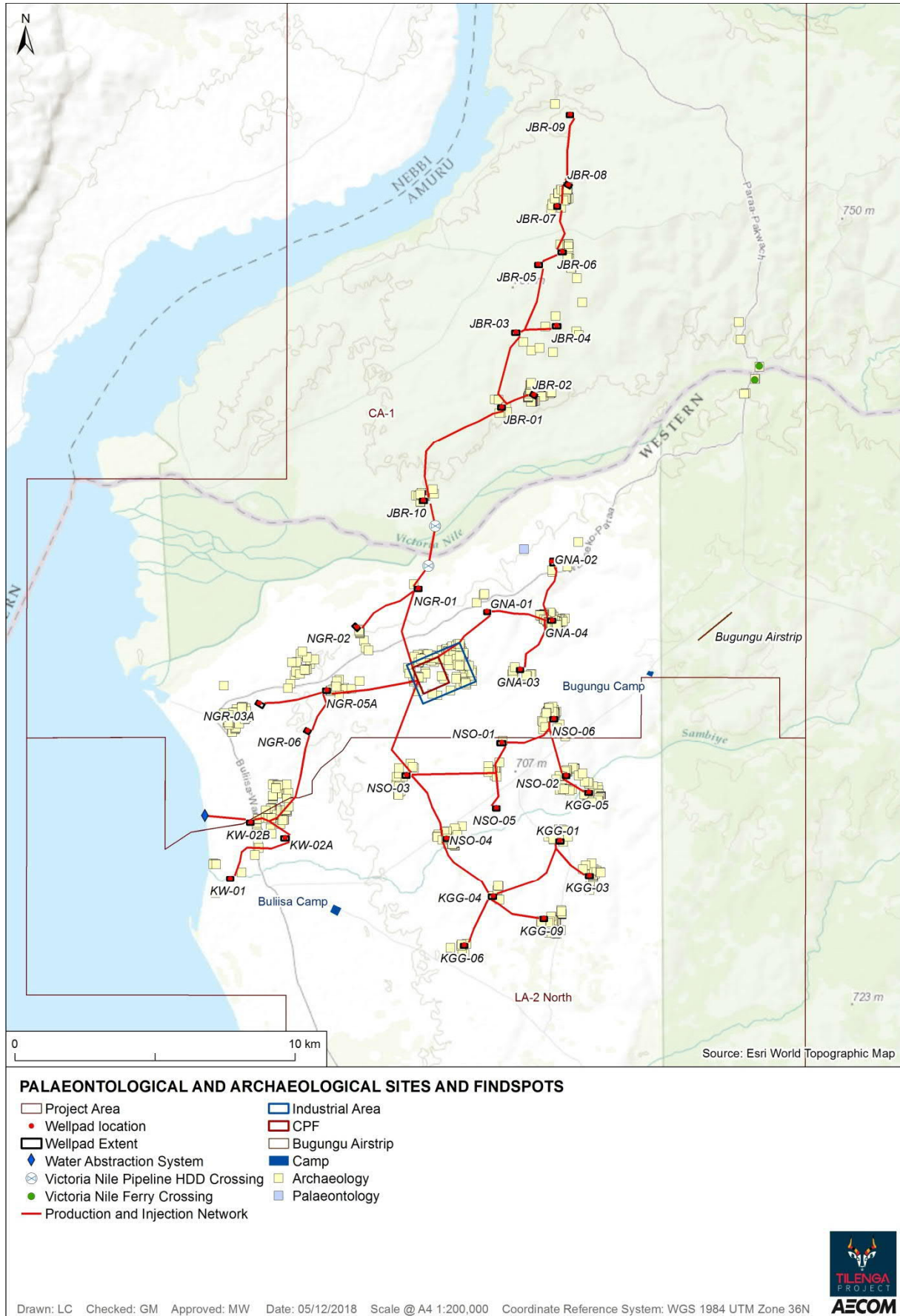


Figure 17-58: Palaeontological and archaeological sites and findspots

17.7 Impact Assessment and Mitigation

17.7.1 Impact Assessment Methodology

Chapter 3: ESIA Methodology sets out the standard impact assessment methodology. The standard methodology includes the following elements, each of which has been adapted for the assessment of archaeology and cultural heritage:

- A brief description of the main Project activities that may affect archaeology and cultural heritage;
- The description of the main receptors and their sensitivity;
- The criteria to be used to define the magnitude of impacts; and
- Assessment criteria to determine the significance of impacts.

The assessment of potential impacts upon archaeology and cultural heritage takes into consideration applicable international standards, Ugandan national standards and recognised GIIP on heritage management.

In the absence of any national or international consensus on archaeological impact assessment methods for non-designated resources, the criteria used to determine receptor sensitivity, magnitude, nature and significance of impacts on cultural heritage are based on the International Commission on Monuments and Sites (ICOMOS) 2011 *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (appendices 3A and 3B) (ICOMOS, 2011). It is acknowledged that this current international standard contains much reference to World Heritage, but the assessment tools contained within its appendices are applicable to all cultural heritage. Cultural monuments are classified by type and their significance to Ugandan archaeology, history and culture.

17.7.2 Project Activities

The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the phases of the Project. The key activities likely to generate impacts upon heritage assets during each of the Project phases are included below in Table 17-55.

Table 17-55: Project Activities which Lead to Potential Impacts upon Archaeology and Cultural Heritage

Phase	Activity
Site Preparation and Enabling Works	Mobilisation of plant and construction vehicles to the Project Site
	Land expropriation
	Physical movement of vehicles and plant (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities)
	Physical presence of construction personnel
	Clearance of vegetation and soils (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities)
	Demolition of existing buildings at the Industrial Area, well pads, Water Abstraction System, if present & construction of Camp (temporary facility) within Industrial Area
	Civil works activities at well pads and Water Abstraction System sites
	Installation of structure around well pads in the north of the Victoria Nile
	Construction of Victoria Nile Ferry Crossing Facility, including piling for the jetties
	Construction of new access roads (C1, C3, N1, N2, inter field access roads south of the Victoria Nile) and upgrade works of existing roads (A1, A2, A3, A4, B1 and B2) including the installation of drainage
	Excavation of construction material from quarries and movement of excavated materials
	Use of power generation sets (e.g. diesel generators)

Phase	Activity
	Delivery of fuel and other hazardous substances; refuelling of plant and machinery; storage of fuel and hazardous materials Storage of wastes
	Lighting emissions - night-time working (use of floodlights). ³
Construction and Pre-Commissioning	Mobilisation of plant and construction vehicles to the Project Site
	Physical presence of construction personnel
	Installation of structures around all key Project components
	Nighttime working (24/7) at well pads and Horizontal Directional Drilling (HDD) Construction Area (lighting emissions)
	Construction activities at the Industrial Area and Water Abstraction System
	Excavation of construction material from quarries and movement of excavated materials
	Physical movement of construction vehicles and plant within the Project Site
	Clearance of vegetation and soils for Production and Injection Network right of way (RoW), Water Abstraction System pipeline RoW and HDD Construction Area
	Movement of construction vehicles for Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area
	Construction of Production and Injection Network (i.e. Pipelines and Flowlines) and Water Abstraction System pipeline RoW (particularly trenching)
	Installation of pipeline routing marker posts
	Clearance of vegetation and soils for the expansion of the existing Tangi Camp
	Construction activities at Tangi Camp to expand facilities
	Commissioning and Operations
Physical presence of the flare (Enclosed Ground Flare or Elevated Flare).	
Physical presence of CPF	
Operation and maintenance of Water Abstraction System	
Operation and maintenance of the Victoria Nile Ferry	
Operation and maintenance of well pads including work over	
Presence of personnel on site	
Decommissioning	Presence of personnel on site

17.7.3 Impact Assessment Criteria

Criteria have been developed for assessing the potential impacts upon archaeology and cultural heritage from the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations; and Decommissioning Phases of the Project. The impact significance matrix in **Chapter 3: ESIA Methodology** is used to determine the significance of each impact.

17.7.3.1 Receptor Sensitivity

Receptor sensitivity is the degree to which a particular receptor is more or less susceptible to a given impact. Receptor sensitivity takes into consideration the receptor’s resilience and value. Receptor resilience or vulnerability describes the ability of the receptor to withstand adverse impacts. It takes into consideration activity-impact-receptor pathways, as well as environmental characteristics that might make it more or less resilient to change. As such, a receptor can be considered as existing within a spectrum of ‘vulnerable’ to ‘resilient’, with the former more likely to experience significant impacts as a result of a given change. Receptor value takes into consideration its quality and its importance as represented, for example, by its conservation status, its cultural importance and/ or its economic value. The evaluation of receptor sensitivity

³ Night-time lighting may have an impact on ritual ceremonies that require darkness. Lighting also impacts upon the setting of heritage assets.

employs a qualitative scale of negligible, low, moderate, and high for each of the sensitivity characteristics, resilience and value.

None of the sites or objects have been previously recorded or designated, so there are no assigned national designation rankings to apply.

The sensitivity of an archaeological or cultural heritage receptor also reflects how vulnerable or robust a site, monument, artefact, assemblage or complex is to damage or destruction by a number of factors, including:

- Natural conditions, such as erosion, flooding, wave movement and chemical deterioration;
- Environmental conditions, such as faunal and floral impacts;
- Human conditions, such as vandalism or interference, recreational use, vehicular damage; and
- Project-related conditions, including construction and operational impacts.

Archaeological remains identified in the Project Area comprise (a) surface scatters or the features identified on the ground with limited vegetation, (b) surface scatters identified in areas of disturbed ground or in up-cast spoil from geotechnical works, earthworks, quarrying etc. or (c) features identified in sections, such as road and quarry cuttings, eroded sedimentary facies etc. These finds are indicators of wider buried archaeological sites. It is important to note that all the sites that have been identified were visible due to varying degrees of truncation or denudation of the ground surface, which may in turn have impacted upon the integrity of the identified sites themselves. Further intrusive field investigations are required before the full extent, condition and human and environmental degradation factors that may have affected them can be assessed accurately.

The assessment of heritage value with regard to research agendas is important in establishing the significance and value of archaeological remains. The value of archaeological remains and sensitivity of archaeological sites, monuments and artefact find spots is judged upon the extent of survival, their current condition, rarity, representativeness, the importance of the period to which the remains date, fragility, connection to other monuments (group value), potential to contribute to knowledge, understanding and appreciation, potential for future research, the values assigned by local experts and the extent of documentation enhancing the monuments' value.

The sensitivities of individual receptors have been categorised by their nature using the criteria in Table 17-56 to help determine the potential significance of effects. Table 17-57 presents the level of sensitivity for each receptor type identified.

The terms High, Moderate, Low and Negligible correlate to the impact assessment matrix which applies to the whole ESIA (**Chapter 3: ESIA Methodology**)⁴. Legal standards are detailed in **Chapter 2: Policy, Regulatory and Administrative Framework** and in 17.7.2.2 Standards and Guidance.

⁴ This is comparable to the categorisations adopted by national standards; the terms High and Major are deemed equivalent. The overall matrix for this ESIA has no 'Very High' category, and for this reason the 'High' category conflates sites of national and international sensitivity. No World Heritage Sites or proposed World Heritage Sites will be impacted by the Project.

Table 17-56: Archaeology and Cultural Heritage Receptor Sensitivity

Sensitivity and Value	Description, based on ICOMOS 2011 Guidance on Heritage Impact Assessment	Applicable Legal Standards*
High	<p>Sites of acknowledged international importance inscribed as World Heritage Sites. Individual attributes that convey Outstanding Universal Value.</p> <p>Nationally-designated archaeological monuments, sites, buildings or historic landscapes protected by national laws. Undesignated sites, structures or historic landscapes of demonstrable national value.</p> <p>Assets that can contribute significantly to acknowledged national or international research objectives, whether designated or not.</p>	<p>International:</p> <p>UNESCO World Heritage Sites</p> <p>UNESCO Representative List of the Intangible Cultural Heritage of Humanity</p> <p>IUCN Marine Protected Areas (Category III Natural monuments or features, including shipwrecks & and cultural sites)</p> <p>UNESCO Geoparks (with cultural heritage and/or palaeontology linkage)</p> <p>UNESCO MAB Biosphere Reserves (with cultural heritage linkage)</p>
	<p>Well or extremely well preserved historic landscapes with considerable or exceptional coherence, time-depth, or other critical factors.</p> <p>Intangible Cultural Heritage inscribed on national registers, or associated with movements or individuals of national or global significance.</p>	<p>Ramsar Convention on Wetlands of International Importance sites (with cultural heritage linkage)</p> <p>Uganda:</p> <p>Historical monuments and objects of archaeological, palaeontological, ethnographic and traditional interests designated under the Historical Monuments Act 1967 and the Historical Monuments (Amendment) Decree (No.6) of 1977.</p> <p>Burials protected under the Penal Code Act 1950 (Art. 120 & 121), the Public Health Act 1935 (Part XIV, Cemeteries) and customary practice.</p> <p>Sectoral standards:</p> <p>IFC PS8 Critical Cultural Heritage (community use of cultural heritage including sacred plants, trees and water bodies; sacred sites (traditional religions, Christianity and Islam); burial grounds.</p>
Moderate	<p>Designated or undesignated sites or landscapes that can contribute significantly to regional research objectives.</p> <p>Designated or historic (unlisted) buildings that have exceptional qualities or historical associations, with important historic integrity and contributing significantly to historic character.</p> <p>Designated or undesignated historic landscapes of regional value, which would warrant designation.</p> <p>Intangible cultural heritage areas in local registers, or associated with movements or individuals of local importance.</p>	<p>Uganda:</p> <p>Historical monuments and objects of archaeological, palaeontological, ethnographic and traditional interests designated under the Historical Monuments Act 1967 and the Historical Monuments (Amendment) Decree (No.6) of 1977.</p> <p>Sectoral standards:</p> <p>IFC PS8 Replicable Cultural Heritage.</p>
Low	<p>Designated or undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations, or with little or no surviving archaeological interest.</p> <p>Assets with potential to contribute to local research</p>	<p>Uganda:</p> <p>Historical monuments and objects of archaeological, palaeontological, ethnographic and traditional interests designated under the Historical Monuments Act 1967 and the Historical</p>

Sensitivity and Value	Description, based on ICOMOS 2011 Guidance on Heritage Impact Assessment	Applicable Legal Standards*
	<p>objectives.</p> <p>Historic (unlisted) buildings of modest quality in their fabric or historical associations, or buildings or urban landscapes of no architectural or historical merit; buildings of an intrusive character.</p> <p>Undesignated historic landscapes with importance to local interest groups, whose value is limited by poor preservation and/or poor survival of contextual associations. Landscapes of little or no significant historical interest.</p> <p>Intangible cultural heritage activities of local significance, or associated with individuals of local importance. Poor survival of physical areas in which activities occur or are associated. Areas with few intangible cultural heritage associations or vestiges surviving.</p>	<p>Monuments (Amendment) Decree (No.6) of 1977.</p> <p>Sectoral standards: IFC PS8 Replicable Cultural Heritage.</p>
Negligible	<p>Assets with little or no surviving archaeological interest.</p> <p>Buildings or urban landscapes of no architectural or historical merit; buildings of an intrusive character.</p> <p>Areas with few intangible cultural heritage associations or vestiges surviving.</p>	-
Unknown	The importance of the resource cannot be ascertained.	-
<p>*These standards are theoretically applicable to impact assessment; however, there are no instances of World Heritage Sites, Representative Intangible Heritage, Category III Marine Protected Areas, Geoparks, MAB Biosphere Reserves or Ramsar sites with cultural heritage linkage within the Project Aol. Source: ICOMOS, 2011</p>		

17.7.3.2 Receptor Identification and Sensitivity

Identified cultural heritage features have been evaluated for their sensitivity in accordance with Table 17-56 which presents a description of receptor sensitivity ranking and highlights relevant applicable legal standards.

The sensitivity of any currently unknown remains that may survive within the Project Area cannot be determined at the time of writing. Their sensitivity would be derived from their potential to contribute to our scientific understanding of past human activities and environments.

There are over 1,400 identified palaeontology, archaeology and cultural heritage sites within the Project study area, which can all be broadly grouped into the categories noted in Table 17-57. It is important to note that although individual archaeological findspots may be of local or regional value, groups of findspots may form part of an assemblage of regional or national value. Taking into account the criteria presented in Table 17-56, cultural heritage receptor sensitivity is defined in Table 17-57 below.

Table 17-57: Description of Identified Cultural Heritage Receptors and Sensitivity Rating

Receptor	Sensitivity
<p>Tangible cultural heritage: sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines).</p> <p>Present in Wellpad study areas: GNA-01, GNA-02, GNA-03, GNA-04, NSO-03, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-06, NGR-02, NGR-03, NGR-05, NGR-06, KW-01, KW-</p>	High

Receptor	Sensitivity
02a, KW-02b, CPF/Industrial Area, Upgrade Roads, Interfield Roads.	
Tangible cultural heritage: places of worship – churches and mosques. Present in Wellpad study areas: GNA-01, GNA-02, GNA-03, GNA-04, NSO-02, NSO-04, NSO-05, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-03, NGR-05, NGR-06, KW-01, KW-02a, KW-02b, Upgrade Roads.	High
Tangible and intangible cultural heritage: cemeteries & graves (cemented graves, unmarked (mud) graves). Present in Wellpad study areas: GNA-01, GNA-02, GNA-03, GNA-04, NSO-02, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-02, NGR-03, NGR-06, KW-01, KW-02a, KW-02b CPF/Industrial Area, WAP, flow routes KW/NGR, Upgrade Roads.	High
Tangible and intangible cultural heritage: forts (Designated Sites) Present in well pad study area GNA-02	High
Tangible cultural heritage: complex, well-preserved palaeontological and archaeological sites and findspots, with multiple finds categories, in situ artefact scatters, concentrations of artefacts, time-depth, of regional research significance. Present in Wellpad study areas: JBR-02, JBR-04, JBR-06, JBR-10, VNFC North & South, GNA-04, NSO-04, NSO-06, KGG-01, KW-01, CPF/Industrial Area.	Moderate
Tangible cultural heritage: isolated palaeontological and archaeological sites and findspots, of local research significance. Present in Wellpad study areas: JBR-01, JBR-03, JBR-07 and JBR-08, JBR-09, GNA-01, GNA-02, GNA-03, NSO-01, NSO-02, NSO-03, NSO-05, KGG-03, KGG-04, KGG-05, KGG-06, KGG-09, NGR-02, NGR-03, NGR-05, KW-02a, KW-02b. Flow Routes NSO/KGG, Flow Routes KW/NGR, Flow Routes GNA/NGR north, Flow Routes JBR, New Roads north of Victoria Nile, Upgrade Roads, Interfield Roads.	Low
Finds of modern material (e.g. faunal remains, shell, pottery) and features (e.g. charcoal burning mounds) of no archaeological significance.	Nil (scoped out from impact assessment)

Intangible cultural heritage activities in the area are assessed as being of local significance; no particular elements are designated or registered, and consultation has not indicated any associations with particular innovations, technical or scientific developments, movements or specific individuals of regional or national significance (ICOMOS 2011). Potential project impacts on these practices and their transmission are also addressed in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

Traditional knowledge refers to the traditional knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. The Project does not propose any commercial use of traditional knowledge. Traditional knowledge aspects are addressed in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

17.7.3.2.1 Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)

Traditional religious practices are undertaken within the Study Area. Sacred plants, trees and water bodies within the Study Area are currently used by local communities for cultural purposes. This long-standing living cultural heritage can therefore be classified as Critical Cultural Heritage (IFC PS8 2012).

It is important that any development or construction activity on the land takes account of traditional sacred areas and practices. Consultation indicates that most sacred sites, particularly family shrines, can be moved, as long as a suitable new location is found, approved by the community and spiritual leaders, and closure/relocation ceremonies are performed. Such procedures can be undertaken only with the free, prior and

informed consent of those who use the sacred sites. The method and location for relocating resident spirits to new resting places and moving shrines must be agreed with the appropriate spiritual leaders.

Sacred sites include clan *Ihongo*, sacrificial sites frequently located in large trees or wooded thickets, *Mpuluma* cultural sites, *abila* shrines and family *kibila*, ancestral shrines. Cultural sites may form part of a series or sequence of areas where cultural activities and sacrifices are performed, and routes between sacred sites are also important to practitioners. There are other sacred areas used for rituals, such as the seasonal Sambye River.

Traditional healers may serve local people or attract people from neighbouring districts. Further details regarding traditional sacred sites are in Section 17.6.4.7.1, Traditional Religions and Beliefs.

Sacred trees include *Marula*, *Bibaale*, *Lenga*, *Mukeeku*, *Munonde*, *Mukoge*, *Munongo*, *Musingabakazi*, *Achoga*, *Uduk*, *Mutooma* tree, *Nnongo*, sausage/ *Mulolo* tree and tamarind/ *Chaw*. *Mudendemule* wood is used for building shrine structures and bark cloth from *Mutooma* trees is important in some ritual ceremonies. As well as sacred trees which form part of family and clan shrines, some large trees are used for community meetings, which are often held under large tamarind or *Mukeeku* trees.

Plants are used for medicinal and ritual purposes, and some are clan totems. Further details on cultural uses of plants are in Section 17.6.4.8, Cultural Uses of Natural Resources.

Some water bodies have spiritual attributes and associated ceremonies, in particular the traditional deity of Lake Albert, Lubanga, and sacred areas on the lake shore. Some marshy areas have spiritual values, rituals and prohibitions, such as Kanyuri, Matwe, Taagi, Kalyamukwanzi (Kirama/Kichoke).

17.7.3.2.2 Places of worship – churches and mosques

A total of 58 places of worship have been identified in the vicinity of proposed wellpads. Places of worship are Roman Catholic, Protestant (including the Anglican Church of Uganda, Pentecostal Protestants, Seventh Day Adventists, Full Gospel Church and others) and Muslim.

17.7.3.2.3 Cemeteries and graves

Cemeteries and individual burial areas (cemented graves, unmarked (mud) graves) are present within the Study Area. Burial grounds are often marked with trees. Although some graves are cemented and/or marked with stones, unmarked graves are common. Graves are frequently located close to village houses, within property plots. There are also small collective family and clan cemeteries, maintained by a caretaker.

The Bagungu bury their relatives around the homestead, three days after the death. Children can be buried anywhere around the house whereas adults from the clan are buried in specific burial places around the homestead. After the burial, it is customary to plant a *mutooma* tree at the grave site. This helps people to records where their ancestors were buried (Artelia, 2015).

For the Alur, each family buries its dead relatives in its own burial site, close to its homestead. Bodies are usually buried in plain ground without any sign indicating their presence (Artelia, 2015). In the past, the Jonam used not to bury the dead, but abandoned the house with the dead body and moved on to other locations (Pakwach Elders Consultation, December 2016).

The alignment of graves differs in settlements, but most burials seem to be aligned so that the individual is facing their home. In most cases this means the house where they lived most recently. However, in some cases the migrants are buried facing their place of birth (i.e. facing towards Lake Albert and the Congo).

There are three categories of graves: cemented graves, including relocated graves; un-cemented graves; and places where spirits of the dead were called to rest (Atacama Consulting 2017, 113). Graves may be marked with stones, iron rods and occasionally, trees, or may be unmarked. *Mutooma* trees are traditionally used as graveyard markers, but some had Sausage trees, Mango trees, Orange trees, *Uduk* trees or were fenced in with *Lukoni* shrubs. Barkcloth trees are traditionally used to mark the burials of victims of drowning whose bodies could not be recovered, although small stones and clusters of three trees were also observed marking graves of the missing. In some communities the missing individuals' clothes are buried as a substitute for a body.

Regarding the reburial of archaeological human remains, community members 'prefer that any disinterred ancestral remains should be reburied in accessible, respectful locations so they are available for ongoing commemorative rituals and ceremonies' (Nyiracyiza, 2009). Traditional ceremonies for grave relocation differ between ethnic groups.

17.7.3.2.4 Complex palaeontological and archaeological remains

Complex, well-preserved archaeological sites and findspots, with multiple finds categories, in situ artefact scatters, concentrations of artefacts, time-depth, of regional research significance are present within the Project Area, including the footprints of some wellpads.

All of the archaeological sites identified within the Study Area are considered to be typical of the region. None have been designated according to local, national or international standards in terms of their outstanding aesthetic, artistic, documentary, environmental, historic, scientific, social, or spiritual value (ICOMOS 2011). For practical purposes, the scientific potential of archaeological sites has been assessed based on initial observations of their complexity and the quality of their preservation made during the field survey. The assessment of the scientific value of archaeological sites may change following mitigation-stage intrusive investigation and recording work.

17.7.3.2.5 Isolated palaeontological and archaeological sites and findspots

Isolated palaeontological and archaeological sites and findspots are considered to be of local research significance.

For practical purposes, the scientific potential of archaeological sites has been assessed based on initial observations of their complexity and the quality of their preservation made during the field survey. The assessment of the scientific value of archaeological sites may change following mitigation-stage intrusive investigation and recording work.

17.7.3.3 Impact Magnitude

Potential impacts may be temporary or permanent, direct or indirect, positive or negative (adverse) and may occur throughout the life of the Project, or otherwise be restricted to either the construction or operational phases. Impacts can be considered in terms of direct, indirect and cumulative impacts.

Table 17-58 presents a description of the magnitude of change to cultural heritage receptors that can be caused by a project, using the classifications High, Moderate, Low and Negligible, based on the current ICOMOS standard (ICOMOS 2011).

Table 17-58: Cultural Heritage Impact Magnitude Criteria

Sensitivity	Description
High	<p>Changes to most or all key archaeological sites such that the resource is totally altered.</p> <p>Changes to key architectural and artistic building elements such that the resource is totally altered.</p> <p>Change to most or all key historic landscape elements, parcels or components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to historic landscape character unit.</p> <p>Comprehensive changes to setting.</p> <p>Major changes to an area affecting intangible cultural heritage activities, associations, visual links and cultural appreciation.</p>
Moderate	<p>Changes to many key materials of archaeological sites, such that the resource is clearly modified. Changes to setting that affect the character of the asset.</p> <p>Changes to many key historic building elements, or to the setting of an historic building, such that the resource is significantly modified.</p> <p>Change to many key historic landscape elements, parcels or components; visual change to many key aspects of the historic landscape; noticeable differences in noise or sound quality; considerable changes to use or access; resulting in moderate changes to historic landscape character.</p> <p>Considerable changes to an area affecting intangible cultural heritage activities, associations, visual links and cultural appreciation.</p>
Low	<p>Minor changes to key archaeological sites, such that the resource is slightly altered or clearly modified. Slight changes to setting, or changes to setting that affect the character of the asset.</p> <p>Slight changes to the setting of key historic building structures. Changes to many key historic building structures, or to the setting of an historic building, such that the resource is slightly different and noticeably changed.</p> <p>Change to many key historic landscape elements, parcels or components; slight or minor visual change to many key aspects of the historic landscape; limited but noticeable differences in noise or sound quality; changes to use or access; resulting in limited to minor changes to historic landscape character.</p> <p>Minor changes to area that affect intangible cultural heritage activities, associations, visual links and cultural appreciation.</p>
Negligible	<p>Very minor or no changes to archaeological asset, historic building fabric or setting.</p> <p>Very minor or no changes to elements, parcels or components of landscapes; no visual or audible changes.</p> <p>Very minor or no changes in amenity or community factors.</p>
No change	No change.
Uncertain	The extent of data on the site or feature, or the nature of construction activities does not enable a determination of likely effects to be made at this stage.
Source: ICOMOS 2011 Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (appendices 3A and 3B)	

17.7.4 Embedded Mitigation

An overview of the embedded mitigation is provided within **Chapter 4: Project Description and Alternatives**. Specific embedded mitigation measures relevant for archaeology and cultural heritage are provided below. The potential effects described in the assessment of impacts below take into account this mitigation.

17.7.4.1 Overview of overarching mitigation strategy

The mitigation strategy is based on the Environment Management Authority Statute of 1995 which states that all projects in Uganda should undergo an environment assessment, including the provision of a plan for managing physical cultural resources. It is also based on the Uganda National Culture Policy (2006) and the Uganda Historical Monuments Act (1967, Cap 46).

The mitigation strategy for archaeology and cultural heritage adheres to the following principles:

- Avoid or minimise impacts by design where reasonably feasible;
- Avoid or minimise impacts during construction and operation;
- Undertake statutory and community consultation on cultural heritage where required;
- Ensure the systematic stewardship of cultural heritage and undertake mitigation works;
- Reduce the risk of contravening cultural values and looting;
- Undertake technical and institutional capacity building; and
- Undertake monitoring of cultural heritage management.

Where the Project involves adverse impacts on physical cultural heritage, appropriate measures for avoiding, minimising, mitigating and compensating these impacts will be applied.

17.7.4.1.1 Design to avoid or minimise impacts upon archaeology and cultural heritage

Cultural heritage data has been fed back to the Project design team, enabling the avoidance of areas of extensive archaeological activity and sensitive cultural heritage receptors. Avoidance as part of the design evolution to help avoid environmental and Social impacts is discussed in **Chapter 4: Project Description and Alternatives**.

Where reasonably feasible, Project components have been designed to avoid or minimise impacts on cultural heritage identified in baseline studies (IFC PS 8, 2012, para 11). As noted above, the Project design has taken into account the location of sites in order to avoid or limit impacts where practicable, in accordance with IFC guidance (IFC, 2012b).

Indicative information on likely cultural heritage protection and mitigation measures was integrated into project planning and scheduling at an early stage, in order to ensure that the Project Proponent are in a position to assure the appropriate and timely protection, stewardship, investigation or relocation of remains.

17.7.4.1.2 Statutory and community consultation on cultural heritage

The topic of cultural heritage is integrated into the Project Proponents Resettlement Action Plans and Stakeholder Engagement documents. These are living documents that will be subject to continuous review and regular updates throughout the course of the Project.

The Project Proponents are engaged in consultation with the national authorities (MTWA and the MGLSD), heritage advisers (Department of Museums and Monuments and Uganda Museum), local representatives (including Bunyoro Inter Religious Council, Acholi Cultural Leaders and Bunyoro Cultural Leaders) and non-governmental organisations including the Cross Cultural Foundation and the Uganda National Commission for UNESCO.

As part of ongoing consultation being undertaken by the Project Proponents, consultation will continue to be undertaken with affected communities regarding attitudes to the cultural heritage mitigation programme and their cultural heritage priorities. Local communities will be involved in consultation on issues such as the relocation of burials, the relocation and rededication of traditional cultural sites, in any additional surveys and in exploring potential local cultural heritage initiatives forming part of offset measures.

17.7.4.1.3 Other relevant Embedded Mitigation Measures

A number of other embedded mitigation measures are of relevance to Archaeology and Cultural Heritage. These include:

- A Stakeholder Engagement Plan is already in place; this will ensure the community are informed both prior to the commencement of work on site, during the works on a regular basis and after. As stated above a Grievance Mechanism will be established for the local community to raise compliant and concerns relating to Project activities (i.e. dust, noise etc.);
- The LARF will be implemented prior to the start of the Project and describes the legal and administrative framework, the land-use and land tenure of the Project Area, and provides guiding principles on valuation methodology, entitlements, resettlement action planning, and livelihood restoration;
- All site clearance activities will be undertaken in line with the Site Clearance Plan which will be developed by the Contractor(s) prior to commencing the Site Preparation and Enabling Works Phase to limit extent of vegetation clearance;
- Barriers and fences will be used to isolate work areas;
- Laydown areas at each of the well pad sites will be located within the footprint of the well pad; there will be no additional site clearance required outside the well pad footprint during the Construction and Pre-Commissioning Phase;
- Construction activities will be contained within the permanent RoW which will have a width of 30 m and is designed to accommodate the pipeline trench(s), stockpile areas, laydown, welding, and the movement of construction equipment alongside the trench(s);
- In general, the following principles will be adopted where practicable and will be subject to detailed assessment prior to decommissioning:
 - Above ground infrastructure will be removed to 0.5 m below ground level and backfilled and vegetated;
 - Access roads may be left in place depending upon the subsequent use of the land;
 - Shallow foundations for infrastructure may be excavated, demolished and disposed of;
 - Where piled foundations exist, these may be excavated to a depth of 1 m below the existing ground level and removed;
 - Excavations resulting from the removal of foundations will be backfilled;
 - It is expected that pipelines will be cleaned, capped and let in situ, to prevent disturbing the reinstated habitats; and
 - Where the environment assessment identifies it is acceptable, in some locations pipeline sections may be cleaned, reclaimed and re-used.

17.7.5 Assessment of Impacts: Site Preparation and Enabling Works

17.7.5.1 Introduction

The following sections provide an overview of the nature and significance of Project impacts on archaeology and cultural heritage during the Site Preparation and Enabling Works phase. Each of the types of archaeological and cultural heritage receptor assessed for this ESIA are analysed in turn.

17.7.5.2 Potential Impacts – Site Preparation and Enabling Works

17.7.5.2.1 Loss of access to sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)

Project activities such as site clearances, earthworks, vehicular movements and night time working among others could potentially impact traditional cultural and sacred sites in the project area.

Receptor Sensitivity

These sites are used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012). These are detailed in Table 17-57.

Impact magnitude

Project activities may cause damage to or the removal of specific traditional cultural and sacred sites. This potential impact is restricted to sites identified within the direct footprint of earthworks around the Industrial Area and well pads, and any sites may be identified in surveys to be undertaken prior to the commencement of any on-site works at the Masindi Check Point and on the road network.

The CPF/Industrial Area contains a relatively high number of cultural sites, including family shrines or *kibila* (ACH-00-168; ACH-00-169; ACH-00-170; ACH-00-172; ACH-00-173; ACH-00-175; ACH-00-176; ACH-00-177; ACH-00-178; ACH-00-179; ACH-00-180; ACH-00-181; ACH-RAP-075) and a clan shrine of the Babala clan for good fortune in fishing (ACH-00-171). However, cultural sites are also located in the footprint of wellpad sites including NSO-03 (ACH-02-389), KGG-01 (ACH-02-588), KGG-03 (ACH-02-638), and NGR-05 (ACH-02-211). Furthermore, sacred sites were recorded within the 30m buffer of the proposed flow lines, the 30m buffer of the inter field roads, and the 50m buffer of the new roads and road upgrades. Traditional cultural sites include sacred trees and culturally significant plants, which will be damaged or removed by vegetation clearance and groundworks activities.

Potential impacts include impacts on local culture, including traditional knowledge and skills, social practices, rituals and festive events, and traditional religion. There is also potential for vehicle damage, human interference due to an increased population and changes to public access arrangements.

The land expropriation process may require the relocation of sacred sites, and may also result in changes in public access to cultural heritage.

The use of temporary topsoil storage areas and the installation and use of temporary road diversions may potentially impact upon cultural sites.

There is potential for spillage and contamination of sacred water bodies and watercourses by fuel and other hazardous substances. (More information is provided in **Chapter 8: Geology and Soils**; **Chapter 9: Hydrogeology**; **Chapter 10: Surface Water** and for unplanned events in **Chapter 20: Unplanned Events**).

Waste storage may desecrate sacred sites, and any odours may potentially impact upon perceptions of tranquillity. (Mitigation measures are described in **Chapter 11: Landscape and Visual**, **Chapter 12: Waste** and **Chapter 6: Air Quality and Climate**).

Plant mobilisation, the movement of vehicles, the use of power generation sets may have effects on cultural and spiritual values. As cultural and spiritual sites are often located in quiet and/or isolated areas, noise, dust, light spill and odour may detract from their value and the ability to undertake rituals appropriately. Lighting may also disrupt practices that require dark skies.

The presence of project personnel and ground preparation activities may potentially impact upon cultural sites, resulting in disturbance, desacralisation and/or removal, breaching local cultural prohibitions, taboos, values and norms. Interference with cultural sites may occur across the Project Area and beyond. Changes to access via new or improved access roads will contribute to this potential impact. However, these potential impacts are only likely to occur sporadically.

The loss of sites as a result of activities at the Site Preparation and Enabling Works phase is not necessarily permanent, as traditional practitioners are able to relocate and rededicate sites if suitable alternatives are found.

Overall potential impact magnitude is therefore considered low to moderate.

Impact significance

The overall potential impact significance of the Site Preparation and Enabling Works phase on traditional cultural and sacred sites is considered to be **Moderate to High Adverse**.

17.7.5.2.2 Loss of access or disruption of places of worship – churches and mosques

Noise generating activities such as plant mobilisation, use of generators and night-time works could potentially impact places of worship during the Site Preparation and Enabling Works.

Receptor Sensitivity

Places of worship are used by local communities for cultural purposes, and are therefore assessed as being of High sensitivity according to IFC PS 8 (2012).

Impact magnitude

No places of worship have been identified within the proposed Industrial Area, or in the path of proposed new roads and road upgrades. However, there are places of worship in the immediate vicinity of the project areas.

Plant mobilisation, the movement of plant and vehicles and night-time working may disturb the tranquillity of places of worship, or disrupt religious services due to noise, dust, light spill and odour.

There may be potential noise impacts upon religious practice at places of worship. Their tranquillity and setting would be impacted by the use of power generation sets, plant mobilisation, the movement of plant and vehicles. Without mitigation, this may disturb the tranquillity of places of worship, or disrupt religious services due to noise, dust, light spill and odour.

The overall potential impact magnitude is therefore considered negligible to low.

Impact significance

The overall potential impact significance of the Site Preparation and Enabling Works phase on places of worship is considered to be **Low to Moderate Adverse**.

17.7.5.2.3 Damage to cemeteries and graves

Project activities may cause damage to or the removal of cemeteries and graves. This potential impact is restricted to sites identified within the direct footprint of earthworks around the Industrial Area and well pads, and any sites may be identified in surveys to be undertaken prior to the commencement of any on-site works at the Masindi Check Point and on the road network. The CPF/Industrial Area contains a large number of burial places, located both within and immediately outside the CPF/Industrial Area boundary. Graves have also been recorded in the footprint of the NSO-06 (ACH-02-548) wellpad site, as well as within the 30m buffer of the proposed flow lines, 30m buffer of the inter field roads, and 50m buffer of the new roads and road upgrades. See figures in the relevant section above.

Receptor Sensitivity

Human remains are generally regarded as sacred and therefore treated with utmost respect and protection. The receptor is therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

Project activities may cause damage to or the removal of cemeteries and graves. This potential impact is restricted to sites identified within the direct footprint of earthworks around the Industrial Area and well pads, and any sites may be identified in surveys to be undertaken prior to the commencement of any on-site works at the Masindi Check Point and on the road network. The CPF contains a large number of burial places, located both within and immediately outside the CPF boundary.

Graves within the footprint of Project activity areas would be impacted by earthworks and vehicle movements; many graves are unmarked. Graves are particularly vulnerable to vehicles driving over them and crushing them, causing rutting, soil displacement and increased erosion. The use of temporary topsoil storage areas and the installation and use of temporary road diversions may potentially impact upon graves.

Burial places located close to access routes may be potentially impacted by an increase in noise, vibration and visual intrusion from the movement of Project traffic and transport across sites and using temporary road diversions. This may impact burial ceremonies and visitors to graves. (Mitigation measures are described in **Chapter 6: Air Quality and GHG, Chapter 7: Noise, Chapter 11: Landscape and Visual, Chapter 12: Waste**).

The land expropriation process may require the relocation of sacred sites and graves, and may also result in changes in public access to cultural heritage. The guardians of these sites may be impacted by land expropriation, limiting their ability to access, use and maintain them. Disregarding the sensitivity of these

potential impacts may lead to confrontation by the communities which may delay progress of the project.

The overall impact magnitude is therefore considered moderate to high.

Impact significance

The overall potential impact significance of the Site Preparation and Enabling Works phase on cemeteries and graves prior to mitigation is considered to be **High Adverse**.

17.7.5.2.4 Impact on Complex palaeontological and archaeological remains

Complex, well-preserved palaeontological and archaeological sites and findspots, with multiple finds categories, in situ artefact scatters, concentrations of artefacts, time-depth, of regional research significance are present in the Industrial Area. It contains extensive pottery sherds and scatters, struck stone flakes and scrapers, grinding stones and daub indicating past occupation and settlement in the area.

Receptor Sensitivity

Heritage assets that do not meet the intended meaning of Critical Cultural Heritage, i.e. heritage of less than international or national significance, are classed as Replicable Cultural Heritage in this ESIA. All archaeological sites within the project area are classed according to IFC criteria as 'replicable cultural heritage', as 'the particular eras and cultural values they represent are well represented by other sites and/or structures' (IFC, 2012). These regionally significant receptors are considered to be of moderate sensitivity.

Impact magnitude

Archaeological features and materials are located in the topsoil, subsoil and cut into the upper levels of natural geological deposits, and would be damaged or removed during vegetation clearance, topsoil stripping, excavation, levelling, compaction and drainage works. Archaeological remains would be irreversibly removed, their setting or context transformed, and sites lost leading to loss of research knowledge.

Plant mobilisation to site and the physical movement of vehicles and plant on site may potentially impact upon cultural heritage receptors through rutting or collision damage. Finds scatters are particularly vulnerable to vehicles driving over them and crushing artefacts, causing rutting, soil displacement and increased erosion; without mitigation, receptors would be irreversibly removed or damaged.

Uprooting of larger plants during vegetation clearance may disturb any archaeological deposits associated with their root systems.

The use of temporary topsoil storage areas and the installation and use of temporary road diversions may potentially impact upon buried archaeological remains, crushing artefacts and distorting strata.

There is potential for spillage and contamination of archaeological strata by fuel and other hazardous substances. Without mitigation, this may result in a moderate to high adverse effect. (More information is provided in **Chapter 8: Geology and Soils; Chapter 9: Hydrogeology; Chapter 10: Surface Water** and for unplanned events in **Chapter 20: Unplanned Events**).

Without mitigation measures, the increase in the population of the area related to construction activity may have the moderate adverse indirect impact of illicit removal of archaeological remains, not just in the vicinity of the proposed project components. Changes to access via new or improved access roads will contribute to this potential impact.

The use of floodlights could impact upon the tranquillity and setting of cultural heritage assets. The historic landscape and its tranquillity would be particularly impacted in the MFNP area, which currently experiences little visual and noise intrusion. In the long term (post-decommissioning), these impacts are reversible. Without mitigation, these may result in a low to moderate adverse temporary construction impact on the setting of cultural heritage sites, as these factors are reversible. (Mitigation measures related to reducing visual impacts are described in **Chapter 7: Noise** and **Chapter 11: Landscape and Visual**).

The overall potential impact magnitude is therefore considered moderate.

Impact significance

The overall potential impact significance of the Site Preparation and Enabling Works phase on complex archaeological remains is considered to be **Moderate Adverse**.

17.7.5.2.5 Impact on Isolated palaeontological and archaeological remains

All archaeological sites within the project area are classed according to IFC criteria as 'replicable cultural heritage', as 'the particular eras and cultural values they represent are well represented by other sites and/or structures' (IFC, 2012).

Receptor Sensitivity

The receptors are of local research significance and are considered to be of low sensitivity.

Impact magnitude

Any isolated palaeontological and archaeological remains would be impacted by the same activities, and in the same manner as complex archaeological remains described above.

The overall potential impact magnitude is therefore considered low to moderate.

Impact significance

The overall potential impact significance of the Site Preparation and Enabling Works phase on isolated palaeontological and archaeological remains is considered to be **Low Adverse**.

17.7.5.3 Additional Mitigation and Enhancement

The mitigation and enhancement of potential impacts on archaeology and cultural heritage within the Project Area will involve a range of standard measures adhering to national and international best practice as discussed in the below sections. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

17.7.5.3.1 Cultural Heritage and Archaeological Management Plan

The mitigation of archaeology and cultural heritage within the Project Area will involve a range of standard mitigation measures adhering to national and international best practice.

Management, monitoring and reviewing systems, will be put in place by developing and implementing a Cultural Heritage and Archaeological Management Plan (CHMP) and a Chance Find Procedures (CFPr). These will aim to avoid or minimise impacts during construction and operation and assure the systematic stewardship of archaeology and cultural heritage.

The CHMP will set out the potential impacts that may arise during the pre-construction, construction and operation stages of the Project, mitigation to be implemented prior to or during works, the Chance Finds Procedure to be adopted during this phase of works and the staff cultural heritage awareness training to be undertaken.

The CHMP and CFPr will be developed in collaboration with the Department of Museums and Monuments, setting out the system for minimising and mitigating impacts on cultural heritage and developing a clear cultural heritage alert and notification process. The CHMP will be implemented, maintained and developed throughout all Project phases, monitoring its implementation and adapting it to any changing circumstances.

Archaeological and Cultural Heritage protection measures will include:

- Develop and implement Cultural Heritage and Archaeological Awareness Training;
- Fixed traffic routes (one-track or single-track policy);
- Flagging of vulnerable sites;
- Erosion prevention through re-vegetation.

Archaeological and Cultural Heritage mitigation measures will include (and also refer to the CFP):

- Archaeological investigation and recording, including Archaeological test-pit evaluation; Archaeological investigation and recording (excavation); Archaeological watching briefs alongside some groundworks; Preservation in situ of significant archaeological sites; and Appropriate expert assessment, analysis and reporting on fieldwork.
- Relocation of graves;
- Relocation of sacred sites (household family shrines);
- Relocation of sacred sites (clan sites, sacred water bodies and sacred trees);
- Stakeholder Capacity building in archaeology and cultural heritage management; and
- Stakeholder Capacity building in museum development, linkage to existing and planned schemes for sustainable development and tourism in the regions, and sustainable planning and conservation initiatives.

17.7.5.3.2 Develop and Implement a Chance Find Procedure (CFPr)

All chance finds will be reported, adequately protected with temporary flagging and promptly assessed by a qualified archaeologist. The CFPr shall apply to any archaeological sites of interest that may be discovered during site preparation and early works, construction and pre-commissioning, commissioning and operation, as well as any stray finds or portable objects found within wellpads, or in the footprint of associated infrastructure and facilities.

A CFPr will be prepared, setting out actions to be taken in the event that suspected archaeological artefacts or palaeontological items are encountered. The CFPr will be used only areas that are not accessible for archaeological evaluation and mitigation prior to intrusive groundworks.

If a chance find appears to be of archaeological, palaeontological, ethnographical, historical and/or traditional interest, the Project proponent must notify the appropriate authorities of the find and request expert verification. Where appropriate, the local community will be notified in accordance with the Stakeholder Engagement Plan, subject to security considerations. The Department of Museums and Monuments (Commissioner of Antiquities) and the District Local Government will be notified within 14 days; While awaiting recommendations from authorities, the discovery will be protected; Appropriate post-excavation conservation, analysis, archiving, reporting, publication and dissemination will be undertaken. No culturally significant archaeological or historical sites, remains or objects accidentally discovered during groundworks, excavation or construction shall be disturbed until appropriately investigated.

It is recommended that a team of trained and experienced professional field archaeologists are retained on site during all groundworks (including road construction and pipeline excavation) in order to undertake watching briefs on groundworks and to respond to any reported chance finds.

17.7.5.3.3 Archaeological investigation and recording

A detailed walkover survey and, if required, test pit evaluation of the final project locations should be undertaken as part of a post-ESIA Setting Out/ Pre-Construction Ground Clearance Survey. This work should be undertaken by a qualified and experienced archaeologist accompanied by local cultural guides. Additional avoidance, control and mitigation measures will be agreed with the Uganda Department of Museums and Monuments. The locations, working methods and schedule of this work will be set out in the CHMP.

All coordinates of the sites and findspots identified during baseline data collection will be forwarded to the Department of Museums and Monuments to enable them to update their databases. Where there are no reasonably feasible alternatives, palaeontological and archaeological sites will be recorded and removed using the best available techniques (permanent removal). These sites will be mitigated by recording in programmed, professional investigations undertaken. Nationally and internationally recognised practices for the protection, field-based study and documentation of the cultural heritage will be implemented. Consultation will be undertaken with local communities at the time of excavations to integrate any relevant information from their experience of living in the area.

A programme of archaeological investigation will maximise the scientific research dividend in order to off-set the loss of the archaeological resource. A detailed scope of works, including a comprehensive archaeological

research design, and a phased programme, will be prepared as part of the documentation involved in applying for a permit for archaeological field investigation. Archaeological fieldwork will be approved, permitted and supervised by the Department of Museums and Monuments and Uganda Museum. Archaeological sites will be mitigated subject to a general fieldwork permit negotiated for the entire scheme. Fieldwork will be led by a Project Archaeologist.

Archaeological fieldwork will be followed by finds processing and conservation, assessment, analysis, scientific dating, reporting, illustration, accessible publication, dissemination of results and long-term curation of the archaeological excavation archive and the museum curation and display of finds.

17.7.5.3.4 Fixed traffic routes (single track policy)

Fixed traffic routes will limit the development of extensive braided tracks which have the potential to run over known archaeological sites. Signposted, flagged and fixed routes to be used in order to avoid and minimise cross-country driving and the use of shortcuts. This will assist in reducing soil cover erosion.

17.7.5.3.5 Flagging of vulnerable sites

Any vulnerable sites will be protected with temporary flagging in the first instance. In the case of cultural sites, this will be subject to the consent of the site guardians. Short-term flagging or fencing would involve tall metal stakes / pins, painted used tyres, or other suitable materials used to identify sensitive sites. Such fencing will follow the operative site warning colour codes and must be subject to regular inspections and maintenance. Project and contractor staff cultural heritage awareness training and toolbox talks will be undertaken to prevent interference with flagged sites. All staff will be informed of their presence and instructed not to interfere with fencing or archaeological sites.

17.7.5.3.6 Erosion prevention through re-vegetation

Increased erosion may occur as a result of vegetation clearance over sites. For sites with fossils or archaeological artefacts, this could result on exposure of specimens or artefacts previously protected by cover. It may be necessary to re-vegetate areas of erosion with appropriate planting to ensure that any specimens or artefacts previously exposed by vegetation clearance are available to be retrieved for future study.

17.7.5.3.7 Relocation of graves from Land Acquired for the Project

The Project Proponent will identify the caretakers of the dead and agree on the modalities to exhume and rebury the dead to an alternative location. The Project Proponent will consult with affected families, including any known descendants, and caretakers of burial grounds. The Project Proponent will provide customary ceremonial assistance for grave relocation. In liaison with the affected families, the Project Proponent will meet all costs for performance of appropriate cultural ceremonies; the removal, transportation and burial of remains and any other paraphernalia; burial related expenditure. Mitigation will apply to family graves identified during asset surveys. Unmarked graves identified through the chance find procedure will not qualify for ceremonial assistance, but will be exhumed and reburied at an appropriate local cemetery with due respect and ceremony, in accordance with Ugandan law and local customary practices.

17.7.5.3.8 Relocation of sacred sites from Land Acquired for the Project

The Project Proponents will consult with leaders of affected clans or communities to ensure appropriate transfer of the cultural properties, to establish their requirements for the ceremonies that will need to be performed, to ensure continued accessibility for the clan members, and to facilitate the conduct of ceremonies and rituals prior to relocation. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

17.7.5.3.9 Relocation of places of worship from Land Acquired for the Project

The Project Proponent will consult with the leaders of places of worship and affected congregations and communities to establish their requirements and ensure appropriate relocation. Should any places of worship impacted by Project activities need to be relocated, compensation and support in relocating religious buildings, holding consecration ceremonies and assuring continued access to places of worship will be undertaken. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

17.7.5.3.10 Cultural Heritage Training programme

An appropriate Cultural Heritage Training and Capacity Building Program will be developed and implemented for the Project:

- Project Proponent and contractor staff are to receive Cultural Heritage Training which will include training in community relations, respect of local cultural norms and the Chance Find Procedure. A record of staff training is to be maintained. Project and contractors staff will be trained to identify items of potential archaeological importance, and to implement Chance Finds Procedures. Driver training will include an element of cultural heritage awareness training, which will encourage them to stay on marked tracks and adhere to signage. When operating in the vicinity of known palaeontological, archaeological and cultural heritage sites, staff toolbox talks will highlight the sensitivity of heritage and reiterate the CFP; and
- It is recommended that fieldwork involves a component of training and capacity building of university students and employing them as assistants to give them field experience, developing local skills and capacity in rescue archaeology. Students will be employed alongside the experienced professional archaeologists who will design, lead and undertake the archaeological mitigation works. This is necessary for the efficient unfolding of the Project, given that there will be a long-running construction programme and there are a very limited number of skilled Ugandan/regional experts. Lack of available skilled staff has potential to delay works and/or result in breach of permitting/regulations. This should be developed alongside specifying the construction and mitigation tender/contract, and developing cultural heritage elements of ongoing social programmes.

The Workforce Code of Conduct will also include requirement for cultural awareness induction training for all new staff regarding local customs, traditions and responsible community relations.

17.7.5.3.11 Community Cultural Heritage & Archeology

Support cultural activities and enhance the preservation and awareness of cultural heritage and traditions including language. The focus of programme activities will be identified through consultation with local communities and cultural leaders and will take into consideration recommendations included in the 2017 'guidelines by cultural institutions for oil and gas'. Where appropriate, outreach activities will be undertaken to involve local communities, particularly schoolchildren, in understanding and caring for their past.

17.7.5.3.12 Monitoring of Cultural Heritage and Archaeology Management

The Project Proponents shall regularly undertake audits and inspections, which will be set out in the CHMP and CFP.

17.7.5.3.13 Relocation of sacred sites from other areas (unexpected land intake, other project impacts requiring mitigation)

The Project Proponents will consult with leaders of affected clans or communities to ensure appropriate transfer of the cultural properties, to establish their requirements for the ceremonies that will need to be performed, to ensure continued accessibility for the clan members, and to facilitate the conduct of ceremonies and rituals prior to relocation. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

17.7.5.3.14 Relocation of places of worship from other areas (unexpected land intake, other project impacts requiring mitigation)

The Project Proponent will consult with the leaders of places of worship and affected congregations and communities to establish their requirements and ensure appropriate relocation. Should any places of worship impacted by Project activities need to be relocated, compensation and support in relocating religious buildings, holding consecration ceremonies and assuring continued access to places of worship will be undertaken. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

17.7.5.3.15 Summary

Table 17-59 sets out the anticipated mitigation measures likely to be applicable at each wellpad and in the surrounding area, including roads, flow lines and pipelines. All Project areas will be subject to the Cultural Heritage Management Plan and Chance Find Procedures. Requirements for further field walkover survey, test pit evaluation and detailed archaeological mitigation, such as archaeological investigation and recording (excavation), watching briefs and preservation in situ, will be developed in the Cultural Heritage Management Plan.

Table 17-59: Summary of anticipated mitigation measures

Wellpad Area/ CPF Industrial Area	Mitigation Requirements					
	Relocation of graves	Relocation of sacred sites (household shrines/ healer)	Relocation of sacred sites (clan sites, sacred water bodies and sacred trees)	Relocation of places of worship (churches and mosques).	Initial stages of further archaeological investigation and recording	
					Further walkover survey	Test-pit evaluation
JBR-01						*
JBR-02						*
JBR-03					*	TBC
JBR-04						*
JBR-05					*	TBC
JBR-06						*
JBR-07						*
JBR-08						*
JBR-09					*	TBC
JBR-10						*
VNFC N & S						*
GNA-01	*	*	*	*		
GNA-02	*	*		*		*
GNA-03	*	*		*		*
GNA-04	*	*		*		*
NSO-01						*
NSO-02	*					*
NSO-03			*X			*
NSO-04	*		*			*
NSO-05						*
NSO-06	*X	*	*			*
KGG-01	*	*		*		*
KGG-02	TBC	TBC	TBC	TBC	*	TBC
KGG-03	*	*X		*		*
KGG-04	*	*		*		*
KGG-05	*			*		*
KGG-06		*				*
KGG-08	TBC	TBC	TBC	TBC	*	TBC
KGG-09	TBC	TBC	TBC	TBC	*	TBC
NGR-01					*	
NGR-02	*	*	*			*
NGR-03	*	*	*X	*		*
NGR-04	*	*	*			*
NGR-05		(*)				*
NGR-06	*					
KW-01	*		*			*
KW-02A	TBC	TBC	TBC	TBC	*	TBC
KW-02B	TBC	TBC	TBC	TBC	*	TBC
CPF/ Industrial Area	X	X	X	*		*
Flow Lines	*	*	*	*	*	TBC
New Roads	*	*	*	*	*	TBC
Upgraded Roads	*	*	*	*	*	TBC

Wellpad Area/ CPF Industrial Area	Mitigation Requirements					
	Relocation of graves	Relocation of sacred sites (household family shrines/ healer)	Relocation of sacred sites (clan sites, sacred water bodies and sacred trees)	Relocation of places of worship (churches and mosques).	Initial stages of further archaeological and recording	
					Further walkover survey	Test-pit evaluation
Interfield Access	*	*	*	*	*	TBC
Key	* = Mitigation measure may be required, depending on final location of wellpad and associated infrastructure. (*) = The nature of the receptor is to be clarified by further local consultation with traditional religious practitioners. X = Wellpad/CPF Industrial Area footprint impacts upon Critical Cultural Heritage (IFC PS8, 2012). TBC = Wellpad location has altered substantially since field survey and/or further survey is required to establish impacts and mitigation measures.					

17.7.5.4 Residual Impacts – Site Preparation and Enabling Works

17.7.5.4.1 Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)

Relocation of sacred sites (clan sites, sacred water bodies and sacred trees)

The Project Proponents will consult with the leaders of affected clans or communities with interests in a cultural site, and affected communities.

If clan leaders are willing to relocate the cultural sites, relevant rituals will be performed. It is important to note that rituals are performed at different times of the year. The timetable of pre-construction works will need to take account of the ritual times of the year. The responsibility for selecting the relocation site is the priest's, in areas where the clan has land in the district.

The Project Proponents will consult with leaders of affected clans or communities to ensure appropriate transfer of the cultural properties, to establish their requirements for the ceremonies that will need to be performed, to ensure continued accessibility for the clan members, and to facilitate the conduct of ceremonies and rituals prior to relocation. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

The Project Proponents will also ensure Government Institutions approve and witness this undertaking.

Additional mitigation measures will also include:

- Developing and implementing a Resettlement Action Plan;
- Developing and implementing a Cultural Heritage and Archaeological Management Plan;
- Developing and implementing a CFPr;
- Developing and implementing Cultural Heritage and Archaeological Awareness Training;
- Fixed traffic routes (single track policy); and
- Flagging of vulnerable sites.

Residual impacts

Following additional mitigation, the residual effect is assessed as being of a **Low Adverse** significance.

17.7.5.4.2 Places of worship – churches and mosques

Relocation of places of worship

The Project Proponents will consult with the leaders of places of worship and affected congregations and communities to establish their requirements and ensure appropriate relocation.

No places of worship have been identified within the footprint of Project activities during surveys, and it is not anticipated that any places of worship will be removed by the Project. Places of worship in the vicinity of Project components such as wellpads, the CPF/Industrial Area and new roads may experience changes to

their setting. Should any places of worship impacted by Project activities need to be relocated, compensation and support in relocating religious buildings, holding consecration ceremonies and assuring continued access to places of worship will be undertaken. The selection of replacement sites should take into consideration linkages with the affected and relocated households.

Residual impacts

Following additional mitigation, the residual effect is assessed as **Insignificant**.

17.7.5.4.3 Cemeteries and graves

Relocation of graves

The Project Proponents will identify the caretakers of the dead and agree on the modalities to exhume and rebury the dead to an alternative location. The Project Proponents will consult with affected families, including any known descendants, and caretakers of burial grounds. If families are willing to have graves relocated, the Project Proponents will provide customary ceremonial assistance for relocation. In liaison with the affected families, the Project Proponents will meet all costs for performance of appropriate cultural ceremonies; the removal, transportation and burial of remains and any other paraphernalia; burial related expenditure; and compensation for the piece of land used for reburial.

Provision of agreed customary ceremonial assistance per family will be in kind (or cash equivalent). Mitigation will apply to family graves identified during asset surveys. Unmarked graves identified through the chance find procedure will not qualify for ceremonial assistance, but will be exhumed and reburied at an appropriate local cemetery with due respect and ceremony, in accordance with Ugandan law and local customary practices.

As described for complex archaeological remains below, mitigation measures will also include:

- Developing and implementing a Resettlement Action Plan (see Chapter 16, Social);
- Developing and implementing a Cultural Heritage and Archaeological Management Plan;
- Developing and implementing a Chance Find Procedure;
- Developing and implementing Cultural Heritage and Archaeological Awareness Training;
- Fixed traffic routes (single track policy); and
- Flagging of vulnerable sites.

Residual impacts

Following additional mitigation, the residual effect is assessed as being of **Low Adverse** significance

17.7.5.4.4 Complex palaeontological and archaeological remains

Complex, well-preserved palaeontological and archaeological sites and findspots, with multiple finds categories, in situ artefact scatters, concentrations of artefacts, time-depth, of regional research significance are present in the Industrial Area. It contains extensive pottery sherds and scatters, struck stone flakes and scrapers, grinding stones and daub indicating past occupation and settlement in the area.

Additional mitigation measures will also include:

- Developing and implementing a Resettlement Action Plan;
- Develop and implement a Cultural Heritage Management Plan (CHMP);
- Develop and implement Cultural Heritage and Archaeological Awareness Training;
- Archaeological investigation and recording;
- Develop and implement a Chance Find Procedure (CFPr);
- Fixed traffic routes (single track policy);
- Flagging of vulnerable sites;

- Erosion prevention through re-vegetation;
- Capacity building in archaeology and cultural heritage management; and
- Capacity building in museum development.

Residual impacts

Following additional mitigation, the residual effect is assessed as being of **Low Adverse** significance.

The impact is assessed as still having the potential to be significant over the long term, as archaeological remains are a finite and irreplaceable resource. In cases where impacts on archaeological remains cannot be avoided, appropriate mitigation will be undertaken in the form of archaeological recording by a programme of scientific excavation, recording, analysis, museum curation and public dissemination of information (publication). The resulting research dividend will contribute to off-setting the significant loss of archaeological remains. The mitigation of archaeological remains through excavation and recording will contribute to the national knowledge base, and the project will contribute to local and expatriate staff training in EMS and the development and enforcement of CFPr. The Project has the potential to make a significant contribution to institutional capacity building, in terms of reinforcing national planning policy and regulatory systems, feeding into the national inventory, promoting scientific exchange, training in fieldwork and heritage management, and exploring opportunities for heritage interpretation and dissemination.

17.7.5.4.5 Isolated palaeontological and archaeological remains

As described for complex archaeological remains above, mitigation measures will include:

- Archaeological investigation and recording;
- Developing and implementing a CHMP;
- Developing and implementing a CFPr;
- Developing and implementing Cultural Heritage and Archaeological Awareness Training;
- Building capacity in archaeology and cultural heritage management; and
- Building capacity in museum development.

Residual impacts

Following additional mitigation, the residual effect is assessed as **Insignificant to Low Adverse** significance.

17.7.5.4.6 Summary of Residual Impacts - Site Preparation and Enabling Works

The residual Project impacts during the Site Preparation and Enabling Works phase are discussed in the above sections. A summary is presented in Table 17-60 below.

Following mitigation, residual archaeological and cultural heritage impacts during Site Preparation and Enabling Works are assessed to vary between **Insignificant to Low Adverse** significance. Effects would entail the removal of archaeological sites and finds, and the relocation of graves and burial grounds, traditional cultural sites and places of worship.

Cultural receptors in the vicinity of Project components may experience changes to their setting, use, amenity and access. The populations currently using or looking after these receptors may also be impacted by changes caused by the Project; these impacts are further explored in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

Table 17-60: Assessment of Potential and Residual impacts: Site Preparation and Enabling Works phase

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)	Site clearance & land preparation for the Industrial Area Road upgrades and construction Land expropriation Earthworks – clearing of vegetation and soils Earthworks – physical movement of vehicles and plant on-site Power generation Delivery of fuel and other hazardous substances; refuelling of plant and machinery; storage of fuel and hazardous materials Storage of wastes	Removal of specific traditional cultural and sacred sites Impacts on local culture Interference with, desecration and damage to sacred sites Changes to public access to cultural heritage	Traditional cultural and sacred sites and practitioners of traditional religion	High	Low to moderate	Moderate to High Adverse	Resettlement Action Plan Relocation of sacred sites Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Low adverse
Places of worship – churches and mosques	Plant mobilisation to site Use of power generation sets	Loss of tranquility Disruption of religious services	Places of worship and congregations	High	Negligible to low	Low to Moderate Adverse	Fixed traffic routes & management Relocation of places of worship Cultural Heritage Awareness Training	Insignificant
Cemeteries and graves	Site clearance and land preparation for the Industrial Area Road upgrades and construction Land expropriation Earthworks – clearing vegetation and soils, physical movement of vehicles and plant on site Use of power generation sets	Damage to or the removal of cemeteries and graves Disturbance of burial ceremonies and visitors to graves Changes to public access Resettlement of guardians of burial grounds		High	Moderate to high	High Adverse	Relocation of graves Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Low adverse
Complex palaeontological and archaeological remains	Site clearance and land preparation for the Industrial Area Upgrade works to Masindi Check Point Road upgrades and construction Earthworks – clearing vegetation and soils, physical movement of vehicles and plant on site	Damage to or removal of palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites		Moderate	Moderate	Moderate Adverse	Archaeological investigation and recording Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage	Low adverse

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
Isolated palaeontological and archaeological remains	Delivery of fuel and other hazardous substances; refuelling of plant and machinery; storage of fuel and hazardous materials Site clearance and land preparation for the Industrial Area Upgrade works to Masindi Check Point Road upgrades and construction Earthworks – clearing vegetation and soils, physical movement of vehicles and plant on site Delivery of fuel and other hazardous substances; refuelling of plant and machinery; storage of fuel and hazardous materials	Damage to or removal of palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites		Low	Low to moderate	Low Adverse	Awareness Training Fixed traffic routes Flagging of vulnerable sites Erosion prevention through re-vegetation Archaeological investigation and recording Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Insignificant to low adverse

17.7.6 Assessment of Impacts: Construction and Pre-Commissioning

17.7.6.1 Introduction

The following sections provide an overview of the nature and significance of Project impacts on archaeology and cultural heritage during the Construction and Pre-Commissioning phase. Each of the types of archaeological and cultural heritage receptor assessed for this ESIA are analysed in turn.

17.7.6.2 Potential Impacts - Construction and Pre-Commissioning

17.7.6.2.1 *Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)*

This potential impact is restricted to those sites that fall within the direct footprint of pipelines and flow lines. Cultural sites identified within the current proposed footprints of the wellpads comprise:

- KGG-03 – A community meeting point at a large Mukeeku tree at Uriibo (ACH-02-640) and a barkcloth tree, possibly a cultural site (ACH-02-638);
- NGR-03 – A series of associated cultural sites which form part of a series of sacrificial places at Kirama. Sites within the proposed wellpad area comprise a cultural site called Waluwe, located in a huge tamarind tree (ACH-02-136), a cultural site (ACH-02-137) and the shrine of Byenkyamukona (ACH-02-148). The area also contains a sacred tamarind tree (ACH-02-138);
- NSO-03 – A cultural site at Kibambura, thought to cure madness, called Kayese. It is a ihongo (ACH-02-389); and
- Cultural sites are located in the vicinity of wellpads including GNA-02, GNA-03, GNA-04, NSO-03, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-06, NGR-02, NGR-03 and NGR-04.

Activities that cause ground disturbance, such as the preparation of the pipeline RoW and trench excavation for pipelines and flow lines also have the potential to impact cultural sites, resulting in disturbance, desacralisation and/or removal.

Receptor Sensitivity

These sites are used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

The use of pipeline and flow line routing marker posts could have a potential physical impact upon cultural sites. Vehicle tracking may develop adjacent to boundary fences and insertion of marker posts may impact upon any underlying deposits.

The laying of pipeline for Water Abstraction site into Lake Albert and onshore facilities at Lake Albert may impacts on cultural sites in their vicinity. Project components may potentially impact upon cultural sites, in particular the traditional deity of Lake Albert, Lubanga, and sacred areas on the lake shore, resulting in disturbance, desacralisation and/or removal.

It is assessed that Project-related groundwater abstraction will not affect the flow or quality of the Kibiro hot spring that feeds the artisanal Kibiro salt production industry. Lake Albert is not known to supply the hot spring, and abstraction of water from Lake Albert will not significantly affect water flow or quality.

Potential impacts include impacts on local culture, including traditional knowledge and skills, social practices, rituals and festive events, and traditional religion. In terms of the transmission of the historic skills used to make salt at Kibiro, it is not anticipated that socio-economic changes related to the Project will have any impact on the traditionally gendered activities involved, or upon skills transmission. Within the Project area, there is also potential for vehicle damage, human interference due to an increased population and changes to public access arrangements.

The land expropriation process may require the relocation of sacred sites, and may also result in changes to public access to cultural heritage.

The use of temporary topsoil storage areas and the installation and use of temporary road diversions may potentially impact upon cultural sites.

There is potential for spillage and contamination of sacred water bodies and watercourses. (More information is provided in **Chapter 8: Geology and Soils; Chapter 9: Hydrogeology; Chapter 10: Surface Water** and for unplanned events in **Chapter 20: Unplanned Events**). Waste storage may desecrate sacred sites, and any odours may potentially impact upon perceptions of tranquillity. (Mitigation measures are described in **Chapter 11: Landscape and Visual, Chapter 12: Waste** and **Chapter 6: Air Quality and Climate**).

The transportation of construction personnel to and from site, increased transport on surrounding roads, and the increased use of Bugungu airstrip will increase noise and visual intrusion, reducing tranquillity impacting on the setting on cultural sites. Traditional cultural sites located close to access routes may also be potentially impacted by noise, vibration and visual intrusion from Project traffic. As these sites are often located in quiet and/or isolated areas, noise, dust, light spill and odour may detract from their value and the ability to undertake rituals appropriately. Lighting may also disrupt any spiritual and community cultural practices that may require dark skies.

Inadvertent storage of excavated materials at cultural sites may result in disturbance, desacralisation and/or removal of cultural sites.

The presence of 4000 construction personnel, particularly the presence of non-local and expatriate personnel, brings the potential for damage to or interference with cultural sites by Project staff, resulting in disturbance, desacralisation and/or removal. The presence of project personnel and ground preparation activities may potentially impact upon cultural sites, resulting in disturbance, desacralisation and/or removal, breaching local cultural prohibitions, taboos, values and norms. Interference with cultural sites may occur across the Project Area and beyond. Changes to access via new or improved access roads will contribute to this potential impact. However, these potential impacts are only likely to occur sporadically. Project impacts resulting in cultural change are addressed in **Chapter 16: Social**.

The loss of sacred sites as a result of activities at the Construction and Pre-Commissioning phase is not necessarily permanent, as traditional practitioners are able to relocate and rededicate sites if suitable alternatives are found.

Overall potential impact magnitude is therefore considered low to moderate.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on traditional cultural and sacred sites is considered to be of a **Moderate** to **High Adverse** significance.

17.7.6.2.2 Disruption of services at places of worship – churches and mosques

There were no places of worship identified within the direct area of influence of the project, but some were noted in the vicinity of a few wellpad sites including GNA-01, GNA-02, GNA-03, GNA-04, NSO-04, NSO-05, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-03, NGR-04 and NGR-06. Noise generating activities like construction works and haulage of equipment and materials could impact on the smooth operation of these worship places.

Receptor Sensitivity

Places of worship are used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

No places of worship have been identified within the footprint of proposed wellpad areas, or in the path of proposed new roads/upgrades, pipelines, flow lines or other project components. However, there are places of worship located in the vicinity of wellpads GNA-01, GNA-02, GNA-03, GNA-04, NSO-04, NSO-05, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-03, NGR-04, NGR-06 and NGR-07.

Plant mobilisation, the movement of vehicles and night-time working may disturb the tranquillity of

places of worship, or disrupt religious services due to noise, dust, light spill and odour. Places of worship located close to access routes may also be potentially impacted by noise, vibration and visual intrusion from Project traffic.

There may be potential impacts upon religious practice at places of worship emanating from the transportation of construction personnel to and from site, increased transport on surrounding roads, the increased use of Bugungu airstrip and night-time working. Without mitigation, this may disturb the tranquillity of places of worship, or disrupt religious services.

The overall potential impact magnitude is therefore considered negligible to low.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on places of worship is considered **Low to Moderate Adverse**.

17.7.6.2.3 Impact on Cemeteries and graves

This potential impact is mainly restricted to those sites that fall within the direct footprint or vicinity of wellpads, the road network and pipelines and flow lines. Burial places identified within the current proposed footprints of the wellpads comprise a burial place with two graves, one cemented (ACH-02-548) at Uduk I/Ngwedo Farm (NSO-06). Graves and cemeteries are known to be present in the vicinity of wellpads GNA-01, GNA-02, GNA-03, GNA-04, NSO-02, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-02, NGR-03, NGR-04 and NGR-06.

Receptor Sensitivity

Burial grounds used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

Graves could be impacted by earthworks and vehicle movements; many graves are unmarked. Graves are particularly vulnerable to vehicles driving over them and crushing them, causing rutting, soil displacement and increased erosion. The storage of excavated materials and pipeline sections may potentially impact on any underlying graves, crushing underlying strata.

Burial places located close to access routes may be potentially impacted by an increase in noise, vibration and visual intrusion from the movement of Project traffic, transport of construction personnel to and from site, increased transport on surrounding roads, and the increased use of Bugungu airstrip. This may potentially impact burial ceremonies and visitors to graves. (Mitigation measures are described in **Chapter 6: Air Quality and Climate**, **Chapter 7: Noise**, **Chapter 11: Landscape and Visual**, **Chapter 12 Waste**).

The land expropriation process may require the relocation of sacred sites and graves, and may also result in changes to public access to cultural heritage. The guardians of these sites may potentially be impacted by land expropriation, limiting their ability to access, use and maintain them.

The overall potential impact magnitude is therefore considered moderate.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on cemeteries and graves values is considered to be of a **High Adverse** significance.

17.7.6.2.4 Complex palaeontological and archaeological remains

Complex, well-preserved palaeontological and archaeological sites and findspots, with multiple finds categories, in situ artefact scatters, concentrations of artefacts, time-depth, of regional research significance have been identified within the footprint of wellpads at:

- JBR-10 – Pottery scatters including Iron Age Chobi Ware (ACH-02-072) and undated pottery sherds (ACH-02-073; ACH-02-098; ACH-02-099);
- VNFC – Late Stone Age quartz flake (ACH-02-101), lithic cores (ACH-02-345; ACH-02-346);

- GNA-04 – A quartz core fragment (ACH-02-869), a decorated pottery sherd (ACH-01-092), a rim sherd (ACH-01-093) and plain sherds (ACH-02-321, ACH-02-322);
- KGG-06 – Plain and decorated pottery sherds (ACH-02-777; ACH-02-783; ACH-02-793);
- NGR-03 – A lithic core (ACH-02-135) and plain pottery sherds (ACH-02-142); and
- NSO-04 – A scraper, five debitage flakes, and a Levallois core (ACH-02-473), plain and decorated pottery sherds (ACH-02-420; ACH-02-421; ACH-02-423; ACH-02-472; ACH-02-473; ACH-02-474) and a large scatter of abraded pottery (ACH-02-422).

Complex archaeological remains have been identified in the vicinity of wellpads JBR-02, JBR-04, JBR-06, JBR-10, VNFC, GNA-04, NSO-04, NSO-06, KGG-01 and NGR-04.

A number of archaeological sites within operational areas will already have been subject to archaeological investigation and recording as part of mitigation measures at the Pre-construction and Construction stage. However, any remaining receptors may be vulnerable to impacts during the Construction and Pre-Commissioning stage.

Potential construction impacts would mainly affect the footprint of pipelines and flow lines. Archaeological features and materials are located in the topsoil, subsoil and cut into the upper levels of natural geological deposits, and would be damaged or removed during groundworks. Archaeological remains would be irreversibly removed, their setting or context transformed, and sites lost leading to loss of research knowledge.

Plant mobilisation to site and the physical movement of vehicles and plant on site may potentially impact upon cultural heritage receptors through rutting or collision damage. Finds scatters are particularly vulnerable to vehicles driving over them and crushing artefacts, causing rutting, soil displacement and increased erosion; without mitigation, receptors would be irreversibly removed or damaged.

Construction storage areas and compounds may result in disturbance, damage to or removal of tangible archaeological remains due to ground disturbance. The storage of excavated materials and pipeline sections may potentially impact on any underlying archaeology, crushing underlying strata; they may also impact upon the setting of archaeological receptors.

Piling and the drilling of wellpads may result in sediment displacement/ deformation and hydrological impacts on the deposits may affect the deposit/ groundwater chemistry and microbiology. Changes in deposit hydrology and chemistry can affect inorganic as well as organic archaeological remains. However, it is not anticipated that deeply stratified, organic-rich archaeological deposits are present. Cultural horizons are likely to be present only between ground level and c.1.5m below ground level. As noted above, it is not considered that ground borne vibration will have an impact on buried archaeological remains.

The use of pipeline and flow line routing marker posts and fencing off all key Project Components would have a potential physical impact upon archaeological receptors. Vehicle tracking may develop adjacent to boundary fences.

The laying of pipeline for Water Abstraction System into Lake Albert and onshore facilities at Lake Albert may potentially impact on any archaeology in the footprint of project elements. The offshore segment of the water abstraction pipeline will extend c.1.5km under the lakebed of Lake Albert, and may potentially impact upon any presently unknown underwater cultural heritage. The onshore segment of the water abstraction pipeline will extend c.10km from the onshore facilities to the CPF/Industrial Area, and may potentially impact upon presently unknown terrestrial archaeology.

Similarly, the construction and operation of VNFC of the Nile (North & South landing structures) and facilities may moderate adverse effect upon potential onshore palaeontological and archaeological remains, including erosion and/or sedimentation due to altered river flow.

Any potential impact upon potential archaeological deposits from horizontal drilling at the Nile Crossing would be limited to the footprint of the HDD entry and exit shafts and surface construction sites. It is not considered that ground-borne vibration will have an impact on buried archaeological remains due to the distance between the source of vibration and any receptors, and attenuation due to ground absorption.

Groundworks associated with the excavation of water storage areas/ bunds for rain/storm event management may have a moderate to high adverse effect on surface or buried archaeological remains.

There is potential for spillage and contamination of archaeological strata by fuel and other hazardous substances. Without mitigation, this may result in a moderate to high adverse effect. (More information is provided in **Chapter 8: Geology and Soils; Chapter 9: Hydrogeology; Chapter 10: Surface Water** and for unplanned events in **Chapter 20: Unplanned Events**).

The presence of 4000 construction personnel, particularly the presence of non-local and expatriate personnel, brings the potential for damage to or illicit removal of archaeological remains by Project staff, not just in the vicinity of the proposed project components. Changes to access via new or improved access roads will contribute to this potential impact.

Project impacts resulting in cultural change are addressed in **Chapter 16: Social**.

The use of floodlights could impact upon the tranquillity and setting of cultural heritage assets. The historic landscape and its tranquillity would be particularly impacted in the MFNP area, which currently experiences little visual and noise intrusion. In the long term (post-decommissioning), these potential impacts are reversible. Without mitigation, these may result in a potential low to moderate adverse temporary construction impact on the setting of cultural heritage sites, as these factors are reversible. (Mitigation measures related to reducing visual impacts are described in **Chapter 7: Noise** and **Chapter 11: Landscape and Visual**).

The overall potential impact magnitude is therefore considered to be moderate.

Receptor Sensitivity

Heritage assets that do not meet the intended meaning of Critical Cultural Heritage, i.e. heritage of less than international or national significance, are classed as Replicable Cultural Heritage in this ESIA. All archaeological sites within the project area are classed according to IFC criteria as 'replicable cultural heritage', as 'the particular eras and cultural values they represent are well represented by other sites and/or structures' (IFC, 2012). These regionally significant receptors are considered to be of moderate sensitivity.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on complex archaeological remains is considered to be of **Moderate Adverse** significance.

17.7.6.2.5 Isolated palaeontological and archaeological remains

Isolated archaeological finds have been recorded within the wellpad footprints and land acquisition areas:

- JBR-01 – Lithic core (ACH-01-003);
- JBR-02 – Pottery and lithics (ACH-00-001, ACH-02-033, ACH-02-034);
- JBR-07 – Daub fragment (ACH-02-042 and ACH-02-043) and pottery (ACH-02-044);
- JBR-08 – Late Stone Age single platform core (ACH-00-010);
- GNA-04 – Lithics (ACH-02-869 and ACH-01-098), iron slag (ACH-01-095), pottery (ACH-01-094, ACH-01-097, ACH-02-321, ACH-02-322, ACH-02-036, ACH-02-038, ACH-02-305, ACH-02-306, ACH-01-096, ACH-01-339), and a grinding stone (ACH-02-337)
- KGG-01 – Decorated pottery sherds (ACH-02-585, ACH-02-584 and ACH-02-589);
- KGG-03 – A single platform core and other lithics (ACH-02-639, ACH-02-637, ACH-02-636 and ACH-02-633) and pottery (ACH-02-669);
- KGG-04 – Plain pottery sherd (ACH-02-680);
- KGG-05 – Quartz flake (ACH-02-714);
- NGR-02 – Plain pottery sherds (ACH-02-102);

- NGR-05 – Pottery (ACH-02-212, ACH-02-213, ACH-02-226, and ACH-02-227);
- NSO-01 – A highly abraded pottery sherd (ACH-01-122);
- NSO-03 – Plain, grey pottery sherds (ACH-02-391);
- NSO-04 – Lithics (ACH-02-473) and pottery (ACH-02-420, ACH-02-421, ACH-02-423, ACH-02-472, ACH-02-473, ACH-02-474, ACH-02-422, ACH-02-493); and
- NSO-05 – Pottery sherd (ACH-01-125).

Receptor Sensitivity

All archaeological sites within the project area are classed according to IFC criteria as ‘replicable cultural heritage’, as ‘the particular eras and cultural values they represent are well represented by other sites and/or structures’ (IFC, 2012). These receptors are of local research significance and are considered to be of low sensitivity.

Impact magnitude

Isolated archaeological find spots have been identified in the vicinity of wellpads JBR-01, JBR-03, JBR-07 and JBR-08, JBR-09, GNA-01, GNA-02, GNA-03, NSO-01, NSO-02, NSO-03, NSO-05, KGG-03, KGG-04, KGG-05, KGG-06, KGG-09, NGR-02, NGR-03 and NGR-05.

Any isolated palaeontological and archaeological remains would be potentially impacted by the same activities, and in the same manner as complex archaeological remains described above.

The overall potential impact magnitude is therefore considered moderate.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on isolated palaeontological and archaeological remains is considered to be **Low Adverse**.

17.7.6.3 Additional Mitigation and Enhancement

The embedded mitigation measures would continue to be applied during the Construction and Pre-Commissioning stage. Additional mitigation measures relevant to this phase are described in more detail in section 17.7.5.3.

The Project will result in a change of land use from a rural landscape of scrub, farming and fishing, to a landscape interspersed with a series of industrial zones with associated infrastructure and pipelines. This will alter the character of the landscape and the ability to understand its cultural heritage components. The Project will alter the context of archaeological sites, settlements and landscapes, removing the ability to understand previous historic, cultural and religious land use and diminishing the significance of the historic landscape in the long term. No heritage-specific mitigation measures are proposed in the chapter as no mitigation is feasible; general mitigation measures are set out in the **Chapter 11: Landscape and Visual** and **Chapter 7: Noise**. Additional archaeological mitigation measures are outlined below.

17.7.6.4 Residual Impacts – Construction and Pre-Commissioning

17.7.6.4.1 Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)

The potential impact of Construction and Pre-Commissioning works on these receptors of high sensitivity prior to mitigation is assessed as moderate adverse.

Mitigation measures will involve:

- Relocation of sacred sites (clan sites, sacred water bodies and sacred trees) and ceremonies to relocate the spirits that are believed to reside in them;
- Relocation of sacred sites (household family shrines);
- Developing and implementing a Cultural Heritage Management Plan;

- Developing and implementing a Chance Find Procedure;
- Developing and implementing Cultural Heritage Awareness Training;
- Fixed traffic routes (single track policy); and
- Flagging of vulnerable sites

Some sacred areas encompass large areas, such as Lake Albert and sacred watercourses. Particular care should be taken in planning water abstraction to avoid or mitigate potential impacts upon areas with spiritual attributes and associated ceremonies, in particular the traditional deity of Lake Albert, Lubanga, and sacred areas on the lake shore. Care should be taken relating to water abstraction activities to avoid or mitigate potential impacts upon marshy areas with spiritual attributes and associated ceremonies e.g. Kanyuri, Matwe, Taagi, Kalyamukwanzi (Kirama/Kichoke).

Careful traffic management will be required to avoid disturbance to any cultural ceremonies in the vicinity of Project components, and to avoid breaching cultural norms (see **Chapter 16: Social**).

Residual impacts

Following additional mitigation, the residual effect is assessed as being of a **Low Adverse** significance.

17.7.6.4.2 Places of worship – churches and mosques

The potential impact of Construction and Pre-Commissioning stage on these receptors of high sensitivity prior to mitigation is assessed as negligible to low adverse.

Mitigation measures will involve the relocation of places of worship, Cultural Heritage Awareness Training, fixed traffic routes and traffic management.

Careful traffic management will be required to avoid disturbance to religious services in the vicinity of Project components, and to avoid breaching cultural norms (see **Chapter 16: Social**).

Residual impacts

Following additional mitigation, the residual effect is assessed as **Insignificant**.

17.7.6.4.3 Cemeteries and graves

The potential impact of Construction and Pre-Commissioning works on these receptors of high sensitivity prior to mitigation is assessed as moderate adverse.

Mitigation measures will involve:

- Relocation of any remaining graves, or graves identified in the course of Construction and Pre-Commissioning works;
- Developing and implementing a Cultural Heritage Management Plan;
- Developing and implementing a Chance Find Procedure;
- Developing and implementing Cultural Heritage Awareness Training;
- Fixed traffic routes (single track policy); and
- Flagging of vulnerable sites.

Careful traffic management will be required to avoid disturbance to funerals in the vicinity of Project components, and to avoid breaching cultural norms (see **Chapter 16: Social**).

Residual impacts

Following additional mitigation, the residual effect is assessed as being of a **Low Adverse** significance.

17.7.6.4.4 Complex archaeological remains

The potential impact of Construction and Pre-Commissioning works on these receptors of moderate sensitivity prior to mitigation is assessed as moderate adverse.

Mitigation measures will involve:

- Archaeological investigation and recording;
- Developing and implementing a Cultural Heritage Management Plan;
- Developing and implementing a Chance Find Procedure;
- Developing and implementing Cultural Heritage Awareness Training;
- Fixed traffic routes (single track policy);
- Flagging of vulnerable sites; and
- Erosion prevention through re-vegetation.

Security fences will be erected around wellpads and support facilities. The security fence will be designed to go around rather than through archaeological and cultural receptors, giving sites appropriate clearance. A one-track policy will be developed and applied in order to prevent any damage from vehicles as access tracks develop.

Residual impacts

Following additional mitigation, the residual effect is assessed as being of a **Low Adverse** significance.

17.7.6.4.5 Isolated palaeontological and archaeological remains

The potential impact of Construction and Pre-Commissioning on these receptors of low sensitivity prior to mitigation is assessed as low adverse.

As described for complex archaeological remains above, mitigation measures will include:

- Archaeological investigation and recording;
- Developing and implementing a Cultural Heritage Management Plan;
- Developing and implementing a Chance Find Procedure;
- Developing and implementing Cultural Heritage Awareness Training;
- Building capacity in archaeology and cultural heritage management; and
- Building capacity in museum development.

Residual impacts

Following additional mitigation, the residual effect is assessed as being of an **Insignificant to Low Adverse** significance.

17.7.6.5 Residual Impacts – Construction and Pre-Commissioning

The residual Project impacts during the Construction and Pre-Commissioning phase are discussed in the above sections. A summary is presented in Table 17-61 below. Residual archaeological and cultural heritage impacts during Construction and Pre-Commissioning are assessed to vary between **Insignificant** to **Low Adverse** significance. Effects would entail the removal of archaeological sites and finds, and the relocation of graves and burial grounds and traditional cultural sites.

Cultural receptors in the vicinity of Project components may experience changes to their setting, use, amenity and access. The populations currently using or looking after these receptors may also be impacted by changes caused by the Project; these impacts are further explored in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

Table 17-61: Assessment of Potential and Residual impacts: Construction and Pre-Commissioning phase

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)	New roads, access roads and upgrading existing roads General construction activities & construction of camp Construction of well-pads Construction of pipelines and flowlines Construction of the Victoria Nile pipeline crossing Vehicle movement and construction activities Fencing off all key Project components Construction of the Lake Albert Water Abstraction System Water discharge to environment Waste storage Use of lighting (light spill) Presence of personnel on site	Removal of specific traditional cultural and sacred sites Impacts on sacred watercourses and water bodies Impacts on local culture Interference with, desecration of and damage to sacred sites Changes to public access	Traditional cultural and sacred sites and practitioners of traditional religion	High	Low to moderate	Moderate to High Adverse	Resettlement Action Plan Relocation of sacred sites Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Low Adverse
Places of worship – churches and mosques	New roads, access roads and upgrading existing roads General construction activities & construction of camp Construction of well-pads Construction of pipelines and flowlines Vehicle movement and construction activities Fencing off all key Project components Laying pipeline for Water Abstraction site to Lake Albert Waste storage Use of lighting (light spill)	Loss of tranquility Disruption of religious services	Places of worship and congregations	High	Negligible to low	Low to Moderate Adverse	Fixed traffic routes & traffic management Relocation of places of worship Cultural Heritage Awareness Training	Low Adverse
Cemeteries and graves	New roads, access roads and upgrading existing roads General construction activities & construction of camp Construction of well-pads Construction of pipelines and flowlines Vehicle movement Fencing off all key Project	Damage to or the removal of cemeteries and graves Disturbance of burial ceremonies and visitors to graves Changes to public access Resettlement of guardians of burial grounds		High	Moderate	High Adverse	Resettlement Action plan Relocation of graves Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage	Low Adverse

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
Complex palaeontological and archaeological remains	<p>components Presence of personnel on site</p> <p>New roads, access roads and upgrading existing roads General construction activities & construction of camp Construction of well-pads Construction of pipelines and flowlines Construction of the Victoria Nile pipeline crossing Vehicle movement and construction activities Fencing off all key Project components Construction of the Lake Albert Water Abstraction System Water discharge to environment (if any) Waste storage Use of lighting (light spill) Presence of personnel on site</p>	<p>Damage to or removal of palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites</p>		Moderate	Moderate	Moderate Adverse	<p>Awareness Training Fixed traffic routes Flagging of vulnerable sites Archaeological investigation and recording Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites Erosion prevention through re-vegetation</p>	Low Adverse
Isolated palaeontological and archaeological remains	<p>New roads, access roads and upgrading existing roads General construction activities & construction of camp Construction of well-pads Construction of pipelines and flowlines Construction of the Victoria Nile pipeline crossing Vehicle movement and construction activities Fencing off all key Project components Construction of the Lake Albert Water Abstraction System Water discharge to environment (if any) Waste storage Use of lighting (light spill) Presence of personnel on site</p>	<p>Damage to or removal of palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites</p>		Low	Moderate	Low Adverse	<p>Archaeological investigation and recording Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites</p>	Negligible to low adverse

17.7.7 Assessment of Impacts: Commissioning and Operations

17.7.7.1 Introduction

The following sections provide an overview of the nature and significance of potential Project impacts on archaeology and cultural heritage during the Commissioning and Operations phase. Each of the types of archaeological and cultural heritage receptor assessed for this ESIA are analysed in turn.

17.7.7.2 Potential Impacts – Commissioning and Operations

17.7.7.2.1 Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)

Receptor Sensitivity

These sites are used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

It is anticipated that any cultural sites within operational areas will have been re-located by the operational stage. Cultural sites are located in the vicinity of wellpads including GNA-02, GNA-03, GNA-04, NSO-03, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-06, NGR-02, NGR-03 and NGR-04; Commissioning and Operation activities may also potentially impact upon any relocated cultural sites, if they are relocated to areas in the vicinity of Project activities.

As for the Construction and Pre-Commissioning stage, any cultural sites in areas that would be directly affected by visual and sound level change may experience light spill, pilot emissions from flare during normal operations and the physical presence of the Flare and GTG Exhaust Stack at the CPF, and noise. These may result in perceived impacts of disruption to sacred sites and spirits from gas flaring, as well as increase in noise, dust and visual intrusion, and reduction in tranquillity potentially impacting on the setting of cultural sites and places worship. This would affect the cultural value of those sites and could have an impact on any cultural activity that takes place at those sites. (Mitigation measures are described in **Chapter 11: Landscape and Visual**, **Chapter 12: Waste** and **Chapter 6: Air Quality and Climate**).

The Lake Albert Water Abstraction System will be in operation. The Lake Albert Water Abstraction facility will have restricted access within 200m either side of the pipeline location in Lake Albert during the operational phase, which will result in changes to public access to cultural heritage.

Sacred water bodies, such as the Sambye River, and natural sacred springs, will remain vulnerable throughout the operational phase. (More information is provided in **Chapter 8: Geology and Soils**; **Chapter 9: Hydrogeology**; **Chapter 10: Surface Water** and for unplanned events in **Chapter 20: Unplanned Events**).

The physical presence of construction personnel, the transport of operational personnel to and from site, increased transport on surrounding roads, and the increased use of Bugungu airstrip will increase noise and visual intrusion, reducing tranquillity impacting on the setting of cultural heritage sites. Traditional cultural sites located close to access routes may also be potentially impacted by noise, vibration and visual intrusion from Project traffic.

Oilfield development in the northeastern Albertine Graben may change public perceptions regarding the purity of Kibiro salt and other traditional local products. This could have a potential impact on the sale and barter of Kibiro salt, which the local population rely upon for subsistence, as local soils are too salty for agriculture.

It is considered unlikely that Project deep drilling activities would potentially impact upon the Kibiro Hot Springs, given they are over 50km distant from the nearest well. The proximity of oil extraction, processing and transit activities carries a potential risk of accidental oil spills which may result in pollution incidents. It is not assessed that the Kibiro salt gardens are directly at risk of pollution due to distance. Further details on unplanned events, such as pollution incidents, are detailed in **Chapter 20: Unplanned Events**.

Overall potential impact magnitude is considered low.

Impact significance

The overall potential impact significance of the Construction and Pre-Commissioning phase on traditional cultural and sacred sites is considered to be **Moderate Adverse**.

17.7.7.2.2 Places of worship – churches and mosques

Receptor Sensitivity

Places of worship are used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

No places of worship have been identified within proposed Project operational areas. However, there are places of worship in the vicinity of Project operational areas.

As for the Construction and Pre-Commissioning stage, any places of worship in areas that would be directly affected by visual and sound level change may experience light spill, pilot emissions from flare during normal operations and the physical presence of the Flare and GTG Exhaust Stack at the CPF, and noise. These may reduce in tranquillity and could have an impact on any religious services. (Mitigation measures are described in **Chapter 11: Landscape and Visual**, **Chapter 12: Waste** and **Chapter 6: Air Quality and Climate**).

The transport of operational personnel to and from site, increased transport on surrounding roads, and the increased use of Bugungu airstrip will increase noise and visual intrusion, reducing tranquillity impacting on the setting of places of worship. Any places of worship located close to access routes may also be potentially impacted by noise, vibration and visual intrusion from Project traffic.

Overall potential impact magnitude is therefore considered negligible to low.

Impact significance

The overall potential impact significance of Commissioning and Operations on places of worship is considered to be **Insignificant to Moderate Adverse**.

17.7.7.2.3 Cemeteries and graves

Project activities that could potentially impact cemeteries and graves (cemented graves and unmarked (mud) graves), including the setting of graves, during the Commissioning and Operations phase include:

- Lighting emissions from Industrial Area, Tangi, well pads (during work over activities only);
- Physical presence of the flare (Enclosed Ground Flare and Elevated Flare); and
- Presence of personnel on site (particularly in-migration).

Receptor Sensitivity

Burial grounds used by local communities for cultural purposes, and are therefore assessed as being of high sensitivity according to IFC PS 8 (2012).

Impact magnitude

It is anticipated that the relocation of any graves directly impacted by the Project would have been undertaken during the Construction and Pre-Commissioning stage. Burial grounds are located in the vicinity of wellpads including GNA-01, GNA-02, GNA-03, GNA-04, NSO-02, NSO-04, NSO-06, KGG-01, KGG-03, KGG-04, KGG-05, NGR-02, NGR-03, NGR-04 and NGR-06; Commissioning and Operation activities may also potentially impact upon any relocated burials, if they are relocated to areas in the vicinity of Project activities.

The transport of operational personnel to and from site, increased transport on surrounding roads,

and the increased use of Bugungu airstrip will increase noise and visual intrusion, potentially reducing tranquillity and impacting on the setting of cemeteries located close to wellpads, the CPF / Industrial Area.

Overall potential impact magnitude is therefore considered negligible to low.

Impact significance

The overall potential impact significance of the Commissioning and Operations phase on cemeteries and graves values is considered to be insignificant to **Moderate Adverse**.

17.7.7.2.4 Complex palaeontological and archaeological remains

During the Commissioning and Operations phase, the following Project activities have the potential to completely or partially remove complex palaeontological and archaeological remains (if present):

- Operation and maintenance of the Victoria Nile Ferry; and
- Presence of personnel on site (particularly in-migration).

Most archaeological sites within operational areas will already have been subject to archaeological investigation and recording as part of mitigation measures at the Site Preparation and Enabling Works and the Construction and Pre-Commissioning stages. However, any remaining receptors may be vulnerable to impacts during the Commissioning and Operations stage.

The operation of VNFC, landing structures and facilities may result in a moderate adverse effect upon potential palaeontological and archaeological remains, including erosion and/or sedimentation due to altered river flow.

If any archaeological or cultural sites have been preserved in place during the Site Preparation and Enabling Works and the Construction and Pre-Commissioning stages, without mitigation, there is potential for the damage or removal of any such sites in Project operational areas.

The presence of non-local and expatriate personnel brings the potential for damage to or illicit removal of archaeological remains by Project staff, not just in the vicinity of the proposed project components.

Overall potential impact magnitude is therefore considered low.

Receptor Sensitivity

Heritage assets that do not meet the intended meaning of Critical Cultural Heritage, i.e. heritage of less than international or national significance, are classed as Replicable Cultural Heritage in this ESIA. All archaeological sites within the project area are classed according to IFC criteria as 'replicable cultural heritage', as 'the particular eras and cultural values they represent are well represented by other sites and/or structures' (IFC, 2012). These regionally significant receptors are considered to be of moderate sensitivity.

Impact Significance

The overall potential impact significance of the Commissioning and Operations phase on complex archaeological remains is considered to be **Low Adverse**.

17.7.7.2.5 Isolated palaeontological and archaeological remains

During the Commissioning and Operation phase, the following Project activities have the potential to completely or partially remove isolated palaeontological and archaeological remains (if present):

- Operation and maintenance of the Victoria Nile Ferry; and
- Presence of personnel on site (particularly in-migration).

Receptor Sensitivity

All archaeological sites within the project area are classed according to IFC criteria as 'replicable cultural heritage', as 'the particular eras and cultural values they represent are well represented by other sites and/or structures' (IFC, 2012). These receptors are of local research significance and are

considered to be of low sensitivity.

Impact magnitude

Any isolated palaeontological and archaeological remains would potentially be impacted by the same activities, and in the same manner as complex archaeological remains described above.

The overall potential impact magnitude is therefore considered low.

Impact significance

The overall potential impact significance of the Commissioning and Operations phase on isolated palaeontological and archaeological remains is considered to be **Low Adverse**.

17.7.7.3 Additional Mitigation and Enhancement

The embedded mitigation measures would continue to be applied during the Commissioning and Operations stage. Additional mitigation measures relevant to this phase are described in more detail in section 17.7.5.3.

The archaeological investigation and protection programme initiated prior to construction will continue as the Project develops in stages. The impacts of these elements are assessed under the Construction and Pre-Commissioning stage, as full details of the schedule and timescale of works during the Commissioning and Operations stage may be subject to change. Staff cultural heritage awareness training will continue. The CHMP and CFPr will be implemented and updated, if necessary, in consultation with the Ugandan heritage authorities. Vehicles will continue to adhere to controlled routes identified by signage. The condition of archaeological sites and protection fencing will be monitored as part of the site environmental monitoring programme and any changes or newly identified sites will be reported to the Ugandan heritage authorities.

It is anticipated that the relocation of any graves, sacred sites and places of worship directly impacted by the Project would have been undertaken during the previous stages. However, some sacred areas encompass large areas, such as Lake Albert and sacred watercourses. Particular care should be taken in planning water abstraction to avoid or mitigate potential impacts upon areas with spiritual attributes and associated ceremonies, in particular the traditional deity of Lake Albert, Lubanga, and sacred areas on the lake shore.

Careful traffic management will be required to avoid disturbance to religious services, funerals and other ceremonies in the vicinity of Project components, and to avoid breaching cultural norms (see **Chapter 16: Social**).

17.7.7.4 Residual Impacts - Commissioning and Operations

Overall, residual archaeological and cultural heritage impacts during Commissioning and Operations are assessed to vary between **insignificant** to **Low Adverse** significance. Effects would entail the removal of minor parts of archaeological sites (but sites would retain a significant integrity and research potential); or minor further changes to the setting of archaeological monuments; or minor removal of elements that form part of a wider surviving research resource. Some areas may undergo little physical impact or change, observable further change in setting or context and or impact from changes in use, amenity or access.

Table 17-62: Assessment of Potential and Residual impacts: Commissioning and Operations phase

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
Sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines)	Lighting emissions from Industrial Area, Tangi, well pads (during work over activities only) Physical presence of the flare (Enclosed Ground Flare and Elevated Flare) Operation and maintenance of Water Abstraction System Presence of personnel on site (particularly in-migration)	Degradation of setting of traditional cultural and sacred sites due to gas flaring, as well as increase in noise, dust and visual intrusion, and reduction in tranquility Impacts on sacred watercourses and water bodies Impacts on local culture Interference with, desecration of and damage to sacred sites Changes to public access	Traditional cultural and sacred sites and practitioners of traditional religion	High	Low	Moderate Adverse	Resettlement Action Plan Relocation of sacred sites Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Low Adverse
Places of worship – churches and mosques	Lighting emissions from Industrial Area, Tangi, well pads (during work over activities only) Physical presence of the flare (Enclosed Ground Flare and Elevated Flare) Operation and maintenance of Water Abstraction System Presence of personnel on site (particularly in-migration)	Loss of tranquility due to noise, visual intrusion, light spill and flaring Disruption of religious services	Places of worship and congregations	High	Negligible to Low	Insignificant to Moderate Adverse	Fixed traffic routes & traffic management Relocation of places of worship Cultural Heritage Awareness Training	Low Adverse
Cemeteries and graves	Lighting emissions from Industrial Area, Tangi, well pads (during work over activities only) Physical presence of the flare (Enclosed Ground Flare and Elevated Flare) Presence of personnel on site (particularly in-migration)	Loss of tranquility due to noise, visual intrusion, vibration, light spill and flaring Disturbance of burial ceremonies and visitors to graves		High	Negligible to low	Moderate Adverse	Resettlement Action plan Relocation of graves Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Low Adverse
Complex palaeontological and	Operation and maintenance of the Victoria Nile Ferry	Erosion or sedimentation changes Damage to or removal of		Moderate	Low	Low Adverse	Archaeological investigation and recording	Low Adverse

Archaeology & Cultural Heritage	Activity	Potential impact	Receptor(s)	Receptor sensitivity	Potential Impact magnitude	Potential impact significance	Mitigation measures	Residual impact significance
archaeological remains	Presence of personnel on site (particularly in-migration)	palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites					Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites Erosion prevention through re-vegetation	
Isolated palaeontological and archaeological remains	Operation and maintenance of the Victoria Nile Ferry Presence of personnel on site (particularly in-migration)	Erosion or sedimentation changes Damage to or removal of palaeontological or archaeological deposits Illicit removal of archaeological remains Impacts upon setting of cultural heritage sites		Low	Low	Low Adverse	Archaeological investigation and recording Cultural Heritage Management Plan Chance Find Procedure Cultural Heritage Awareness Training Fixed traffic routes Flagging of vulnerable sites	Insignificant to low adverse

17.7.8 Assessment of Impacts: Decommissioning

17.7.8.1 Introduction

During the Decommissioning phase, the following activity has the potential to impact upon archaeological and cultural sites:

- Presence of personnel on site; and
- General decommissioning activities such as vehicle movements and construction works.

17.7.8.2 Potential Impacts - Decommissioning

The potential impact of the presence of personnel on site is variable, depending on whether any archaeological sites are to be preserved in situ at evaluation and/or mitigation stage, and whether any cultural sites remain within project operational areas, rather than having been relocated and rededicated as part of mitigation measures undertaken at the pre-construction and construction stage.

Sacred water bodies, such as the Sambye River, marshland and Lake Albert, will remain vulnerable throughout the decommissioning phase.

Care will need to be undertaken to avoid, for example, increased transport on surrounding roads disturbing funerals in the surrounding areas.

The overall potential impact magnitude on sacred cultural sites, places of worship, cemeteries and graves is considered negligible to low.

The overall potential impact magnitude on complex and isolated palaeontological and archaeological remains is considered negligible.

Impact significance

The overall potential impact significance of the Decommissioning phase on archaeology and cultural heritage is considered **Low to Moderate Adverse**.

17.7.8.3 Additional Mitigation and Enhancement

During the closure phase, mitigation will involve ongoing staff training on cultural heritage awareness and management. The CHMP and CFPr will be implemented in consultation with the Ugandan heritage authorities. Vehicles will continue to adhere to controlled routes identified by signage. The condition of archaeological sites will be monitored as part of the site environmental monitoring programme and any changes or new discoveries reported to the Ugandan heritage authorities. A Decommissioning Plan will also be developed and approved in advance of the commencement of any decommissioning activities.

17.7.8.4 Residual Impacts - Decommissioning

Potential Residual effects following mitigation would include minor further changes to the setting of archaeological and cultural heritage sites; or minor removal of elements that form part of a wider surviving research resource. Some areas may undergo no physical impact or change, no observable further change in setting or context and no impact from changes in use, amenity or access.

Residual impacts on archaeological and cultural heritage sites post-closure are assessed to be to vary between **Insignificant to Low Adverse** significance.

17.8 In-Combination Effects

As described in **Chapter 4: Project Description and Alternatives**, the Project has a number of supporting and associated facilities that are being developed separately (i.e. they are subject to separate permitting processes and separate ESIA or EIAs). These facilities include:

- Tilenga Feeder Pipeline;
- East Africa Crude Oil Export Pipeline (EACOP);

- Waste management storage and treatment facilities for the Project;
- 132 Kilovolt (kV) transmission line from Industrial Area to Kabaale; and
- Critical oil roads.

As these facilities are directly linked to the Project and would not be constructed or expanded if the Project did not exist, there is a need to consider the potential in-combination impacts of the Project and the supporting and associated facilities. This is distinct from the Cumulative Impact Assessment (CIA) which consider all defined major developments identified within the Project’s Area of Influence (and not just the associated facilities) following a specific methodology which is focussed on priority Valued Environmental and Social Components (VECs) (see **Chapter 21: Cumulative Impact Assessment**).

The in-combination impact assessment considers the joint impacts of both the Project and the supporting and associated facilities. The approach to the assessment of in-combination impacts is presented in **Chapter 3: ESIA Methodology**, Section 3.3.5.

The identified residual impacts of the Project listed in Table 17-63 below are predicted to have the potential to be exacerbated due to in-combination effects with supporting and associated facilities. A comment is provided on the potential in-combination impacts and the need for additional collaborative mitigation between project proponents to address these impacts.

Table 17-63: Assessment of potential in-combination impacts: Construction and Pre-Commissioning phase

<i>Description of Potential Impact of Project</i>	<i>Comment on potential in-combination effects with associated facilities</i>
Physical damage to traditional cultural and sacred sites and disruption of ceremonies and traditional culture	<p>The presence of traditional cultural and sacred sites, including sacred trees; sacred watercourses, springs and marshes; traditional religious cultural sites (clan sites and family shrines), is likely.</p> <p>The construction of supporting and associated facilities may result in the removal of specific traditional cultural and sacred sites, impacts on local culture, interference with, desecration and damage to sacred sites and changes to public access to cultural heritage.</p>
Disruption of religious services	Loss of tranquillity and disruption of religious services at places of worship
Damage to burials, disturbance of ceremonies and changes to maintenance and public access	<p>The presence of cemeteries and graves is likely.</p> <p>The construction of supporting and associated facilities may result in damage to or the removal of cemeteries and graves, disturbance of burial ceremonies and visitors to graves, changes to public access and the resettlement of guardians of burial grounds.</p>
Damage to complex archaeological and palaeontological remains	<p>The wider archaeological resource in the affected area comprises buried remains which have accumulated as a result of human activity since the early prehistoric period. The presence of complex palaeontological and archaeological remains is likely.</p> <p>The construction of supporting and associated facilities may result in damage to or removal of palaeontological or archaeological deposits, illicit removal of archaeological remains and impacts upon setting of sites.</p>

<i>Description of Potential Impact of Project</i>	<i>Comment on potential in-combination effects with associated facilities</i>
Damage to isolated palaeontological and archaeological remains	The construction of supporting and associated facilities may result in damage to or removal of palaeontological or archaeological deposits, illicit removal of archaeological remains and impacts upon setting of cultural heritage sites.

Additional mitigation to help reduce or enhance any potential in-combination impacts will include collaboration amongst the different developers to:

- Share survey information to enable the effective implementation of Resettlement Action Plans, relocation of sacred sites, relocation of graves, fixed traffic routes, traffic management and flagging of vulnerable sites;
- Develop common CHMP, CFP and staff Cultural Heritage Awareness Training, training materials and delivery; and
- Share survey methods and results to enable the effective coordination of archaeological investigation and recording programmes and research agendas.

It is reasonably assumed that the determination of planning approval for each cumulative development will have been made in accordance with national, regional and local legislation, planning policy and guidance, as well as IFI standards and guidance. Within these, archaeological and cultural heritage assets would be a material consideration and would have included the provision of appropriate archaeological mitigation measures, including the requirement for investigation and recording.

In terms of additional collaborative mitigation, it is notable that past projects in the area have gathered a large amount of piecemeal archaeology and cultural heritage data, often to different survey protocols, by different practitioners, of variable quality, over a number of years. The current fragmented, piecemeal approach is highly inefficient, both from the perspective of informing and mitigating oilfield development, and of producing scientifically useful data. What is required is a consistent, connected, and detailed area survey followed by programmed mitigation works.

It is recommended that the projects work in close collaboration with the Department of Museums and Monuments and Uganda Museums to seek their advice and inputs into the development of joint field surveys and mitigation programmes, as well as contributing to the national mapping of heritage assets. It is recommended that project proponents and their advisers collaborate to develop a common archaeology, palaeontology and cultural heritage database and GIS platform for all heritage data moving forwards, and seek to build a collaborative team of Ugandan archaeologists and palaeontologists to develop and take ownership of the linked investigation and mitigation programmes over the next decades.

These projects provide an exceptional opportunity to investigate the heritage of western and northern Uganda. The Project Proponents and their heritage advisers will need to coordinate their survey and mitigation works to best effect, avoiding duplication of work and assuring common standards. They will need to consider the post-fieldwork stages, including finds processing and conservation, assessment, analysis, scientific dating, reporting, illustration, accessible publication, dissemination of results and long-term curation of the archaeological excavation archive and the museum curation and display of finds. In particular, they will need work together to refine pottery and lithic chronologies, and target investigations not just at collecting and quantifying objects, but at increasing our understanding of the region's past by addressing pertinent, targeted research questions.

It is recommended that, with a view to building capacity for long-term environmental support for oilfield development in the area, Project Proponents invest in the training of local archaeology, palaeontology and cultural heritage practitioners in the course of field survey and mitigation works. This may involve

requiring local experts to include students and early career professionals on their teams and assuring both practical skills training and career development. This will build up the next generation of trained and experienced Ugandan heritage professionals. It is also recommended that the projects collaborate to foster capacity in local and national museum infrastructure, and interpretation and outreach to local communities.

17.9 Unplanned Events

An unplanned event, such as emergency situations, or a major pipeline breach or spill during operation, or a ground pollution incident, may result in damage to or contamination of any palaeontological/ archaeological deposits or cultural heritage sites that remain in the vicinity of Project elements during the operational stage. Sacred water courses and Lake Albert would be particularly sensitive to such potential impacts. Appropriate unplanned event contingency planning will be undertaken that minimises the likelihood of low probability events occurring, as well as minimising event consequences. Further details on unplanned events relevant to the Project are detailed in **Chapter 20: Unplanned Events**.

17.10 Cumulative Impact Assessment

Chapter 21: Cumulative Impact Assessment provides an assessment of the potential cumulative effects of the Project together with other defined developments in the Project AOI. The CIA focussed on VECs that were selected on the basis of set criteria including the significance of the effects of the Project, the relationship between the Project and other developments, stakeholder opinions and the status of the VEC (with priority given to those which are of regional concern because they are poor or declining condition). On the basis of the selection process, Cultural Identity, Ethical and Spiritual Values were not considered to be priority VECs and were not considered further in the CIA as no significant impacts are anticipated as suitable mitigation measures can be implemented at each project to minimise adverse impacts.

17.11 Conclusions

Impact assessment criteria were developed and utilised for assessing the potential impacts to archaeology and cultural heritage from the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations; and Decommissioning phases of the Project, and include impact magnitude and receptor sensitivity. The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the four phases of the Project.

Taking account of the embedded and specific additional mitigation measures outlined above, the Project will be undertaken in accordance with the requirements of IFC PS 8 (IFC, 2012) and Ugandan legal requirements.

The mitigation for the potential impacts of the Project on cultural heritage currently revolves around four key concepts: avoiding or minimising impacts by design (protection and preservation), mitigation (excavation and relocation), cultural heritage management systems (plans and procedures) and offset via technical and institutional capacity building and development of cultural heritage aspects of ongoing social programmes. These principles follow national policy, maintaining a clear and consistent approach to minimising impacts on cultural heritage in Uganda.

It is considered possible to mitigate potential Project impacts on archaeological remains by a staged programme of further walkover survey and test pit evaluation prior to groundworks, followed by appropriate archaeological mitigation (investigation and recording), analysis, publication, dissemination and archiving.

The mitigation of archaeological remains through excavation and recording will contribute to the national and international scientific knowledge base via research and capacity-building in cultural heritage. This will be classed as a **Beneficial Impact**. The Project will contribute to local and expatriate workers' training and the development and enforcement of CHMP and CFPr. The Project has the potential to make a significant contribution to national research and institutional capacity building, in terms of reinforcing national planning policy and regulatory systems, feeding into the national inventory, promoting scientific exchange, and exploring opportunities for heritage interpretation and dissemination.

Overall, with mitigation, the residual significance of the predicted impact on archaeology and cultural heritage is assessed to vary between **Insignificant** to **Low Adverse** significance. Although the development would lead to the complete removal or transformation of archaeological remains within the Project footprint, it would lead to increased knowledge as a programme of archaeological investigation would be undertaken. In addition, the design has been adapted to avoid archaeological sites wherever reasonably feasible.

A summary of the residual impacts of the proposed development following the implementation of mitigation measures with respect to cultural heritage are presented in Table 17-64.

Table 17-64: Summary of Residual Archaeology and Cultural Heritage Impacts

Nature of potential Impacts	Site Preparation and Enabling Works	Construction and Pre-Commissioning	Commissioning and Operations	Decommissioning
Project impacts upon sacred trees and cultural sites (family and clan)	Low adverse	Low adverse	Low adverse	Insignificant to low adverse
Project impacts upon places of worship	Insignificant	Low adverse	Insignificant to low adverse	Insignificant to low adverse
Project impacts upon graves, burial grounds and visitors	Low adverse	Low adverse	Insignificant to low adverse	Insignificant to low adverse
Project impacts upon complex palaeontological and archaeological sites and findspots	Low adverse	Low adverse	Insignificant to low adverse	Insignificant to low adverse
Project impacts upon isolated palaeontological and archaeological sites and findspots	Insignificant to low adverse	Insignificant to low adverse	Insignificant to low adverse	Insignificant to low adverse

17.12 References

17.12.1 Legislation, Standards & Guidance

17.12.1.1 Applicable Ugandan Legislation

- Ref 17-1. Public Health Act 1935 (Cap. 281), Part XIV Cemeteries.
<http://www.globalforumlid.org/sites/default/files/docs/library/Public%20Health%20Act%201935-ch%20281.pdf>
- Ref 17-2. Penal Code Act 1950 (Cap. 120) <http://www.ulii.org/ug/legislation/consolidated-act/120/>
- Ref 17-3. Town and Country Planning Act 1951 <http://www.ulii.org/ug/legislation/consolidated-act/246>
- Ref 17-4. The Land Acquisition Act 1965, Cap 226 <https://www.ulii.org/ug/legislation/consolidated-act/226>
- Ref 17-5. The Historical Monuments Act 1967, Cap 46 <http://www.ulii.org/ug/legislation/consolidated-act/46> [currently under review]
- Ref 17-6. Historical Monuments (Amendment) Decree (No.6) of 1977. Decree 6 of 1977, now Ch 46 Laws of Uganda 2000. <http://www.wipo.int/wipolex/en/profile.jsp?code=UG>
- Ref 17-7. The Traditional Rulers (Restitution of Assets and Properties) Act 1993 <http://www.ulii.org/ug/legislation/consolidated-act/247>
- Ref 17-8. The National Environment Act 1995 Cap. 153 (19 May 1995) <http://www.ulii.org/ug/legislation/consolidated-act/153>
- Ref 17-9. Uganda Wildlife Act 1996, Cap. 200, section 21 <http://www.ulii.org/ug/legislation/consolidated-act/200>
- Ref 17-10. Local Governments Act 1997 Cap. 243 <http://www.ulii.org/ug/legislation/consolidated-act/243>
- Ref 17-11. Constitution of the Republic of Uganda 2006 http://www.statehouse.go.ug/sites/default/files/attachments/Constitution_1995.pdf
- Ref 17-12. Copyright Act and Neighbouring Rights Act, 2006 http://www.wipo.int/wipolex/en/text.jsp?file_id=424958
- Ref 17-13. Tourism Act 2008 http://tourism.go.ug/index.php?option=com_phocadownload&view=category&id=1
- Ref 17-14. Institution of Traditional Leaders or Cultural Leaders Act, 2011 <http://www.ulii.org/ug/legislation/act/2015/6-5>

17.12.1.2 Applicable Ugandan Policy

- Ref 17-15. Uganda National Tourism Policy 2003 <https://www.scribd.com/document/120328197/UGANDA-TOURISM-POLICY>
- Ref 17-16. NEMA 2004 Environmental Impact Assessment Guidelines for the Energy Sector. June 2004. National Environment Management Authority
- Ref 17-17. Republic of Uganda 2014 Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda. June 2014. National Environment Management Authority/ United national Development Programme
- Ref 17-18. Uganda National Cultural Policy 2006. Ministry of Gender, Labour and Social Development, Kampala http://ocpa.irmo.hr/resources/policy/Uganda_Culture_Policy-en.pdf
- Ref 17-19. National Planning Authority 2013 Uganda Vision 2040. Uganda National Planning Authority <http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf>
- Ref 17-20. National Environment Management Policy for Uganda 2014 <http://enr-cso.org/wp-content/uploads/2014/12/Draft-Final-National-Environment-Management-Policy-Dec-2014.pdf>
- Ref 17-21. Uganda Wildlife Policy 2014. Ministry of Tourism, Wildlife and Antiquities <file:///C:/Users/33187lo/Downloads/uganda%20wildlife%20policy%202014%20.pdf>
- Ref 17-22. Uganda National Oil and Gas Policy 2008 <http://www.energyandminerals.go.ug/downloads/NATIONALOILANDGASPOLICYFORUGANDA.pdf>
- Ref 17-23. Uganda National Tourism Policy 2014 http://tourism.go.ug/index.php?option=com_phocadownload&view=category&id=1
- Ref 17-24. Uganda Museums and Monuments Policy 2015 (in prep.)
- Ref 17-25. National Medicines Policy 2015 <http://health.go.ug/download/file/fid/589>.
- Ref 17-26. CCFU, 2017 Guidelines by Cultural Institutions for Oil and Gas Companies operating in the Albertine Graben. June 2017. Cross Cultural Foundation Uganda with the Acholi, Alur Kingdom

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17.12.1.3 Ugandan Environmental and Social Conventions and Agreements of Relevance to Archaeology and Cultural Heritage

- Ref 17-27. ACP (African Caribbean and Pacific Countries) group and the European Union Lomé IV Convention, 1989 <http://www.acp.int/>
- Ref 17-28. ACP Cotonou Agreement (African, Caribbean and Pacific Group of States & EU), ACP-EC Partnership Agreement or Cotonou Agreement 2000 (revised 2010) (African, Caribbean and Pacific Group of States & European Community and its member states) & subsequent revisions. 2000 <http://www.acp.int/content/acp-ec-partnership-agreement-cotonou-agreement-accord-de-partenariat-acp-ce-accord-de-cotonou>
- Ref 17-29. African Convention on the Conservation of Nature and Natural Resources, 2003 <http://faolex.fao.org/docs/pdf/mul45449.pdf>
- Ref 17-30. African Union 2006 Charter for African Cultural Renaissance <http://www.au.int/en/content/charter-african-cultural-renaissance> [Not yet in force]
- Ref 17-31. International Covenant on Economic, Social and Cultural Rights (ICESCR), 1987 <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx>
- Ref 17-32. OAU African Cultural Charter (Organisation of African Unity), 1976, Port Louis, Mauritius <http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Dakar/pdf/CulturalCharterAfrica.PDF>
- Ref 17-33. OAU African Charter on Human and Peoples' Rights (Banjul Charter, Organisation of African Unity), 1981, Monrovia, Liberia <http://www.au.int/en/content/african-charter-human-and-peoples-rights>
- Ref 17-34. OAU Charter for African Cultural Renaissance 2006, Khartoum, Sudan. Organisation of African Unity <http://www.au.int/en/content/charter-african-cultural-renaissance>
- Ref 17-35. UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. Paris, 14 November 1970. United Nations Educational, Scientific and Cultural Organization <http://www.unesco.org/new/en/culture/themes/illicit-traffic-of-cultural-property/1970-convention/>
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- Ref 17-38. UNESCO 2003 Convention for the Safeguarding of the Intangible Cultural Heritage (Paris, 17 October 2003) United Nations Educational, Scientific and Cultural Organization <http://www.unesco.org/culture/ich/index.php?pg=00006>
- Ref 17-39. UNESCO 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions <https://en.unesco.org/creativity/convention/>

17.12.1.4 Standards and Guidance

- Ref 17-40. CBD 2004 Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments Regarding Developments Proposed to Take Place on, or Which Are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities. CBD Guidelines Series. Secretariat of the Convention on Biological Diversity <http://www.cbd.int/doc/publications/akwe-brochure-en.pdf>
- Ref 17-41. ClfA 2017 Standard and guidance. Historic environment desk-based assessment. Chartered Institute for Archaeologists, Reading, http://www.archaeologists.net/sites/default/files/ClfAS%26GDBA_3.pdf
- Ref 17-42. ClfA 2014 Standard and guidance. Field evaluation. Chartered Institute for Archaeologists, Reading, December 2014 <http://www.archaeologists.net/sites/default/files/node-files/ClfAS&GFieldevaluation.pdf>
- Ref 17-43. ICOMOS 1990 Charter for the Protection and Management of the Archaeological Heritage (Lausanne Charter) 1990. International Council on Monuments and Sites, Paris http://www.international.icomos.org/charters/arch_e.pdf
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18 – Health and Safety

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18 Health and Safety

18.1 Introduction

This chapter provides the health and safety baseline and impact assessment, covering the potential impacts (both positive and negative) on community health and safety that the Project is predicted to have. This includes changes and impacts related to health and wellbeing, safety and security of local populations and occupational health and safety (OHS) of Project employees. The chapter also provides the framework of suitable mitigation and enhancement measures for community and occupational health and safety impacts.

The community health and safety impact assessment process involves a review of the baseline health conditions within the context of a set of defined environmental health areas (EHAs). EHAs are a standard set of health effects categories that have been developed by the oil and gas industry and international multilateral lending institutions (Ref. 18-1; Ref. 18-2). EHAs have been developed to capture a variety of determinants of health and provide a linkage between Project-related activities and potential positive or negative community-level health impacts. The EHA approach includes all of the biomedical and social concerns originally developed by key international health and development agencies, i.e., the World Health Organisation (WHO) and the World Bank Group¹. The set of EHAs used in this chapter are summarised in Table 18-1.

The baseline data presented in this chapter have been obtained via desktop study and through primary data collected through various surveys undertaken between 2014 and 2017. The baseline has also been informed by stakeholder consultations undertaken over the same period. Further details about the data collection methodology are provided under Section 18.5.2.

Other baseline sections covering aspects of relevance to the community health baseline, referenced in this chapter, include **Chapter 5: Stakeholder Engagement**, **Chapter 16: Social**, and **Chapter 19: Ecosystem Services**.

Table 18-1: EHA Definitions

Environmental Health Area	Description
EHA 1 - Vector related disease	Malaria, Schistosomiasis (also known as Bilharzia in the Project Area), Dengue, Japanese Encephalitis, Lymphatic Filariasis, etc.
EHA 2 – Housing and respiratory issues	Acute respiratory infections (bacterial and viral), Pneumonia, Tuberculosis, respiratory effects from housing, overcrowding and inflation of housing prices.
EHA 3 – Veterinary medicine and zoonotic disease	Including zoonotic emerging infectious diseases, e.g. Brucellosis, Rabies, and Ebola.
EHA 4 – Sexually Transmitted Infections (STIs) including HIV/AIDS	Human Immunodeficiency Virus (HIV) / Acquired Immunodeficiency Syndrome (AIDS), Syphilis, Gonorrhoea, Chlamydia, Hepatitis B.
EHA 5 – Disease linked to soil, water, sanitation and waste	Giardiasis, worms, etc.
EHA 6 – Food and nutrition related issues	Stunted growth, wasting, anaemia, micronutrient diseases (including folate, vitamin A, iron and iodine deficiencies), changes in agricultural practices, gastroenteritis (bacterial and viral) and issues relating to inflation of food prices.
EHA 7 – Accidents and injuries	Traffic-related accidents, spills and releases, construction (home- and project-related) and drowning.

¹ A World Bank analysis demonstrated that an almost 50% improvement in major health outcomes could be achieved by improvements in four sectors: (i) housing and urban development; (ii) water, food and sanitation; (iii) transportation; and (iv) communication. Building upon this sectoral analysis and incorporating a broad perspective on “environmental health” led to the development of a defined set of EHAs, which have been adopted in the IFC Notes for Performance Standard no. 4 “Community Health” the 2016 IPIECA (International Petroleum Industry Environmental Conservation Association) Health Impact Assessment (HIA) guidelines and the 2009 IFC HIA toolkit.

Environmental Health Area	Description
EHA 8 – Exposure to potentially hazardous materials	Pesticides, fertilizers, road dust, air pollution (indoor and outdoor, related to vehicles, cooking, heating or other forms of combustion and incineration), landfill waste or incineration ash, any other project-related solvents, paints, oils or cleaning agents and their by-products.
EHA 9 – Psychosocial effects (social determinants of health)	Resettlement/ relocation, violence, security concerns, substance misuse (e.g. drugs, alcohol, smoking), depression and changes to social cohesion.
EHA 10 – Cultural health practices	Role of traditional medical providers, indigenous medicines and unique cultural health practices. Understanding cultural practices and beliefs inside and outside communities that are health lowering and enhancing.
EHA 11 – Health services infrastructure capacity	Physical infrastructure, staffing levels and competencies, technical capabilities of health-care facilities at district levels, systems for delivering and managing health programmes, coordinating the project to existing national and provincial health programmes (for example, Tuberculosis (TB), HIV and AIDS) and future development plans.
EHA 12 – Non-communicable disease	For example, hypertension, diabetes, stroke and cardiovascular disorders.

Source: Ref. 18-1

18.2 Scoping

During the scoping phase a desktop study was conducted to compile and analyse existing baseline data available for the Study Area. A gap analysis was undertaken on the existing data to determine requirements for additional primary data collection needed to undertake the impact assessment.

Additionally, a field reconnaissance visit was undertaken in June 2015 and scoping consultations were undertaken in August and September 2015. Findings from these visits helped to identify available data sources to complete the desktop study and were used to determine the approach for baseline surveys.

The outcomes from the scoping phase tasks were summarised in the Scoping Report, which was submitted to National Environment Management Authority (NEMA) in December 2015. The Scoping Report provided an initial baseline of community health and safety, an overview of anticipated impacts on social receptors, and an outline of the required contents of the Environmental and Social Impact Assessment (ESIA) chapter. The Terms of Reference (ToRs) for the detailed ESIA studies were approved by NEMA in April 2016 (see Appendix A). It is worth noting that the Project phasing and identified list of potential impacts have evolved during the completion of this ESIA and consequently build and expand on those originally identified in Table 18-2 during the Scoping phase.

Table 18-2: Potential Health and Safety Impacts as defined in Scoping Report

Potential Impact	Potential Cause	Potential Sensitivity	Phase
Potential impact to nutritional status due to loss of household income; loss of farming areas or impacts to fisheries.	Acquisition of land for Project construction Indirect impact from Project induced migration placing pressure on existing resources e.g. fisheries, agricultural land.	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning
Risk of accidents and injury.	All Project activities, in particular Road Traffic	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning
Potential increase in disease (vector borne, communicable and non-communicable such as malaria, cholera and HIV).	Presence of Project workforce. (indirectly) Project induced migration. Project waste management.	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning
Potential health problems due to Project related environmental hazards (e.g. accidental spills of hazardous substance, dust, noise)	Indirect from Project induced environmental impacts (e.g. soil or water contamination, change to water courses).	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning
Potential increase in alcohol or drug abuse.	Resettlement and compensation. (indirectly) Increased cash incomes from direct and indirect Project employment.	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning
Potential mental health issues caused by disruptions / disintegration of traditional support structures and community cohesion and un-met expectations around Project related economic opportunities.	Presence of foreign Project workforce, Resettlement and compensation process (indirectly) Project induced migration	Local communities within and potentially out-with the Project Area.	Construction Operation Decommissioning

18.3 Legislative Framework

18.3.1 National Standards

Table 18-3 sets out the relevant national legislation and standards in Uganda for the community health and safety baseline study and impact assessment.

Table 18-3: National Standards Relevant for Community Health and Safety Assessment

Legislation	Description
Medical and Dental Practitioners Act, 1998	The Act establishes the Medical and Dental Practitioners Council, whose duties include, among others; to promote the maintenance and enforcement of professional medical and dental ethics; to exercise general supervision of medical and dental practice at all levels; and to exercise disciplinary control over medical and dental practitioners. Section 28, Subsection (1) makes provision for application for a licence to engage in private practice by a registered medical or dental practitioner. Article 29, Subsection (2) makes provision for registration of health units.

Legislation	Description
Tobacco Control Act 2015	This Act aims to control the demand for the consumption of tobacco and its products; to control the supply of tobacco and its products to the population; to protect the environment from the effects of tobacco production and consumption and exposure to tobacco smoke; to promote the health of persons and reduce tobacco related illness and deaths; to protect persons from the socio-economic effects of tobacco production and consumption; to promote research, surveillance and exchange of information on tobacco control; to protect tobacco policies, laws and programs from interference from the tobacco industry; to strengthen coordination, partnerships and collaboration for tobacco control; to establish the Tobacco Control Committee; and to fulfil Uganda's obligation and commitment as a party to the World Health Organisation Framework Convention on Tobacco Control (WHO FCTC).
Standards	
Occupational Health and Safety Management Systems, US 534 (2008)	The Occupational Safety and Health Management Systems US 534:2008 is a national standard set by the Uganda National Bureau of Standards. The objective of the standard is to promote the safety, health and welfare of people engaged in work or employment. As a secondary effect, it also protects co-workers, family members, employers, customers, suppliers, nearby communities and other members of the public who are impacted by the workplace environment. The standard sets out the policy, legal and the implementation framework of how an organisation may establish, implement and maintain the standard.

18.3.1.1 National Health Policies and Strategic Plans

Strategic directions and government priorities in health are determined and articulated in a number of key statements, policy documents and plans. These are outlined in Table 18-4.

Table 18-4: Health Policy Framework in Uganda

Policies and Strategic Plans	Description
National Development Plan (2015-2020)	While the overall focus of the National Development Plan (NDP) is growth, the focus of is on prosperity and social transformation rather than poverty reduction, as such the importance of increasing access to quality health and social services is emphasised within the plan. It contains a detailed analysis of the current constraints in the health sector and establishes a number of key objectives that need to be met to address them.
National Health Policy II (2010/11-2019/20)	Outlines the Government of Uganda's overall vision and strategic objectives for the health sector over the next decade. The mission of the Ministry of Health is to facilitate the attainment of a good standard of health by all people of Uganda in order to promote a healthy and productive lifestyle.
Health Sector Strategic and Investment Plan III (2010/11-2014/15)	This document was developed to implement the National Health Policy II. Recognising resource constraints it emphasises the delivery of a national minimum health care package (UNMHCP). Component parts of the UNMHCP are arranged in clusters and are: 1. Health promotion, environmental health and community health initiatives. 2. Maternal and child health. 3. Communicable disease control. 4. Prevention and control of non-communicable diseases, disabilities, injuries and mental health problems.
Uganda National Policy on HIV/AIDS and the World of Work	This policy aims to develop an effective response to HIV/AIDS in the workplace in Uganda.

Policies and Strategic Plans	Description
(2007)	The Uganda National Policy on HIV/AIDS and the World of Work covers all workers and prospective workers, all employers and prospective employers, from both the formal and informal public and private sectors. The policy spells out the key principles underlying its implementation, namely: non-discrimination; confidentiality; HIV testing; greater involvement of people living with HIV/AIDS; promotion of prevention; treatment, care and support; and gender concerns in the work place. The goal is to provide a framework for prevention of further spread of HIV and mitigation of the socio-economic impact of HIV/AIDS within the workplace. Furthermore, this policy makes it the role of every employer to develop an HIV/AIDS policy around the principles of non-discrimination, equality, confidentiality, care and support.
Resettlement Policy Framework for the Reproductive, Maternal, Neonatal, and Child Health Improvement Project	The Government of Uganda, with financing support from the World Bank, plans to improve reproductive, maternal, neonatal and child health by implementing the Reproductive, Maternal, Neonatal and Child Health Improvement Project (RMNCAH Project).
National Health Laboratory Services Strategic Plan (2010-2015)	The National Health Laboratory Services Strategic Plan (NHLSP) provides a national framework to guide investments in laboratory services by the Government of Uganda and health development partners. It aims to strengthen coordination, implementation and management of the services and ensure that they are transparent and responsive to the country's health needs.
National Oral Health Policy	This policy is based on the principles already enshrined in the Constitution of Uganda, National Health Policy and Health Sector Strategic Plan I and II, Poverty Eradication Action Plan, Local Government Act and the United Nations (UN's) Sustainable Development Goals. It offers an alternative way of gathering and interpreting oral health information and an alternative approach to the process of identifying and managing priority oral health problems.
National Medicines Policy 2015	The National Drug Policy of Uganda was first published in 1993. It was updated in 2002 to include new strategies to guide implementation and reflect legislative changes. The changes in the access to medicines landscape over the past decade have prompted the Ministry of Health to revise the policy in 2015.
National Integrated Early Childhood Development Policy, Action Plan Of Uganda (2016-2021)	The Government of Uganda as a signatory to the global and regional frameworks and standards on the rights of the child is committed to ensuring that all children in the country realise their full potential. This commitment is reflected in the formulation of the National Integrated Early Childhood Development Policy and Action Plan of Uganda.

Source: Multiple sources Ref. 18-3 & own elaboration

18.3.2 International Standards

The international standards outlined below are relevant for the assessment of the community and occupational health and safety baseline and impact assessment.

18.3.2.1 International Finance Corporation (IFC) Performance Standards

IFC Performance Standard (PS) 2, Labour and Working Conditions, covers occupational health and safety of the workforce. Among the objectives of Performance Standard 2 is to ensure workers (including those employed by contractors) are provided with safe and healthy working conditions. It states that steps will need to be taken to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimising, as far as reasonably practicable, the causes of hazards. In doing so, the following areas will need to be addressed:

- i. identification of potential hazards to workers, particularly those that may be life-threatening;
- ii. provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances;

- iii. training of workers;
- iv. documentation and reporting of occupational accidents, diseases, and incidents; and
- v. emergency prevention, preparedness, and response arrangements.

IFC Performance Standard 4, Community Health, Safety, and Security (Ref. 18-4) sets out the standards to minimise impacts to community health, safety, and security that may result from project activities, such as accidents, release of hazardous materials, loss of natural resources, exposure to disease, and use of security personnel. It also sets out requirements specifically regarding infrastructure and equipment safety, hazardous materials safety, environmental and natural resource issues, community exposure to disease, emergency preparedness and response², and security personnel requirements.

Performance Standards 1 and 3 are also relevant to community health and safety aspects of the ESIA. Performance Standard 1 sets out the standards for managing and assessing social and environmental risks and minimising impacts of a project. Performance Standard 3, Resource Efficiency and Pollution Prevention, sets out environmental standards to prevent impacts from pollution on human health and the environment.

18.3.2.2 World Bank Environmental, Health, and Safety Guidelines

World Bank Environmental, Health, and Safety (EHS) Guidelines (Ref. 18-5) of relevance include:

- Industry sector guidelines for typical oil and gas projects including:
 - Waste Water Management;
 - EHS Guideline Onshore Oil and Gas Development; and
 - EHS Guideline on Hazardous Materials Management.
- EHS general guidelines, including but not limited to:
 - Water Quality and Availability;
 - Air Emissions and Ambient Air Quality;
 - Waste Management;
 - Structural Safety of Project infrastructure;
 - Occupational Health and Safety;
 - Community Health and Safety. and
 - Hazardous Materials Management.

The community health and safety baseline assessment has also been prepared in-line with the following good practice guidelines:

- IFC (2009) Introduction to Health Impact Assessment (Ref. 18-2);
- International Petroleum Industry Environmental Conservation Association (IPIECA) (2016), Health Impact Assessment: A Guide for the Oil and Gas Industry (Ref. 18-1); and
- United Nations Development Program (UNDP) (2017) Guidelines on Integrating Health and Gender into Environmental and Social Impact Assessments in Sub-Saharan Africa (Ref. 18-51).

² Note: consideration of emergency scenarios is discussed in Chapter 20: Unplanned Events, which presents an overview of the procedures and processes associated with the Project to respond to and minimise the impact of emergency and unplanned events.

18.4 Spatial and Temporal Boundaries

The Project Area is defined in **Chapter 1: Introduction** and covers Contract Area 1 (CA-1), Exploration Area 1A (EA-1A) and License Area 2 (LA-2) North. The Community Health and Safety Study Area (see Figure 18-1) includes the areas where the Project components lie and the immediately surrounding areas, as well as a wider geographical area that was considered likely to experience indirect health impacts related mainly to influx, and employment and procurement opportunities created by the Project.

The Community Health and Safety Study Area therefore included:

- Buliisa and Nwoya Districts: specifically, villages within the Buliisa District sub counties of Buliisa Town Council, Buliisa Sub County, Ngwedo and Kigwera, as well as Got Apwoyo Sub County in Nwoya District;
- Hoima Town (Hoima District);
- Masindi Town (Masindi District); and
- Pakwach Town Council (Pakwach District).
- Each of these areas is expected to experience some health and safety impacts relating to the Project, albeit as a result of different Project-related activities and to varying degrees of severity.

Primary data referenced in this chapter was collected between 2014 and 2017. As far as possible a five year limit was put on secondary data sources. It should be noted that Pakwach District became operational in July 2017, after the conclusion of baseline data collection activities. Prior to that Pakwach was part of Nebbi District. District level data relevant for Pakwach Town Council was therefore collected and reported for Nebbi District.

For the purpose of the Health and Safety assessment, one combined impact assessment has been undertaken which covers the lifecycle of the Project.

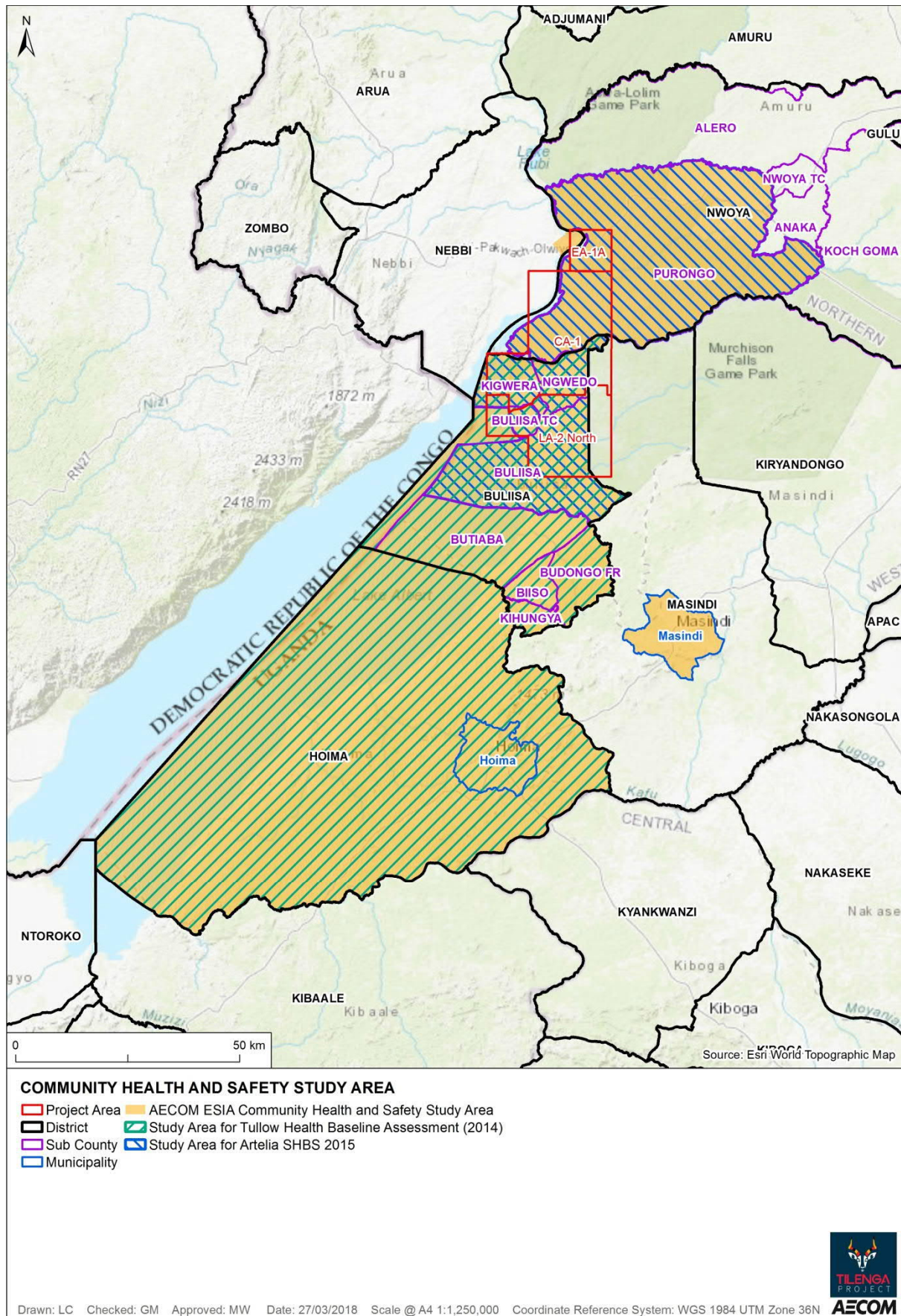


Figure 18-1: Community Health and Safety Study Area

18.5 Baseline Data and Characteristics

18.5.1 Introduction

Health baseline data has been obtained from a wide range of sources, including secondary sources collected through desk-based research and primary sources collected during fieldwork and through stakeholder consultations. Tullow Uganda Operations Pty Ltd (TUOP) and Total Exploration & Production (E&P) Uganda B.V (TEP Uganda) commissioned a standalone Social and Health Baseline Study (SHBS) for CA-1 (formerly known as EA-1) / EA-1A and LA-2 (formerly known as EA-2) North in 2015, which was carried out by Artelia Eau et Environment (Ref. 18-3). The report included a standalone chapter on health based on surveys undertaken with communities and health facilities within the Project footprint. TUOP also commissioned a standalone health baseline assessment for LA-2 in 2014 (Ref. 18-6). This chapter relies heavily on the information provided in those reports, which are provided as supporting studies in this ESIA as Appendix G. Additional data was sourced from publically available secondary data and primary data collected by Tilenga ESIA social team in 2015 and 2016-17.

18.5.2 Baseline Data Collection

18.5.2.1 Methodology and Data

The following sections set out the secondary data sources that were used and primary data research and baseline surveys that were undertaken to supplement data obtained through the desktop study.

18.5.2.2 Secondary Data

Secondary health information was obtained from a wide range of sources, including government data sources, previous ESIA's and baseline studies and Non-Governmental Organisation (NGO) reports and research papers available online. Secondary data was obtained for the national level, regional and local level. Secondary data sources used for the health baseline are outlined below.

18.5.2.2.1 Consultant Reports

Three studies were used as key data sources to develop the community health and safety baseline chapter and are referenced throughout this chapter:

- Health Baseline in Exploration Area Two of Tullow Oil Uganda, 2014 (DRAFT)³ (Ref. 18-6): produced for TUOP by the Socio-Economic Data Centre (SEDC) and Nordic Consulting Group (NCG) in December 2014. This report covers LA-2 and encompasses ten sub counties in Buliisa and Hoima districts. Throughout this chapter this work is referred to as the 2014 Health Baseline Assessment (HBA);
- Social and Health Baseline Survey (SHBS), 2015 (Ref. 18-3): Workstream F "Community Health" Baseline Report: produced for TEP Uganda by Artelia Eau and Environment in December 2015. This report covers EA-1/1A and LA-2 North and encompasses 45 villages and one Town Council (TC) (Buliisa TC) located in Buliisa and Nwoya districts. Throughout this chapter, this work is referred to as the 2015 SHBS; and
- Ecosystem Services Review, 2015 (Ref. 18-7): produced for TUOP by Advisian and Treweek Environmental Consultants in December 2015. This report encompasses all of CA-1/EA1A and LA-2 North, as well as wider parts of Nwoya, Buliisa, Masindi and Hoima districts.

³ Note, the Health Baseline in Exploration Area Two of Tullow Oil Uganda, 2014 prepared by Social Economic Data Centre Ltd (SEDC) and Nordic Consulting Group (NCG) consultants is available in draft format only.

18.5.2.2.2 Government Data Sources

Public health information in Uganda is recorded through the national Health Management Information System (HMIS). Key health indicators are reported through the HMIS on a routine basis from all health units in Uganda. The data is held by the National Health Databank/ Resource Centre of the Ministry of Health. The Uganda Bureau of Statistics (UBOS) provides health data from various sources including the population and housing census, household surveys and demographic health surveys.

18.5.2.2.3 Publically Available Reports

Publically available reports from multilateral institutions and UN agencies provided useful national and regional level data. Available secondary data was also supplemented through research papers, development reports and media articles available from online sources. Online sources included:

- World Bank;
- United Nations agencies;
- Makerere University;
- International and national NGOs; and
- Online newspapers and websites.

18.5.2.3 Primary Data and Baseline Surveys

Baseline data collection involved field visits conducted in November-December 2016 and January 2017 in the following areas: Hoima Municipality, Buliisa District, Pakwach Town Council (Pakwach District), Nwoya District, Masindi Municipality. Key informant meetings were also held with the Ministry of Health (MoH) and the Uganda AIDS Commission and the MoH TB Control Programme. At the district level, a district entry meeting was held to introduce the baseline survey and schedule meetings with all relevant stakeholders.

The data collection strategy employed a mixed method approach, using both qualitative and quantitative methods for data collection and health facility assessments. These were as follows:

- Qualitative data collection: comprised of both Focus Group Discussions (FGDs) and Key Informants Interviews (KII). FGDs were held with the following stakeholder groups: sex workers, women, private medical practices, and traditional medicine practitioners. KIIs were held with: district health officers, district hospital superintendents, health facility in-charges, MoH TB program coordinator, and the Uganda AIDS commission director for programming, research and policy.
- Quantitative data collection: data was collected from the district health authorities from the District Health Information System 2 (DHIS2), which is part of the HMIS. Data was collected at district health offices by the resident biostatistician for malaria, neglected tropical disease, bilharzia, TB, pneumonia, eye infection, rabies, STIs, HIV/AIDS, hepatitis, accidents and injuries (e.g. traffic accidents), and drug and alcohol use.
- Health facility assessment: conducted for three health facilities; two in Nwoya District (Latoro Health Centre II and Purongo Health Centre III) and one in Masindi District (Masindi district hospital). This evaluation comprised of an assessment of the facilities staffing levels, in-patient capacity, communication and transport ability, power supply, infection control, medical waste management, water supply, sanitation, supervision, basic equipment, and available services offered.

18.5.2.4 Data Assumptions and Limitations

Key limitations faced during the study were:

- The baseline assessment relies mainly on qualitative data methods, which may not give a fair representation of the exact health status and circumstances in the Study Area. Even though the

sample chosen was of key personnel and most at risk groups, the sample chosen is small and opinions given can be biased based on the individual or group dynamics;

- The 2015 SHBS and 2014 HBA cover different (partially overlapping) study areas and did not cover Pakwach and Masindi (considered part of the Study Area for this report). As such, the data available from previous reports for different parts of the Study Area was collected using different data collection methods and therefore is not always consistent;
- The Study Area covers an extensive area within which communities are likely to be indirectly impacted by Project activities. It was not feasible to undertake community level consultations throughout this area; therefore the baseline assessment for the parts of the Study Area outside the direct Project footprint (namely Pakwach TC, Masindi and Hoima municipalities) provides a broad picture of the health situation and challenges in these areas but is limited in the description of the baseline status at community level;
- Information obtained through household surveys undertaken for the 2015 SHBS and the 2014 HBA was all self-reported by survey respondents – no biomedical data was obtained from an epidemiological study; and
- The only source of routine disease data for district and sub-district level is the HMIS which is limited by incomplete reporting; disease coverage; and sub-optimal data quality.

Further limitations that were encountered during the 2015 SHBS, upon which this chapter draws heavily, are described below:

- Although there are several private health service providers in Buliisa, such as drug stores and clinics, there is no inventory of these facilities at national or district level as these facilities do not report to the district. It was very difficult to obtain reliable information on the private health sector;
- There was very limited information available about the use of traditional medicine in the study area. Information obtained from health facilities and the Buliisa District Health Management Team (DHMT) suggested that the informal sector in the study area plays a minimal role in health service provision. It is recommended that data collection from the informal sector be included in future community surveys as it is likely that this will better identify the role of traditional medicine in health provision and health seeking behaviour;
- The Household Survey that was conducted in 41 villages (173 respondents) for the 2015 SHBS included general questions about health (main facilities used, main diseases and treatment means). No other health primary quantitative data was collected in the survey; and
- Where available, other data sources such as surveys with regional-level data and research studies were used to validate HMIS data.

18.5.3 Baseline Characteristics

18.5.3.1 Overview

For the purposes of this baseline, health is understood to refer to a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (Ref. 18-8).

The social context of the Study Area is described in **Chapter 16: Social**.

18.5.3.2 Health Profile for Uganda

Uganda's overall health profile is comparable to other countries within the sub-Saharan African region. Several key health indices have improved over the recent past; including the life expectancy at birth from 47 years in 2000 to 62 years in 2015; mortality among children under five years old decreasing from 179 per 1,000 births in 2000 to 5 in 2015; and maternal mortality decreasing from 780 to 343 deaths per 100,000 births from 1990 to 2015 (Ref. 18-9). However, there are wide disparities in health status across geography, social economic status and gender, and the country's health system remains weak.

Communicable diseases including malaria, respiratory infections, HIV/AIDS, and diarrhoeal illnesses, are the leading cause of morbidity and mortality in all regions of the country. Maternal and neonatal conditions (i.e. conditions related to pregnancy and early life) also contribute significantly to Uganda's disease burden. Non-communicable diseases (NCDs), such as hypertension, diabetes mellitus, cancers and mental health illnesses are increasingly contributing to the overall burden of disease. The increasing burden of NCDs, which is a common health feature in developing countries, is as a result of changes in diet, lifestyle (e.g. tobacco use, alcohol use, physical inactivity, etc.) and population demography (an aging population and increasing life expectancy). It is estimated that Uganda has a substantial cancer burden, despite there being little reliable data. Many cancers result from infectious diseases such as HIV, Epstein-Barr virus, and Hepatitis B among others. Cardiovascular diseases have also been prioritised in the recent Health Sector Strategic Plan (HSSP III). The WHO estimates NCDs cause about 25% of deaths in Uganda (Ref. 18-10).

The major contributor to disability-adjusted life years (DALYs)⁴ in 2012 were HIV, TB and malaria (up to 6,000 years to premature death); followed by maternal, neonatal and nutritional illness (at 4,200 years lost); and other infectious diseases (at 4,000 years lost). NCDs contributed to approximately 2,000 years lost (Ref. 18-10).

A recent national survey conducted by the Ministry of Health (2014) indicated that the prevalence of malaria infection in Uganda in children less than five years, the most vulnerable population to the disease, had reduced from 49% in 2009 to 19% in 2014 (Ref. 18-11). The Government of Uganda like other malaria endemic countries is adopting strategies to hopefully lead Uganda to malaria elimination in the foreseeable future, in line with WHO malaria control and elimination strategies (the goal being to eliminate malaria by 2040). In 2014, a national distribution of Long Lasting Insecticide Treated Nets (bednets/ LLINs) – Uganda's major protection intervention against malaria – was undertaken across the country. This has resulted in over 90% of households in Uganda owning at least one bednet and a related drop in the number of malaria cases reported in most districts across the country. However, according to health facilities visited as part of the 2015 SHBS, the distribution of insecticide treated bed nets in Buliisa district which occurred in June 2014 does not appear to have led to the expected drop in number of diagnosed cases (Ref. 18-3).

Even though evidence suggests that there has been a reversal in progress in HIV/AIDS control in Uganda, there is positive evidence that the number of new infections per year for all ages declined from about 99,000 to 52,000 over the period 2010 to 2016 (Ref. 18-12). According to the most recent national survey of 2005 and 2011 (Ministry of Health AIDS Indicator Survey), the prevalence of HIV increased from 6.4% to 7.3% with most regions in the country registering increases. Between 2007 and 2013 the number of people living with HIV increased from 1.2 million to 1.6 million (Ref. 18-13). This is a result of both increased longevity among those infected and continued spread of the disease. The National HIV and AIDS Strategic Plan for 2015/2016 – 2019/2020 identified the highest risk sub-populations as female sex workers (35-37% prevalence), fisher folk (22-20%), long distance truck drivers (25%), uniformed services personnel (18.2%), men who have sex with men (13.7%) and boda-boda taxi men (7.5%). Women and girls constitute the largest proportion of people living with HIV - 8.3% compared to men at 6.1% (Ref. 18-14).

Rates of acute malnutrition in Uganda (outside of Karamoja region) are fairly low. However, rates of chronic malnutrition in Uganda are high with an estimated one third of children under-five years old stunted as a result. The 2013 'Cost of Hunger in Uganda' Report suggests that undernutrition was associated with 15% of all child mortality cases in Uganda (Ref. 18-15). The causes of undernutrition vary by region but include availability and access to food. Undernutrition disproportionately affects rural areas, where rates of stunting are much higher than those found in urban areas.

18.5.3.2.1 Health Service Delivery

The delivery of health services in Uganda is by both public and non-government agencies and actors. The public health care system under the MoH is organised in a tiered structure from the village health team (HC I) to the district hospital, regional and the national referral hospital. The private or non-government health system comprises of the private/ for profit facilities (PFPs), private/ not for profit organisations (PNFPs) and the Traditional and Complementary Medicine Practitioners (TCMP).

⁴ Disability-adjusted life years (DALYs) are the number of years of life lost due to premature mortality, ill-health, or disability (Ref. 18-17).

The national target for access to services is that everyone should have a health facility within five kilometres (km) of their residence. In 2010, success measured against this indicator was at 72% nationally with a target of 95% by the end of 2015 (the current HSSP period) (Ref. 18-16).

Like other essential services, health provision in Uganda is decentralised. The Ministry of Health is responsible for overall policy analysis and formulation and strategic planning and advises other government departments and agencies on health issues. The MoH is also responsible for resource mobilisation, capacity development and providing technical support and supervision, as well as setting standards and providing quality assurance. MoH is responsible for provision of nationally coordinated services and coordination of research and monitoring and evaluation of the overall health sector performance.

District health teams are responsible for the delivery of health services and management of human resources, the development and passing of health related by-laws and monitoring of sector performance within their districts. Local governments manage district hospitals and health centres (HC) II, III and IV and also provide supervision and monitoring of all health activities (including those in the private sector) in their respective areas.

A number of semi-autonomous institutions are part of the public health structure. These include agencies tasked with the provision of specialised clinical services such as the Uganda National Blood Transfusion Service, Uganda Virus Research Institute, the National Medical Stores and National Drug Authority.

The types of health facilities in Uganda and their intended functions and target populations are outlined in Table 18-5.

Table 18-5: Health Service Delivery Structure

Level Structure /	Basic Description of Function and Services	Target Population
National Referral Hospitals	<p>Provide comprehensive specialist services and are involved in research and teaching. They are fully autonomous. They act as referral centres for regional referral hospitals.</p> <p>Offer a full range of preventive and curative outpatient services, inpatient care, obstetrics, and gynaecology, laboratory services, psychiatry, pathology, radiology, comprehensive specialist services, teaching, and research.</p> <p>The national referral hospitals are Mulago Hospital for general medicine and surgery and Butabika for psychiatric services, with both located in Kampala.</p>	Service the whole population
Regional Referral Hospitals	<p>Regional Referral Hospitals are semi-autonomous – they have been granted self-accounting status (and have their own vote in the budget) but are still formally managed by the MoH Headquarters (HQ). They act as referral hospitals for district hospitals.</p> <p>Provide a range of preventive and curative outpatient services, inpatient care, obstetrics and gynaecology, laboratory services and a subset of specialist clinical services such as psychiatry, ophthalmology etc. They provide higher level surgical and medical care, and are also involved in teaching and research.</p>	Each is supposed to cater for a population of 2,000,000
District Hospitals (also known as Public General Hospitals)	<p>These hospitals support all referrals from health centres and lower levels of care. They provide preventive, promotive, curative, maternity, and in-patient health services including surgery, blood transfusion, laboratory and medical imaging services. They also provide in-service training, consultation and research on behalf of community based health programs at lower levels of care. Most serve a particular district and are managed by District Local Government.</p>	Up to 500,000

Level Structure /	Basic Description of Function and Services	Target Population
Health Centre IVs	These facilities are intended to serve as the highest non-hospital referral facilities at the sub-district level and offer basic preventive and curative outpatient services, inpatient care, second-level referral services (e.g., life-saving medical, surgical, and obstetric services such as blood transfusions and caesarean sections), and physical base for district health teams.	Approximately 100,000 (County level)
HCIIIs	Provide basic preventive, promotive and curative care and provide support and supervision to lower level units. There are provisions for laboratory services for diagnosis, maternity care and first referral cover for the sub county.	Up to 20,000 (the sub-county level)
HCIIIs⁵	Provide the first level of interaction between the formal health sector and the communities. HCIIIs only provide outpatient care and community outreach. An Enrolled Comprehensive Nurse posted at health centre IIs provides the key linkage between village health teams and service provision.	Approximately 5,000 (Parish level)
Village health teams⁶	Village Health Teams staffed by volunteers who provide basic care and advice.	Village level
Clinics	These facilities are privately owned and managed, largely dispensing medications to individuals for a fee. Clinics also can provide basic outpatient services.	Various

Source: Multiple Sources (Ref. 18-18; Ref. 18-19; Ref. 18-20)

18.5.3.2.2 Emergency Services Provision

Only five Regional Referral Hospitals (RRHs) in Uganda (none within the Study Area) have Accident & Emergency Units, with construction ongoing in a further three (including one in Hoima). Three General Hospitals (none within the Study Area) have Accident & Emergency Units while eight more are under construction (including in Nebbi District and Anaka District, which neighbour the Study Area). Only three RRHs have intensive care units though these are not fully functional due to lack of health workers trained in intensive care (Ref. 18-21).

The Health Sector Development Plan (HSDP) 2015/16 – 2019/20 has prioritised Emergency Medical Services and ambulance services as key intervention areas for introduction and scale up. Key planned interventions include the operationalisation of the National Ambulance and Emergency Service (beginning in Kampala and then rolling out nationwide with establishment of the National Ambulance Call Centre and regional offices and establishment of a fleet of 120 ambulance vehicles and equipment and supplies); operationalisation of a referral framework from community to national level; and upgrading RRHs and General Hospitals along highways with Accident and Emergency Units (Ref. 18-21).

18.5.3.3 Overview of Health Profile in the Study Area

The health profile for the Study Area is very similar to the national profile, with minimal differences between the regions. The most common three causes of morbidity and mortality are still malaria, HIV and pneumonia, while diarrhoea is still another major illness especially among children under 5 years.

The most recent and comprehensive available health profile data for this region can be found in the Uganda demographic and health survey of 2011 carried out by UBOS. Data specific to HIV are available in the Uganda AIDS Indicator survey 2011 carried out by MoH. Data specific to malaria are available in the Malaria Indicator Survey (MIS) 2014 carried out by UBOS. All these surveys divided the country into ten similar regions with the Study Area districts covering three of these.

⁵ During the Tilenga ESIA SHBS it was reported that HCIIIs are being phased out and village health teams will become the first point of contact for primary health care.

⁶ During a meeting with the Ministry of Health in January 2018 it was noted that Village Health Teams are being phased out and replaced with Community Extension Workers. There will be two Community Extension Workers in each parish, one male and one female. At the time of data collection and reporting, however, these structures were not yet in place in the Study Area.

These are:

- Western Region - districts of Hoima, Buliisa and Masindi;
- Northern Region - Nwoya District (Purongo and Got Apwoyo sub counties); and
- West Nile Region - Nebbi District (Pakwach Trading Centre – now in Pakwach District).

Overall, the health situation in each of these regions is generally similar among the districts and also around the other regions. Therefore the Study Area profile will be discussed based on these three regions: Western, Northern, and West Nile.

The key relevant findings from these surveys are:

- The overall risk of malaria drastically declined in these three regions between 2009 and 2014, similar to the national prevalence⁷. Malaria prevalence in children (under five) by microscopy in the western region declined from 42.7% to 17.6%, in the northern region from 62.5% to 19.6%, and in the West Nile region from 45.7% to 27.5% over the period 2009 to 2014 (Ref. 18-11);
- Malnutrition (stunting and underweight) and respiratory infections are more common in the western region compared to most of the other nine regions of the country while diarrheal illness in children is less common in western Uganda; and
- Similar to the national trends, the prevalence of HIV/AIDS in the western as well as six other regions has increased over the recent past. According to the most current statistics at the MoH (Ref. 18-13), the prevalence of HIV in the western and mid-northern regions is higher than the national average (8.2% and 8.3%, compared to 7.3%), while the West Nile region recorded the second lowest prevalence at 4.9%. It is thought that the relatively high HIV prevalence in the western and northern regions is at least in part due to the presence of the vibrant fishing industry along Lake Albert.

Overall, the disease epidemiology of the regions across the Study Area is generally similar. This finding is supported by data from the HMIS and information collected during the 2015 SHBS and the 2014 HBA. According to the routine HMIS system, the top three diseases diagnosed across the whole Study Area are malaria, upper respiratory tract infections, and acute diarrhoea.

The 2015 SHBS reports that HMIS data for 2013/2014 (Ref. 18-3) in Buliisa showed the most common conditions were malaria (47%), non-pneumonia-cough (33.7%), intestinal worms (6.7%), acute diarrhoea (4.8%), Sexually Transmitted Infections (2.9%), skin infections (2.8%), eye infections (2.1%), gastrointestinal disorders (1.9%), pneumonia (1.4%) and ear, nose and throat Infections (1.2%). Of note, interviews with the different health teams during the 2016 baseline survey revealed that cholera outbreaks are also quite prevalent especially along the river banks in Buliisa District.

The prominent health conditions reported in the 2014 HBA (covering LA-2) were respiratory problems other than asthma, intestinal worms, eye infection, hypertension and pneumonia⁸. The prevalence of zoonotic diseases (e.g. brucellosis and ascariasis) was also found to be very low at 4% and 8% in Hoima and Buliisa districts respectively (Ref. 18-22).

While these are the most common diseases diagnosed and reported at the district level, villages bordering Lake Albert and the River Nile also experience a high burden of neglected tropical diseases, such as schistosomiasis (bilharzia) and onchocerciasis (river blindness). The burden of HIV and HIV-related conditions is also high, although this is not captured within the HMIS system. Reports in the 2014 HBA of NCDs such as hypertension, heart disease, depression, asthma, diabetes, cancer and arthritis were relatively low compared to infectious diseases. Data on NCDs are also not adequately captured in the routine national HMIS surveillance system or periodic national surveys; however, information from health workers during the 2015 SHBS suggests that NCDs are becoming increasingly common in the Study Area.

⁷ Though it should be noted that the introduction of long lasting insecticide treated bed nets in 2014 did not have the same effect on drop in case load in Buliisa as it had in another regions. (Ref 18-3)

⁸ These findings are based on health conditions that the respondent of the survey had been informed they were suffering by a health worker.

People most commonly seek healthcare advice and treatment from a medical doctor or health worker though traditional healers are also consulted for certain conditions and herbal or traditional remedies are also used to treat symptoms of disease.

18.5.3.4 Environmental Health Areas

This section outlines the baseline health status within the Study Area with reference to the EHA framework (see Table 18-1).

18.5.3.4.1 EHA 1: Vector Related Disease

The Study Area contains common vectors including mosquitoes (*Anopheles gambiae* and *Anopheles fenestus*), which transmit malaria and black flies, which transmit onchocerciasis (river blindness), snails, which spread bilharzia (also known as schistosomiasis), and tsetse flies, which transmit sleeping sickness. The Study Area suffers a heavy burden of schistosomiasis, intestinal helminths (worms) and onchocerciasis, which fall under the group of diseases classified as neglected tropical diseases (NTDs).

Malaria

Malaria transmission occurs throughout the Study Area and throughout the year, but peaks in June to August and November to January during the rainy seasons. Malaria is a significant disease burden and is the number one illness in all the five districts included in the Study Area according to the HMIS and from interviews with district health personnel. Malaria rates are highest amongst children.

In the 2015 SHBS, malaria was reported as the number one cause of health facility visits in all health centres visited. According to HMIS data for the period January 2013 to December 2014, approximately 50% of patients visiting Buliisa District health facilities were diagnosed with malaria. According to HMIS data the malaria burden in Nwoya District was similar to Buliisa District in 2016 (Ref. 18-22). Within Got Apwoyo sub county, health facility staff in Latoro health centre reported that malaria cases increased between 2014 and 2016. Latoro Central and Te Ogot villages were reported to have the highest rates of malaria, (interview with Latoro Health Centre II In-Charge). Malaria prevalence is also one of the top five diseases across Masindi, Hoima and Nebbi (according to HMIS data and feedback from health facility staff and district health management teams during the Tilenga ESIA SHBS). Rates vary seasonally, increasing during the wet seasons and waning during dry seasons.

Health facility staff interviewed as part of the 2015 SHBS and 2016 baseline survey reported that the distribution of insecticide treated bed nets in Buliisa district, which occurred in June 2014 did not lead to the expected drop in number of diagnosed cases. During the 2016 baseline survey there was reported to be widespread misuse of mosquito nets, for example people use them as fishing nets and to place around crops or young fruit trees to protect them from animals (this practice was directly observed during the survey). The District Health Team also reported that as of December 2016, they had still not received mosquito nets that were supposed to have been delivered in August 2016.

According to HMIS data the malaria case load across all districts in the Study Area increased significantly between 2015 and 2016. In Buliisa District the reported number of confirmed malaria cases went from 17% to 40%; in Nwoya District it went from 18.7% to 42.5%; in Hoima from 8.8% to 22.1%; in Nebbi from 13.1% to 32.3% and in Masindi from 8.9% to 20.4% (Ref. 18-22). The reasons for such an increase in malaria case load are unknown, although health facility staff in Purongo Sub County reported that from 2014 to 2015 malaria cases almost tripled following the end of a programme of Indoor Residual Spraying (IRS) that had been carried out in mid-northern Uganda for several years. Spraying and distribution of bed nets started again in 2016 and cases reportedly reduced slightly. The reported malaria case load from health facilities may be an over- or underestimate of the true malaria burden as it reflects only cases seen within health facilities and accurately diagnosed in health facilities. It does not include self-treatments and those diagnosed in the private sector, and may include misdiagnosed cases.

The following environmental and socio-economic risk factors for malaria were identified during the 2015 SHBS:

- The 2015 SHBS Study Area was found to be generally swampy, especially the areas around Lake Albert. This swampy environment provides a rich mosquito breeding environment;
- The design of mud huts, which are the most common type of housing unit in Buliisa District, and overcrowding within these small units (average of five persons per household), allows for mosquito ingress into structures and increases the number and type of bed nets required to protect all household occupants⁹; and
- The health facilities visited in the 2015 SHBS did not have adequate malaria protection measures such as sealable windows and bed nets. Given that close to 50% of health facility visits are attributed to malaria this means that patients admitted without malaria are potentially at high risk of being infected while in the health facilities.

In addition to the above factors, during the 2016 baseline survey it was also suggested that lack of consistent and sustained interventions against malaria reduces the effectiveness of prevention and treatment strategies. There was reported to be no holistic approach taken for mosquito prevention such as use of spraying in areas where it is difficult to use nets. There was also reported to be frequent shortages of malaria treatment drugs in health facilities.

Strategies to address malaria include treatment; targeted interventions to control mosquito breeding (e.g. maintaining anti-malarial drains reported in Masindi District and Indoor Residual Spraying reported in Nwoya District); bite prevention through distribution of mosquito nets; and, health education such as advising people to sleep under insecticide treated bed nets and sensitising them on environmental sanitation to keep homesteads free of breeding conditions. Village health teams are being trained to test and treat malaria in order to reduce the burden of malaria on health facilities, and several NGOs work alongside district health teams and health centres on malaria prevention and care, including the Malaria Consortium and Infectious Disease Institute (IDI).

Bilharzia (snails)

Schistosomiasis (Bilharzia) commonly occurs around fresh water bodies. As such, it is highly prevalent in Buliisa District, especially affecting populations living around Lake Albert and the River Nile. A district-wide survey carried out in Buliisa in 2011¹⁰ found a high infection prevalence of 47%¹¹. The disease is often asymptomatic in its early stages or manifests as non-specific symptoms which resolve after a few weeks. However, in the long run it can have severe complications including severe liver disease, kidney disease and severe anaemia.

Given its non-specific presentation, schistosomiasis is not commonly diagnosed (or tested for) in health centres within the Study Area. However the disease is a major unrecognised problem as continuous contact with water contaminated by fresh water snails that transmit schistosomiasis by communities is inevitable. Periodic mass treatment of communities living along Lake Albert and River Nile is the strategy of prevention of schistosomiasis and during the 2016 baseline survey there was an on-going mass treatment campaign that started in October 2015. However, due to resource limitations it is not regularly done in Buliisa District. Research has found that among people along the shores of Lake Albert infection rates have remained high since the start of the mass drug administration programmes in 2003. Among people along the lakeshores there is reported to be low drug coverage and, in some cases, resistance to the distribution (Ref. 18-23).

Specific lake-based livelihood groups identified within Buliisa district considered most vulnerable to bilharzia due to their daily exposure to freshwater are sea shell collectors, papyrus harvesters, sand loaders, and fishermen (see Figure 18-2).

⁹ Various studies (Ref. 18-24) have found simple mosquito proofing of housing has led to a decrease in malaria rates in endemic areas by around 10 fold.

¹⁰ Buliisa NTD survey results (unpublished) shared by Buliisa DHMT during 2015 SHBS (Ref. 18-3).

¹¹ During the 2016 baseline survey the District Health Team reported that, as of 2016, bilharzia infection contributed approximately 37% of the disease burden in the district, mainly affecting populations living around Lake Albert.



Figure 18-2: Seashell Collector, Wanseko

Onchocerciasis (black flies)

Onchocerciasis (river blindness) is spread by bites of 'black flies,' which live near fast flowing rivers. As such, onchocerciasis, although not well documented, is believed to occur commonly around the River Nile. Health workers interviewed as part of the 2015 SHBS did not generally report blindness, a frequent complication of the disease, to be prevalent within local communities in Buliisa District. However it was reported that epilepsy, another complication, is being increasingly seen in upper Buliisa. Blindness was also reported as not infrequent in patients attending Pakwach HC IV.

A nationwide river blindness elimination program was launched in 2007, which aims to eliminate the disease nationwide by 2020. Significant progress has been made towards this goal. As of 2016 fourteen districts had achieved elimination of the disease. Interruption of transmission of the disease was suspected in Buliisa, Hoima, Masindi and Nebbi districts. Documenting elimination of the disease in these areas is reported to be complicated; however, because the areas border Democratic Republic of Congo (DRC). Transmission of river blindness continues in 11 districts, including Nwoya (Ref. 18-25).

According to HMIS data, there was one reported case of onchocerciasis in Buliisa in 2015 and none in 2016. In Nwoya there is no data for 2015 but 32 cases reported in 2016. The highest number of cases was reported in Hoima district with 216 cases reported in 2015 and 398 in 2016. Cases in Masindi district were also relatively high with 45 cases reported in 2015 and 97 in 2016. Nebbi had 10 cases reported in 2015 and three in 2016 (Ref. 18-22).

Trachoma

Trachoma is a disease of the eye caused by a bacterial infection, which can lead to irreversible blindness. Infection spreads through personal contact (via hands, clothes or bedding) and by flies that have been in contact with discharge from the eyes or nose of an infected person. At the time of the 2016 baseline survey, mass treatment of Trachoma using Azithromycin and tetracycline eye drop treatment, which started in November 2016, was ongoing.

There were two cases and 49 cases of trachoma reported in HMIS data for Buliisa District in 2015 and 2016 respectively; two cases in Nwoya in 2015 and 106 in 2016; 122 in Hoima in 2015 and 39 in 2016; 296 in Nebbi in 2015 and 618 in 2016; and, 84 cases in Masindi in 2015 and 46 in 2016. (Ref. 18-22).

18.5.3.4.2 EHA 2: Housing and Respiratory Issues

Tuberculosis (TB)

There was very limited information available on TB from health facilities surveyed as part of the 2015 SHBS¹². This is mainly because TB is only diagnosed and treated in accredited facilities, is under reported, and the data management system is separate from the HMIS. TB data goes from the health facility to the district in a parallel system to the HMIS, and is controlled by a TB focal person, who later sends it to the Tuberculosis and Leprosy Program (TLP) at the MoH, rather than the HMIS system. According to information from the MoH TB coordinator, unpublished results from the 2015 TB Prevalence Survey showed that there are 50,000 more cases of unreported TB above the national average of 60,000 cases, an indication that close to 50% of TB cases are not reported. This scenario can be related to the Study Area in relation to TB unreported cases. Currently there is no specific program that the TLP is conducting in the Albertine region (Interview with TB Control Program, Tilenga ESIA SHBS). Data on TB incidences was collected as part of the health studies included in the Social Baseline report for the Resettlement Action Plan (RAP) 1: Priority Areas. Approximately 1.3% of the Project Affected Persons (PAPs) interviewed reported suffering from TB over survey period (Ref. 18-38).

The most at risk population for TB are mainly children under 5 years, the elderly and those with HIV. Other at risk population includes individuals living in restricted communities such as camps, slum dwellers, fishing communities, and refugees and migrants. Factors predisposing them to TB include low immunity, congestion, and close contact with those infected with TB.

In the Study Area, HIV-related TB is commonly diagnosed and treated in the two large HIV / Antiretroviral therapy (ART) clinics in Buliisa District¹³, Masindi District hospital, and Hoima RRH. At the time of the 2015 SHBS field visit, two patients were undergoing treatment for Multi-Drug Resistance (MDR) TB at Pakwach HC IV, and four in Hoima RRH. During the 2016 baseline survey one case of MDR TB was also reported in Purongo Sub County. The patient was said to have come from Karuma and was referred to the regional hospital.

The spread of MDR TB is a major public health concern, especially in the setting of high HIV prevalence and overcrowding. HIV negative persons with latent TB have a 5 to 10% risk of developing active TB during their lifetime (Ref. 18-26), while HIV positive persons with latent TB have a 10 to 15% risk of developing active TB per year (Ref. 18-27). It is estimated that around one third of the world's population has latent TB (Ref. 18-28). The collision of the HIV and TB epidemics along with poor health systems in Africa is fuelling the increase in MDR TB rates.

According to the TB coordinator at the TLP, some of the challenges in addressing TB in Uganda include:

- Lack of facilities providing TB care and uneven distribution of such facilities across regions meaning people have to travel long distances to access care;
- Unaffordability of TB treatment for most rural poor;
- Weak provision of TB health education and lack of awareness of TB prevention, infection and treatment;
- TB infection stigma and denial especially among men and the affluent;
- Delayed initiation of treatment at health facility level even for those patients that report early;
- Weak adherence to treatment especially since TB treatment takes a minimum of 9 months;
- Stock outs of medications and other TB related resources; and
- TB treatment requires a balanced diet, which is not readily available for the poorest of patients.

¹² Nine health facilities servicing the populations in CA-1/EA-1A and LA-2 were surveyed: Hoima Regional Referral Hospital, Buliisa Hospital, Buliisa HC IV, Pakwach HC IV, Biiso HC III, Avogera HC III, Bugoigo HC II, Kigwera HC II and Kihungya HC II.

¹³ At the time of the 2016 SBS, the TB clinic in Buliisa District has been demolished and patients were converging under a tree. Staff at Buliisa HC IV reported that a new clinic is planned.

Acute Respiratory Infections (ARI)

Respiratory infections are a very common cause of illnesses in Uganda and in the Study Area. All health workers interviewed as part of the 2015 and 2016 baseline surveys across the Study Area cited respiratory infections as being among the most common causes of facility visits, particularly in children. This is confirmed by HMIS data; according to HMIS statistics up to 34% of all facility visits in Buliisa district in 2016 were for non-pneumonia cough or severe acute respiratory tract infections (SARIs). The figure was similar for Nebbi and Masindi districts at 31% and 32% respectively but lower for Nwoya and Hoima districts, both at 23% (Ref. 18-22). There were no significant changes in case load across any of the districts between 2015 and 2016.

The prevailing environmental conditions are a contributing factor to the prevalence of respiratory diseases. Risk factors for respiratory infections observed in the Study Area include poor household ventilation, overcrowding, burning fuels from indoor cooking, or cooking close to households using solid fuels, especially wood.

Pneumonia

There is currently very limited capacity within health facilities in the Study Area to adequately diagnose pneumonia. However, health workers often presumptively treat patients with respiratory infections for pneumonia. Within admitting facilities in Buliisa District (Buliisa HC IV, Biiso HC III, Buliisa Hospital), health workers reported that severe respiratory infections were common among children admitted as in-patients to hospital, and as a cause of death in children under five. Pneumonia was listed as one of the main diseases that people seek treatment for at health facilities in Purongo sub county (Nwoya District) although staff interviewed at Purongo Health Centre considered that the number of pneumonia cases has decreased over the last five years, thought to be due to immunisation.

Pneumonia, especially among children, is reported to be among the top five diseases in Hoima district and Nebbi district but was not listed as one of the top five diseases during health interviews in Masindi district. This may not reflect actual prevalence of the disease, however, as capacity for adequate diagnosis within health facilities is limited.

Epidemics

Interviews with health teams revealed that Buliisa and Hoima, and especially areas along the lake shores, experience frequent outbreaks of cholera. This was mainly attributed to poor hygiene, lack of safe water and the shortage of toilet facilities along the lake shores. The district health team in Buliisa reports that due to the improvement of safe water access through the provision of piped water and digging of bore holes, as well as increased construction of latrines, cholera outbreaks are now reducing in frequency. There was an ongoing cholera outbreak in Buliisa (Butiaba Sub County) at the time of the baseline survey in December 2016 that was being contained. It was reported to be the second outbreak that year (the first was in January 2016).

While districts in the Study Area have not experienced haemorrhagic fever¹⁴ outbreaks, Kibaale, Bundibugyo, Wakiso and Luweero districts, which are in western and central Uganda, relatively close to Buliisa and likely to contribute to population movement in the region, have had recent haemorrhagic fever outbreaks including of Ebola (2007/2011/2012 – Kibaale and Luweero), Crimean-Congo haemorrhagic fever (August 2013, Wakiso) and Marburg haemorrhagic fever. Gulu District (just north of Nwoya District) experienced a large Ebola epidemic in 2000 which resulted in 425 confirmed cases and 224 deaths (Ref. 18-29).

Recurrent measles outbreaks were reported in Hoima district in areas around Kyagwali, Subuta and Kabwoye sub-counties. According to HMIS data for 2015 and 2016, there were 1,600 measles cases treated in health facility outpatient departments in Hoima in 2016. In Nebbi and Masindi district there were approximately 600 cases but in Nwoya and Buliisa districts there were only 4 and 12 cases respectively (Ref. 18-22).

¹⁴ Viruses that cause haemorrhagic fevers are transmitted by mosquitoes (dengue, yellow fever, and Rift Valley fever), ticks (Crimean-Congo haemorrhagic fever), rodents (Hantavirus and Lassa) and bats (Ebola, Marburg). Humans have also been infected with Ebola and Marburg from non-human primates and other mammals, and from human to human contact.

18.5.3.4.3 EHA 3: Veterinary Medicine and Zoonotic Disease

The prevalence of zoonotic diseases is reported to be very low in the Study Area. Examples of zoonotic disease include Rabies, Ebola, Ascariasis and Brucellosis. Only 4% and 8% of the respondents of the 2014 HBA in Hoima and Buliisa districts respectively had ever been told by a health worker that they had zoonotic related diseases such as brucellosis¹⁵ and ascariasis. Households reporting that *any member* of that household had even been told that they had a zoonotic disease were 10% in Hoima district and 8% in Buliisa district.

Although the prevalence of zoonoses was found to be low, several households in the Study Area could be exposed to zoonoses through contact with wildlife, sharing living space with domestic animals, keeping unvaccinated pets (e.g. cats and dogs), consumption of game meat and consuming undercooked animal products such as beef, milk or pork. According to HMIS data, 27 and 182 outpatient department cases in Buliisa and Nwoya district respectively in 2016 related to domestic animal bites. The number of cases in Hoima, Nebbi and Masindi was far higher at 587, 562 and 454 respectively. There were 30 suspected rabies cases in Buliisa in 2016, 96 in Nwoya, 593 in Hoima, 208 in Nebbi and 107 in Masindi (Ref. 18-22).

While districts in the Study Area have not experienced haemorrhagic fever outbreaks, Kibaale, Bundibugyo, Wakiso and Luweero districts, which are in western and central Uganda, relatively close to Buliisa and likely to contribute to population movement in the region, have had recent haemorrhagic fever outbreaks including Ebola (2007/2011/2012 – Kibaale and Luweero), Crimean-Congo haemorrhagic fever (August 2013, Wakiso) and Marburg haemorrhagic fever. Gulu District (just north of Nwoya District) experienced a large Ebola epidemic in 2000 which resulted in 425 confirmed cases and 224 deaths (Ref. 18-29).

18.5.3.4.4 EHA 4: STIs including HIV/AIDS

In Uganda, HIV/AIDS is among the top three leading causes of ill health (Ref. 18-16). Reported HIV prevalence rates in the Study Area vary but are all higher than the national average. Data from the National AIDS Indicator Survey completed in 2011 reported HIV prevalence for the Mid-Western Region (including Buliisa, Hoima and Masindi Districts) of 8.2%, mid-northern Region of 8.3% (Nwoya District) and West Nile 4.9% (Nebbi) (Ref. 18-13). Other sources suggest similarly high rates - prevalence in Buliisa is reported in the Buliisa District Development Plan 2015-2020 to be 10% (Ref. 18-30) and the Hoima District Development Plan 2015-2020 reports prevalence in the district at 6% (Ref. 18-31). A study carried out in 2008 in the fishing community living along the shores of Lake Albert in Buliisa reported HIV prevalence of as high as 25% (Ref. 18-32).

The Uganda AIDS Commission recognises that the region where the Project is located has the potential of increasing HIV infections due to the economic activities, influx of different personnel, and the rise in risky sexual behaviour. In its mandate, the Commission has been working with the regional facilities to offer technical support to the district and health facilities on HIV diagnosis and management through support, supervision, strategic and operational guidance, up-to-date guidelines on HIV, following up on activities, and monitoring progress, (interview with Uganda AIDS Commission, Tilenga ESIA SHBS).

Awareness of HIV/AIDS is widespread across the Study Area — all household respondents for the 2014 HBA survey had heard of HIV/AIDS. One of the communication channels contributing to this coverage is the fact that most health facilities in the Study Area have a functional health education system, and, where funds allow, they have been carrying out outreach. Some of these outreach activities have been supported by The AIDS Support Organisation (TASO) and IDI. Half of the respondents (51%) in the survey for the 2014 HBA had used a condom either as a device for HIV prevention, contraception or to avoid infection with STIs.

A majority of respondents to the 2014 HBA (92%) knew where they could access HIV testing services in their sub-county. However, only 31% of the sample had ever tested for HIV and 69% had never

¹⁵ Brucellosis is a bacterial disease caused by various *Brucella* species, which mainly infect cattle, swine, goats, sheep and dogs. Humans generally acquire the disease through direct contact with infected animals, by eating or drinking contaminated animal products, or by inhaling airborne agents. The majority of cases are caused by ingesting unpasteurized milk or cheese from infected goats or sheep. Person-to-person transmission is rare. The disease causes flu-like symptoms, including fever, weakness, malaise and weight loss (Ref. 18-28).

tested. Of those who had never tested for HIV, the majority (58%) were females compared to males (42%). The reasons for not having taken a HIV test included having a low perception of the risks of contracting HIV, and fear of the impact if the result was positive, such as stigmatisation in the community.

If someone tests positive for HIV they are started on treatment with a health facility to which they are registered. One of the challenges noted in HIV management particularly amongst mobile communities along the shores of Lake Albert was that people do not transfer their treatment when they move in and out of the area and then get 'lost' in the system. This issue was raised in both Buliisa and Hoima districts where there is reported to be a high dropout rate of patients enrolled in HIV treatment programmes amongst migrant populations (Interviews with Kigwera HC II and Hoima DHO, Tilenga ESIA SHBS).

While there is no empirical evidence of an increase in the burden of HIV in the Study Area¹⁶, it was mentioned during several health worker interviews during the 2015 SHBS that there seems to be an increasing number of HIV confirmed cases in Buliisa district and the number of HIV confirmed patients enrolling into HIV care programs in Buliisa has steadily increased over the last two years. The perception that the prevalence of HIV and STI cases is increasing across other parts of the Study Area was also widely reported during interviews with district health teams and health facility workers during the 2016 baseline survey. Increasing numbers of sex workers and migrant workers were considered to be two of the main reasons for the increase in the HIV burden.

Some of the key challenges in addressing HIV/AIDS that were noted by the Uganda AIDS Commission were:

- Limited access to HIV services especially in rural settings;
- Stock out of ART medicines in health facilities;
- Inadequate HIV testing and counselling services;
- Understaffing at the health facility level; and
- Inadequate social support and protection of HIV patients.

In the Study Areas there are HIV/AIDS programs supported by TASO and the IDI, amongst others¹⁷. These organisations do work to sensitise people on the risk of contracting HIV/AIDS, offer counselling and testing including through outreach with Most At Risk Populations (MARP – see below) in HIV hotspots; encourage safe sexual behaviour and conduct condom distribution; and offer care and treatment.

Most at Risk Populations

Globally, it is recognised that some population categories are more at risk of contracting HIV than others. The most at risk populations for HIV identified across the Study Area are: female sex workers, fishermen, boda boda drivers, long-distance truck drivers and persons in uniformed services. In Purongo and Got Apwoyo Sub-Counties (Nwoya district) and Masindi district, casual labourers in the farming community (mainly men) are also considered a MARP. Casual farm labourers come to the area in the dry season to look for work on farms. Some of the factors that predispose these groups to be at higher risk are that they engage in risky sexual behaviour without using protection, engage with multiple sexual partners, stay long periods of time away from their spouses, and have easily acquired disposable income (spent on sex workers) - this is especially the case for fishermen and boda boda drivers.

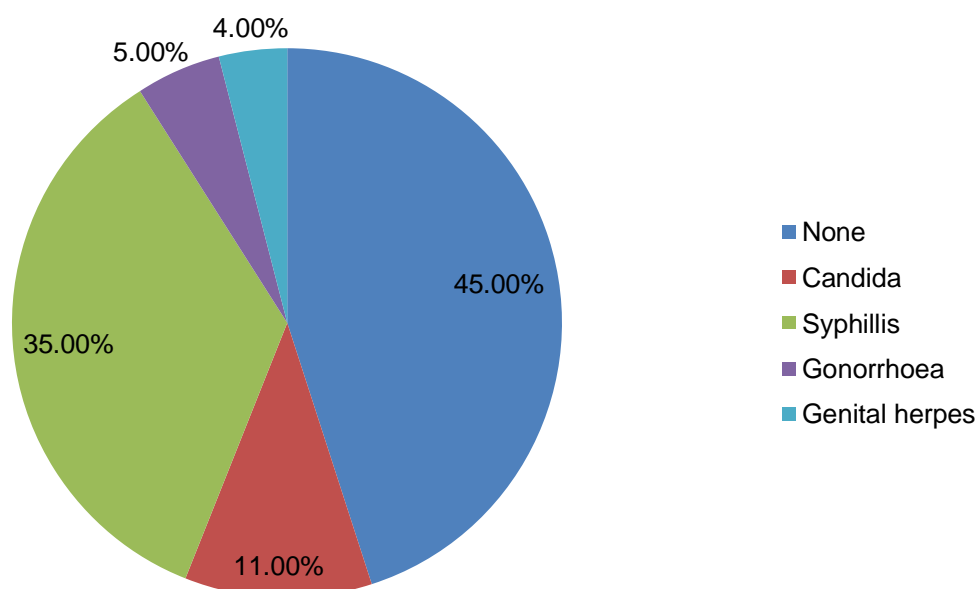
¹⁶ At the time of writing ongoing data collection was being undertaken for the 2017 AIDS indicator survey, which will provide updated data on the HIV/AIDS prevalence across all regions in Uganda.

¹⁷ Other organisations mentioned during the 2016 baseline survey that deliver HIV/AIDS programmes included: YODI (Pakwach), World Vision, Build Africa and LACWADO (Buliisa), Alliance of Mayors and Municipal Leaders Action Against HIV (AMICAL), Sustain (Hoima), Uganda Cares and CEDO (Masindi).

The hotspots or places where MARPs operate vary ranging from bars and night clubs (particularly in urbanised areas such as Hoima and Pakwach Town Council¹⁸) to landing sites. Other places where MARPs operate include streets, restaurants, hotels, lodges, trailers, truck parking yards, and barracks. A total of 40 hotspots were identified and verified in LA-2 as part of the 2014 HBA. Within Buliisa district Wanseko parish, which has large migrant fishing communities, is thought to be one of the areas with the highest HIV rates. Within the wider Study Area, the more urbanised and densely populated areas within Pakwach Town Council, Hoima Municipality and Masindi Municipality (particularly Central Division) are reported to have higher rates of HIV/AIDS.

STIs

Other sexually transmitted infections (STIs), such as gonorrhoea and syphilis were reported in the 2015 SHBS to be common causes for attendance at a health facility. HMIS statistics from 2014 indicated that reported STIs accounted for between 0.4% and 2.3% of total monthly out-patient visits in Buliisa District. Data from 2015-2016 for the whole Study Area show similar rates, with between 0.6% and 1.5% of total outpatient department visits related to 'other STIs' (Ref. 18-22). It is likely that many suspected STI cases are not reported and thus not included in the HMIS system. Over half of respondents (55%) of the 2014 HBA reported having ever suffered from an STI, with more than a third (35%) reporting syphilis. Although self-reported data, it is worth noting that people seem aware about STIs and how they are spread (see Figure 18-3).



Source: Ref. 18-6

Figure 18-3: STI Prevalence Reported in 2014 Health Baseline Assessment (Hoima and Buliisa Districts)

Hepatitis B

There are few population and health facility-based data on the current prevalence of hepatitis in Uganda, however, historical data suggest that viral hepatitis, particularly hepatitis B (HBV), is highly prevalent in the north-west region of Uganda including Nwoya District. A national population-based sero-survey found that compared to the national average of 10%, the prevalence of hepatitis B was 19.4% in north-central Uganda and 18.7% in neighbouring West Nile region (Ref. 18-33). Nwoya

¹⁸ During a meeting with Pakwach Town Council technical leadership the health officer reported a prevalence rate of 10% for the town council.

District is one of several districts in northern and eastern Uganda which experienced a hepatitis B epidemic in the first half of 2015. One of the factors that was believed to have led to the spread of the epidemic into Nwoya was movement of commercial sex workers from neighbouring districts.

HIV/AIDS and STI Risk Factors

Several related potential risk factors for HIV and other STIs were identified during the 2015 SHBS and the 2016 baseline survey:

- Economic activity and risky sexual behaviour associated with the fishing community is likely a major driver of HIV transmission in Buliisa district. The fishing community in Uganda is known to be one of the most-at-risk populations;
- It was reported in several FGDs and interviews during the 2016 baseline survey that over the recent past, there has been an influx of female commercial sex workers, another high-risk population for HIV, into the Albertine region. This influx is due to expectation of increased commercial sex business associated with increased economic activity in the area;
- Overall, migration and human movement into the Study Area and the larger Bunyoro region in anticipation of the economic opportunities associated with the oil and gas activities. Migrants, especially mobile workers, are another recognised high-risk population;
- Having a disposable income, especially among boda boda drivers, and fishermen, and construction workers, results in greater spending power and opportunity to engage in high risk sexual behaviour. On the other hand, poverty has also been a contributing factor especially among the sex workers who use sex as a means of livelihood;
- High school drop-out rates particularly for girls due to early marriage (particularly for the Alur tribe). High poverty rates and demand for child labour are also said to encourage school drop-out;
- Infidelity is also a serious risk factor. The 2014 HBA reported that over a tenth of the sample (15%) surveyed with regular partners had engaged in sexual intercourse with other partners in the past 30 days preceding the study, while 21% reported having sexual intercourse with a sex worker in the past six months. Of those who reported to have engaged in infidelity the majority (58%) were males compared to 42% females;
- Respondents during the 2016 baseline survey noted that attitudes towards the risks of HIV/AIDS were changing, leading to more risk taking behaviour. This is partly attributed to the fact that people on anti-retro viral medications are living longer thus HIV/AIDS is no longer perceived as life threatening, especially in comparison to more immediate health concerns and risks such as accidents, and other STIs; and
- There is still some stigma associated with a positive HIV diagnosis meaning some people are reluctant to get tested and seek treatment.

18.5.3.4.5 EHA 5: Disease Linked to Soil, Water, Sanitation and Waste

Water and Sanitation

Access to safe water and adequate sanitation provision are important determinants of health, and in particular the avoidance of water borne diseases such as diarrhoea. Baseline information about water and sanitation facilities is provided in **Chapter 16: Social** (Section 16.6.4.2 and 16.6.4.3). This section looks at some of the common water and sanitation related diseases prevalent in the Study Area. The most common sanitation and hygiene related diseases reported in the Study Area include diarrhoea, intestinal worms, cholera, dysentery, typhoid and scabies.

Respondents during the 2016 baseline survey in all districts within the Study Area reported that sensitisation programmes are being led with communities to observe good hygiene practices (e.g. washing hands and using pit latrines), and there have also been programmes to construct pit latrines. Support on water, sanitation and hygiene (WASH) programmes is provided by NGOs including Water Trust, United Nations Children's Fund (UNICEF), and the Uganda Water and Sanitation Network, which is an umbrella NGO group working on WASH issues.

Diarrhoeal Diseases

The most common gastrointestinal condition diagnosed in Buliisa District is acute diarrhoea, which accounted for approximately 5% of all health facility outpatient department visits in the district in 2016 (Ref. 18-22). Across the wider Study Area acute diarrhoea accounted for between 3% (Nwoya and Hoima districts) and 4% (Nebbi and Masindi districts) of all outpatient department visits in 2016. There are frequent cases of typhoid reported across all districts in the Study Area. In 2016 there were 914 cases reported at health facility outpatient departments in Buliisa, 217 cases in Nwoya, 3,964 in Hoima, 989 in Nebbi and 788 in Masindi (Ref. 18-22).

Diarrhoeal diseases mostly affect children, especially under-fives, and cases rise during the rainy season. Health workers interviewed as part of the 2015 SHBS reported that the most prominent risk factor for acute diarrhoea in Buliisa district is poor hygiene and sanitation (i.e. lack of handwashing facilities, open defecation and unsafe cooking practices), and poor access to potable water to WHO standards.

A national sanitation programme, the Uganda Sanitation Fund Programme, which aims to work to end open defecation and reduce sanitation related disease, was due to be extended into Buliisa and Hoima districts from 2017-2020. The programme is already being run in Nebbi district.

Helminthiasis (intestinal worms)

Health workers reported that intestinal worms are common in Buliisa District. This is confirmed in findings from the MoH's 2011 Neglected Tropical Disease (NTD) Survey for Buliisa, which found soil transmitted helminthiasis to be highly prevalent in Buliisa District, especially among children. In the survey, 37% of those tested were found to be infected. In 2016, intestinal worms accounted for 3.5% of health centre outpatient department visits in Buliisa district, 4.5% in Nwoya district, 2.7% in Hoima district, 3.9% in Nebbi district and 3.4% in Masindi district (Ref. 18-22).

Helminthiasis, like other NTDs, is often asymptomatic or non-specific in its presentation, but associated with anaemia, malnutrition and generally poor health outcomes in children. Because it is often asymptomatic or presents with non-specific symptoms, helminthiasis is likely to be an under-appreciated health problem.

18.5.3.4.6 EHA 6 - Food and Nutrition Related Issues

Diet

The majority of people within the Study Area consume fresh foods supplemented with processed maize meal. The main sources of protein for communities in the Study Area are fish, meat (beef), beans, millet, sorghum and bushmeat. Most communities, especially along the lake and River Nile, eat fish for protein regularly when supplies are available, and there are entire lakeshore communities that depend on fishing and associated livelihoods. However, whereas fish was previously eaten five to seven days a week, with income from surplus fish being used to vary the diet with meat (beef) or beans on the other two days, now several participants in FGDs for the 2015 ESS Review (Ref. 18-7) reported only being able to eat fish on two or three days per week due to declining stocks. Many people living in fishing communities are living below the poverty line, have large numbers of dependents, and have limited or no alternatives to fishing for food and income (Ref. 18-7).

Although illegal in protected areas, hunting is still carried out by hunters for bushmeat for their families and for sale. Bushmeat is also relied on as a source of protein by some people from communities that no longer keep livestock. Despite the preference for bushmeat, the majority of families using it get more of their protein from livestock meat and only eat bushmeat occasionally. On average, the households surveyed as part of the 2015 ESS Review that reported people eating bushmeat consumed it in 1 to 12 out of every 100 days (see **Chapter 19: Ecosystem Services**).

During the 2014 HBA (Buliisa and Hoima) 31% of households reported occasions when they experienced food shortages in the past and about 3% reported starvation. There were frequent anecdotal reports of food shortages made during the 2016 baseline survey (reports of food shortages were made in Buliisa district, Hoima district, and Masindi district but not in Nwoya or Nebbi). This was mostly attributed to poor harvests, blamed on crop diseases and changing weather patterns (see **Chapter 16: Social**). In Masindi district, however, it was also related to an increasing trend to grow

food for sale (both cash crops such as sugarcane but also traditional food crops) rather than subsistence consumption. Respondents alleged that this has resulted in poorer quality and lower volume of products available for consumption at household level.

Malnutrition

Malnutrition is due to food shortages, lack of knowledge about healthy diets, poor food preparation techniques, as well as the effects of diseases and parasites that can inhibit the uptake of nutrients from foods. A 2014 United States Agency for International Development (USAID) funded project found that malnutrition is the underlying cause of as many as 45% of child deaths in Uganda (Ref. 18-34). Children who are malnourished are at greater risk of infections, which in turn increases the risk of malnutrition. Malnourished children also have a greater risk of developing chronic diseases in adulthood. Malnutrition also affects cognitive development and school performance. Cases of malnutrition are generally underreported as several cases are not presented at health centres and village health teams are not trained to check nutritional status. Overall nutritional data is not disaggregated by district level and rates of stunting are not captured accurately within HMIS Data. However, data gathered using Lot Quality Assurance Sampling (LQAS) for a USAID Health Programme does provide some insights on a number of indicators for the districts in the Study Area (see Table 18-6).

Table 18-6: Key nutrition indicators gathered during LQAS sampling

Indicator	Buliisa (2012)	Masindi (2012)	Nebbi (2012)	Hoima (2012)	Nwoya (2014)
Percentage of households that are food secure	54.7	38.9	72.3	33.3	45.8
Percentage of children aged 12-23 months receiving a minimum of acceptable diet. ¹⁹	2.1	6.1	5.3	8.8	7.3
Percentage of children under 6 months of age who are exclusively breastfed	Not available	60	43.9	Not available	50
Percentage of mothers with children 12-23 months who consumed the 3 major food groups in the last 24 hours ²⁰	20	18.4	36.8	24.6	45.8

Source: Ref. 18-35 & Ref. 18-36

18.5.3.4.7 EHA 7: Accidents and Injuries

Within the health system, only injury cases that are presented to health facilities are documented and reported. Statistics from health facilities are believed to be a gross underestimate of the true burden of both accidental and non-accidental injuries as they are generally restricted to those who require urgent medical care. Additionally, the source of injuries may not be accurately reported by accident victims. Road traffic accidents (RTAs) are commonly settled between the parties involved without involving authorities. Issues related to occupational health and safety have been identified in **Chapter 16: Social** (see Section 16.6.9.3 on Labour and Working Conditions). Further reliable baseline data on occupational health and safety accidents and injuries within the Study Area were not available.

Health facilities in Buliisa district that were visited during the 2016 baseline survey noted that the main causes of accidents are RTAs involving motorcycles and bicycles, burns and accidents on the lake including drowning. Snake and animal bites, poisoning by farm chemicals (by accident or in suicide

¹⁹ This indicator is a proxy for adequate micronutrient-density for foods. Consumption of foods from at least four food groups is considered sufficient. This would imply that child has high likelihood of consuming at least one animal-source food, one fruit or vegetable source and a staple food.

²⁰ This indicator measures dietary diversity and control of malnutrition among breast feeding mothers. The three major groups include: Energy foods – cereals and products, roots/tubers and product.

attempts – poisoning was mentioned in Hoima Municipality and Purongo Sub County), burns and scalds, and domestic violence were also mentioned as common causes of injury.

Overall, the most common reported injuries in the 2014 HBA (Hoima and Buliisa) included wounds (17%), knee injuries (13%) and hand injuries (13%). These injuries were mainly caused by RTAs (17%) and falls (11%).

Road Traffic Accidents

According to the 2015 SHBS, RTAs were not listed among the common causes of health facility visits in Buliisa except at Biiso HC III, which is close to a main road (Buliisa – Hoima highway), and Pakwach HC IV, commonly as a result of accidents involving animals in Murchison Falls National Park (MFNP). There were six fatal RTAs recorded in Buliisa district in 2016 (three vehicle accidents and three motorcycle accidents) (Interview with officers in charge of traffic and crime, Buliisa police headquarters Tilenga ESIA SHBS, December 2016). Respondent's rating of frequency of accident occurrence in the 2014 HBA (Hoima and Buliisa), showed that most (51%) rated RTAs as being much more frequent or slightly more frequent in 2013. The 2014 HBA reported a slightly higher frequency of road traffic accidents in Buliisa District (58%) than in Hoima District (50%).

The main causes of RTAs cited by respondents in the 2016 baseline survey were drunk driving, speeding, driving without permits, and overloading of vehicles. The majority of traffic accidents were reported to involve boda bodas and the rate of accidents is reported to be higher in the rainy season and around festive periods. Accident rates are reported to be higher on tarmacked roads due to speeding and the Hoima-Kaiso Tonya road, (the road running down the escarpment from Biiso), and the Gulu-Arua road (running through Got Apwoyo and Purongo sub counties) are perceived to have high rates of RTAs. Accidents on the Gulu-Arua road are perceived to be increasing due to an increase in the volume of traffic along the road.

In Uganda, there are laws on seatbelt use, blood alcohol concentration limits (0.08 grams per decilitre (g/dL)), motorcycle helmet use, national speed limits, and laws prohibiting hand held mobile phone use while driving. However the enforcement of these laws, as rated by WHO, is very ineffective. International vehicle standards (e.g. the UN World Forum on harmonisation of vehicle standards) do not seem to be applied. The WHO reports in 2010 that Uganda had a road fatality rate of 28.9 deaths per annum per 100,000 population, as compared with France at 6.8 (Ref. 18-37). This difference is indicative of the unsafe road conditions in Uganda, poor pedestrian awareness of road safety, and poor medical emergency response and emergency care. The poor emergency response and medical care results in many people with potentially non-fatal injuries dying or suffering permanent disability due to inadequate and delayed medical care.

18.5.3.4.8 EHA 8 – Exposure to Potentially Hazardous Materials

Exposure to and presence of hazardous materials (including pesticides, fertilizers, road dust, indoor and outdoor air pollution, vehicle emissions, and chemicals from paints, cleaning products etc.) has got a direct bearing on environmental health.

Detailed information on environmental factors that influence the exposure of communities to potential health hazards is provided in the following technical chapters of this ESIA:

- Chapter 6: Air Quality and Climate;
- Chapter 7: Noise and Vibration;
- Chapter 8: Geology and Soils;
- Chapter 9: Hydrogeology;
- Chapter 10: Surface Water;
- Chapter 12: Waste; and
- Chapter 20: Unplanned Events.

Health complaints resulting from exposure to hazardous materials were not listed amongst the main reasons for health centre visits in any of the facilities surveyed during the 2016 baseline survey. Over

a half of the sampled households (55%) in the 2014 HBA (Hoima and Buliisa) reported that their homes were affected by dust from vehicles. Almost a half (47%) reported loud noise from traffic or vehicles while 43% reported exhaust fumes from vehicles. Overall, respondents from Buliisa reported higher levels of exposure to hazardous materials than Hoima except for air pollution from factories. (See Table 18-7 and Table 18-8).

The 2014 HBA found that the use of unregulated pesticides is common in LA-2, despite regulation against it. Cases of use frequently go unreported. During the 2015 SHBS, however, it was reported that farmers do not commonly use inputs such as chemical or natural pesticides and fertilizers (such as animal manure). This was explained in part by the low availability and high prices of these products in Buliisa. Illegal drugs for animals have not been widespread because the veterinary sector is well controlled and conducts routine joint inspections and spot checks on drug shops, in collaboration with the National Drug Authority. However, there are unconfirmed reports of use of illicit drugs in animals, though this is still under investigation.

Table 18-7: Household Exposure to Hazardous Materials or Disease Carrying Insects (LA-2)²¹

Materials	District		Total	
	Hoima %	Buliisa %	%	Number
Dust from vehicles	50	70	55	484
Water scarcity	50	65	54	476
Loud noise from traffic/vehicles	42	62	47	412
Exhaust fumes from vehicles	38	53	43	372
Polluted rivers and lakes	27	36	29	255
Solid waste/garbage	17	22	18	158
Noise from drilling/surveying	14	16	15	129
Air pollution from factories	11	4	9	78

Source: Ref. 18-6

Table 18-8: Reported Regularity of Exposure to Air Pollutants in the Last 12 Months (LA-2)

Pollutant	Exposed	Reported Regularity of Exposure			
	%	Often %	Sometimes %	Rarely %	Never %
Pesticides	37	20	59	20	1
Acaricides	12	23	48	28	1
Indoor air pollution related to cooking	78	50	42	8	0
Exhaust fumes from vehicles	77	59	32	10	0
Exhaust fumes from machinery work	60	33	47	19	0
Open dumping grounds for garbage	9	30	45	26	0
Paints	29	22	44	34	0
Oils / cleaning agents	19	4	36	60	1

²¹ Results presented in Table 18-7 and Table 18-8 are from the household survey carried out for the 2014 HBA. These questions were not part of the household survey undertaken for the 2015 SHBS and no household surveys were undertaken as part of the 2016 baseline survey. Therefore similar data are not available for CA-1.

Pollutant	Exposed	Reported Regularity of Exposure			
	%	Often %	Sometimes %	Rarely %	Never %
Thinner / solvents	7	14	44	41	2
Gasoline like-smell / benzene	7	12	27	61	2
Cigarette smoke	85	42	47	12	0

Source: Ref. 18-6

18.5.3.4.9 EHA 9: Psycho Social Effects (Social Determinants of Health)

Psychosocial effects refer to social pathologies (such as drinking, drug use, violence, gender discrimination, crime, poverty) that are influenced by social determinants of health and can lead to social, psychological or economic problems that undermine wellbeing. Social determinants of health describe the conditions in which people are born, grow, live, work and age. Social determinants of health include gender, ethnicity, cultural cohesion, physical or mental distress due to cultural change, education levels, poverty or economic disadvantage, and dependence on unique natural resources (Ref. 18-1). Social determinants of health are mostly responsible for health inequalities between groups – these are the avoidable inequalities in health status that arise due to social and economic effects on people's risk of illness and their options for preventing and treating illness.

Some aspects of social determinants of health and psycho social effects are described in the following sections:

- **Chapter 16: Social:** this section looks at gender, ethnicity, poverty, access to energy, education levels, cultural identity, and social disorders including alcohol consumption, domestic violence, commercial sex, and crime; and
- **Chapter 19: Ecosystem Services:** this section looks at dependence on unique natural resources.

Mental Health

Although participants in FGDs for the 2014 HBA acknowledged that mental illness was not common in their communities, they observed tendencies of mental instability, especially among the unemployed youths that were taking to alcohol and drug abuse. In addition to alcohol and drug abuse (e.g., kuber, opium/marijuana), participants noted other causes of mental illness including family spirits, severe malaria, and witchcraft. The 2015 SHBS reports that alcohol abuse is a serious issue across villages in CA-1/LA-2, especially in villages along the Lake shores, landing sites and peri-urbanised areas such as Katanga, Wanseko and Buliisa Town Council. Both men and women consume alcohol, but men are more common in public drinking places and it is recognised that men, such as fishermen, are more likely to be heavy drinkers (Ref. 18-3). **Chapter 16: Social**, provides further information on drug and alcohol use in the Study Area.

The household survey undertaken for RAP¹²² found that 26 out of 601 households surveyed (4.3%) supported one or more persons with a mental disability (Ref. 18-38). Very few respondents (6%) in the 2014 HBA reported having a household member with a mental illness. However, over a half (54%) of the respondents were aware of a person in their villages or community with a mental illness. It is possible that multiple respondents knew the same individuals with a mental illness within the village. In all, this highlights the fact that respondents had the ability to recognise mentally ill persons within the community.

According to HMIS data for 2016, outpatient department visits related to a mental health issues (including anxiety disorder, bipolar, depression, and dementia) constituted 0.1% of all visits in Buliisa district, 0.5% in Nwoya district, 0.3% in Hoima district, 0.2% in Nebbi district and 0.2% in Masindi district (Ref. 18-22).

²² The household survey undertaken for RAP1 covered 601 households, of which 67% were in Kasinyi village; 18% in the neighbouring villages of Uduk II, Kisomere, Kirama and Kigwera; and 13% in wider Buliisa District (predominantly within Ngwedo and Kigwera sub counties).

Health Seeking Behaviours

Health seeking behaviour refers to how people use health services and can be influenced by a number of factors including socio-cultural traditions and beliefs, distance to health facilities, costs of services, education levels and capacity of the services.

According to the health facility in-charges interviewed as part of the 2015 SHBS and 2016 baseline survey, women and children form the majority of those that seek health care at the facilities. Men tend to come only when they are in the advanced stages of an illness. People located in remote rural areas were also reported to delay treatment seeking and this was attributed to lack of means of transport to access the services, lack of awareness about services available, fear, and uncertainty about costs involved. Self-medication is common with many people reportedly buying drugs directly from drug shops because they think it takes too long to go to health facilities. Facilities also often have drug stock-outs, which means patients have to pay for the drugs from private pharmacies themselves anyway and therefore prefer to go directly to the drug store. This is especially the case for men. Another factor that reportedly deters people from seeking treatment at public health centres is that there is compulsory HIV testing for all patients registering at a health centre and some people do not want to know their HIV status due to fear of stigmatisation if the result is positive.

During the 2016 baseline survey (Ref. 18-22) the district health team and health facility in-charges in Hoima district noted that many migrants coming to Hoima have poor health seeking behaviours due in part to different cultural health practices, illiteracy and low education levels, and also lack of familiarity with the public health system. There is a concern that this is increasing the burden of some diseases like malaria and HIV.

Treatment seeking for malaria

During the 2014 HBA for LA-2, particular interest was put into investigating treatment seeking behaviours and practices for malaria at the household and community level²³. The majority of the households surveyed (62%) with children under five reported that in the last three months preceding the study a child had fallen sick. Almost a half (48%) had fallen sick of malaria. Although for the majority of households treatment was sought for the under-fives, the period of days of seeking treatment from the time the fever/ malaria began varied greatly. A large proportion sought treatment for the under-five the day after the fever or malaria began. The socio-demographic profiles of the households, and particularly those of the heads of household, can potentially influence health seeking behaviours and practices. For instance, the majority (75%) of the households that sought treatment for their children under five more than two days after the fever/ malaria began had heads aged below 20 years. Households with heads who had attained technical or university/ tertiary education sought treatment either on the same day the fever/ malaria began or the next day.

A large proportion of households (46%) sought treatment for malaria at public facilities, followed by private hospital/ clinic (25%). This implies that home-based care models of antimalarial treatment that are supported by Village Health Teams (VHTs) and Community Medicine Distributors (CMDs) are underutilised by most households with children under five in LA-2. Only 8% of the household respondents mentioned VHTs/ CMDs as their source of treatment for malaria among the under-fives. Possibilities of "self-medication" could also be possible given the study findings where about 8% of the household respondents mentioned shop/ vendor and pharmacy/ drug shop as places where treatment was sought for the under-fives.

Most households (84%) reported owning at least two or more long lasting insecticide treated (LLIN) mosquito nets, which had been in use the night before the survey. Although the majority of households indicated having LLIN mosquito nets, 16% of the households with no or only one LLIN mosquito net still remains a relatively large number. In the majority of households (79%) it was reported that all members, regardless of age or household status, slept under the insecticide treated mosquito nets.

²³ Similar data is not available for the wider Study Area.

Treatment seeking for respiratory diseases

The timely seeking of healthcare, especially for acute conditions, has implications for children's survival. The 2014 HBA for LA-2 notes that there were reports of delayed care seeking for respiratory tract infections for children under five. Many respondents sought care for respiratory tract infection in children after a day or longer. Over a third of the household sample respondents (36%) who sought healthcare for a child under five with a respiratory tract infection sought treatment the next day, while a good proportion (28%) sought treatment after two or more days. A small proportion didn't seek healthcare at all. Treatment was commonly sought at public health facilities (56%), private clinics (25%) and VHTs (4%). A few (2%) used herbs or traditional medicine.

Health Inequities

Respondents to the 2016 baseline survey from health facilities and district health teams noted that women, children and the elderly are the most vulnerable to poor health. Several reasons were given for this including the fact that women and children generally spend more time at home in poor living conditions; women do not have the financial resources to seek medical treatment; and children, especially under-fives have lower immune systems and this is exacerbated by poor nutrition. A study on the causes of health inequalities in Uganda found that child nutritional status is linked mainly to household income status and level of maternal education (Ref. 18-39). Villages that are far from health centres are also underserved and are reported to have lower health status due to the long time it takes and costs involved in reaching health facilities for treatment.

18.5.3.4.10EHA 10: Cultural Health Practices

Traditional and Complimentary Medical Practitioners (TCMP) are present throughout Uganda and include:

- Those practicing and providing exclusively herbal remedies;
- Bone-setters;
- Spiritualists (both affiliated with traditional cosmology and Christianity and Islam); and
- Traditional Birth Attendants.

Information about the types of natural resources including plants and animal parts used in traditional medicine is detailed in **Chapter 19: Ecosystem Services, Chapter 16: Social and Chapter 17: Archaeology and Cultural Heritage.**

There is considerable ambiguity about the role of TCMP in health seeking behaviour and underreporting of their use and perceived importance in formal surveys is likely. Successive Demographic and Health Surveys have suggested that use of them is limited (with less than 5% of people saying that they are used as a source of service provision) whilst other sources suggest that up to 60% of people may visit TCMP before seeking care from the formal sector. (Ref. 18-40 and Ref. 18-16)

During the 2016 baseline survey, respondents in Hoima and Buliisa reported that use of traditional medicine is still widespread. Slightly over a tenth (12%) of respondents in the 2014 HBA reported that they or any other household member saw a traditional healer due to symptoms related to diseases. Almost the same proportion of respondents (12%) noted that they were taking some form of herbal or traditional remedy for the symptoms. Continued use of traditional medicine is thought to be mainly due to cultural beliefs and misinformation about modern healthcare practices. In several FGDs during the 2014 HBA participants also noted that drugs are not always available at the health facilities, and hence they resort not only to buying from drug shops but also using herbal medicines. The district health team in Buliisa district also noted that there is widespread advertising for traditional healers' services on radios and in print media.

Traditional healers noted that they do not see any conflict between use of traditional medicine and western medicine and that they sometimes refer patients to health centres if traditional medicines fail and vice versa. Health professionals report, however, that use of traditional medicine delays health seeking behaviour and can contribute to poor health outcomes due to poor management of preventable and curable diseases. District health teams noted that they are working with community

groups and local authorities to try and discourage use of traditional healers and to raise awareness about the formal health sector (Interview with Buliisa District Health Team, Tilenga ESIA SHBS, November 2016).

Traditional healers are not registered with district authorities. The 2014 HBA for LA-2 reported that a reasonable proportion of respondents (37%) knew at least one traditional medicine provider in the community and an even higher proportion (78%) of respondents knew where to find medicinal plants within their community. A traditional healer interviewed from Beroya village in Buliisa stated that there is at least one traditional healer in every village in Buliisa but this was not verified. Traditional healers reported that they treat patients from both within and outside their districts, and that patients of all age groups, ethnicities and genders use their services. Medicinal plants were available in Hoima and Buliisa but were reported to be more available in the former than the latter.

Traditional healers claim to treat most diseases and injuries including coughs, wounds, malaria and mental illness, as well as fertility. Respondents to the 2014 HBA cited a range of diseases that they perceived would respond well to treatment by herbal medicines, including malaria (31%), diarrhoea (14%), STIs (31%), HIV and cancer. Overall, 65 % of respondents noted that traditional medicine was highly effective or effective in the management of some illnesses.

In Kigwera Health Centre II it was reported that traditional birth attendants are still widely used by women in place of health centres for pregnancy care and delivery. The health centre delivers approximately 300 babies per year but noted that the figure should be closer to 700. Factors deterring women from going to the health centres include that they have to pay to deliver there and they must also be tested for HIV, which some women do not want due to stigma associated with testing positive. Village health teams are trained to work with pregnant women to encourage them to use health centres (Interview with HC in-charge, Kigwera HC II, Tilenga ESIA SHBS, December 2016).

18.5.3.4.11EHA 11: Health Services Infrastructure Capacity including Programme Delivery

Health Facilities Overview

The number and distribution of national health facilities in the regions of the Study Area (Northern, Western and West Nile regions) are highlighted in Table 18-9. There are a total of 1,255 health facilities serving the Western Region, 817 serving the Northern region and 292 serving the West Nile region. The Regional Referral Hospital for Buliisa is located in the neighbouring Hoima District; Gulu Hospital serves Nwoya District; and Arua Hospital serves the West Nile region where Pakwach Municipality is located. District hospitals are located in Buliisa, Masindi and Nebbi.

Table 18-9: Public health facilities in Northern, Western and West Nile Regions Uganda

Area	HCII	HCIII	HCIV	General Hospital	Regional Referral Hospital	National Referral Hospital	Total
Western Region	774	376	67	34	4	-	1,255
Northern Region	484	271	31	27	4	-	817
West Nile Region	151	122	9	9	1	-	292
National	2,941	1,289	197	144	14	2	4,587

Source: Ref. 18-41

All facilities in the Study Area provide outpatient (OPD) services while in-patient care services are provided by all the hospitals, HC IVs, most of the HC IIIs and a few HC IIs. Health facilities available within Buliisa District are outlined in Table 18-10.

Table 18-10: Health Units in Buliisa District by Type and Location

Sub-County	HC II	HC III	HC IV	Hospital	Total
Biiso	-	Biiso	-	-	1
Buliisa S/C	-	Bugana	-	Buliisa General Hospital	2
Buliisa TC	-	-	Buliisa	-	2
	Uganda Martyrs (private)	-	-	-	
Butiaba	Butiaba*	-	-	-	3
	Bugoigo	-	-	-	
	Marine Military (private)	-	-	-	
Kigwera	Kigwera	-	-	-	1
Kihungya	Kihungya	-	-	-	1
Ngwedo	Avogera*	-	-	-	2
	-	-	-	-	
Total	7	2	1	1	12

*Although officially designated a HCII, the health centres in Avogera and Butiaba operate as HCIIIs. Plans to officially upgrade these facilities to HCIII levels are underway however there have been delays in appointing and posting additional human resource. Source: Ref. 18-30 updated based on findings from 2016 baseline survey.

Buliisa General Hospital was constructed by Tullow Oil and handed over to the MoH in March 2014. It is now fully functional and was recently integrated into the MoH facilities, medicines and equipment supply system. It is, however, at the time of writing still operating at minimal capacity as it is yet to be equipped appropriately and staffed. Within Buliisa Sub County a new HC III, Bugana Health Centre III, was opened in Financial Year (FY) 2016/2017 (Ref. 18-42).

In addition to the officially designated health facilities in Buliisa, it is not uncommon for Buliisa residents to attend other health facilities in neighbouring districts, largely because of better access as well as better capacity for service delivery compared to facilities within Buliisa. During the 2015 SHBS health facilities that were cited as commonly used by Buliisa residents included Pakwach HC IV, Angal Hospital, Anaka Hospital and Masindi Hospital. During the 2016 baseline survey, however, the health centre in-charge in Masindi Hospital noted that the number of patients from Buliisa going there had decreased since the opening of Buliisa General Hospital.

There are two HC IIIs and five HC IIs serving Hoima Municipality as well as Hoima Regional Referral Hospital. There are 17 government health facilities providing health services in Masindi Municipality (five HC IIs, one HC III and one hospital) and in Nwoya, specific to Purongo and Got Apwoyo Sub Counties (eight HC IIs and two HCIIIs). The exact number of registered private health facilities in these areas is not known, as these keep changing faster than the district registration process can process; however, in Masindi Municipality, it was reported that the number could range from 10 to 15 private health facilities.

In Hoima Municipality there are estimated to be approximately 30 private facilities comprising seven main medical centres run under doctors (including four with in-patient facilities) and several smaller centres run by clinical officers or midwives, as well as several private pharmacies. Referrals from public health facilities to private facilities are reported to be common (Interview with private medical practices, Hoima Municipality, Tilenga ESIA SHBS, November 2016).

Specific to the Study Area of Hoima Municipality, Masindi Municipality, Pakwach TC and Nwoya (Purongo and Got Apwoyo Sub Counties), there were 12 health facilities visited during both the 2015 SHBS survey and the 2016 baseline survey. During field work for the 2015 SHBS, nine health facilities serving the Study Area were visited and assessed: seven in Buliisa District, one in Nebbi District (Pakwach) and one in Hoima District. During the 2016 baseline survey three more health facilities in two additional districts (two in Nwoya and one in Masindi districts) were visited. These are presented in Table 18-11.

Table 18-11: Health Facilities visited during 2015 and 2016 Baseline Surveys

Name of Facility	Type of Facility	Location	Estimated Catchment of Population in 2013	Survey
Kigwera HC	Health Centre II	Kigwera, Kigwera	14,024	2015 SHBS 2016 baseline
Bugoigo HC	Health Centre II	Bugoigo, Butiaba	9,738	2015 SHBS
Kihungya HC	Health Centre II	Garasoya, Kihungya	12,311	2015 SHBS
Latoro HC	Health Centre II	Latoro Parish, Got Apwoyo Sub county	13,489	2016 baseline
Avogera HC	Health Centre III	Avogera, Ngwedo	13,714	2015 SHBS
Biiso HC	Health Centre III	Biiso, Biiso	16,555	2015 SHBS 2016 baseline
Purongo HC	Health Centre III	Purongo Sub County	27,302	2016 baseline
Buliisa HC	Health Centre IV	Central Ward, Buliisa	10,437	2015 SHBS 2016 baseline
Buliisa Hospital	District Hospital	Kigoya, Buliisa TC	105,000	2015 SHBS 2016 baseline
Pakwach	Health Centre IV	Jonam County, Pakwach	128,000	2015 SHBS
Masindi General hospital	General(District) hospital	Masindi Municipality, Central Division	292,951	2016 baseline
Hoima Hospital	Regional Referral Hospital	Hoima, Hoima TC	2,230,000	2015 SHBS 2016 baseline

Source: Tilenga ESIA research

Constraints faced by Health Facilities

The major challenges faced by health facilities visited in the Study Area during the course of the 2014 HBA, 2015 SHBS and 2016 baseline survey can be summarised as follows:

- Inadequate human resource capacity. Nearly all public facilities lacked sufficient human resource capacity both in terms of numbers and training. Staff inadequacies were mostly associated with poor remuneration;
- Inadequate accommodation facilities for health workers where several facilities had few staff houses, which made it difficult to have adequate numbers of staff on site. This further constrains the ability to deliver 24 hour emergency services, and to some extent the delivery of comprehensive healthcare services;
- Lack of transport facilities to conduct activities such as outreaches and follow-up of mothers on elimination of Mother to Child Transmission (eMTCT) and most importantly referral of emergency and complicated cases. The poor road network and poor road conditions in most parts of the Study Area causes delays in accessing and delivering healthcare services;
- Consistent stock-outs of medicines and supplies resulting from the inadequate stock supply from the National Medical Stores, especially the Push System. This system does not take into

consideration the changes in disease burden and added medical needs since what is supplied is already pre-determined;

- The number of patients receiving care at facilities is growing and yet the infrastructure and staff is not adequate to handle the patient workload appropriately. For example, in Buliisa Health Centre IV, the delivery ward is small with only two delivery beds for a facility that handles over 20 deliveries in a week;
- Given the increasing in-migrations and out-migrations in the Study Area, language barriers between patients and service providers are on the increase especially in parts of Buliisa and Hoima dominated by the Alur. This has affected communication between service users and providers;
- Shortages of safe and clean water were reported to affect service delivery;
- Inadequate financial support towards primary health care among lower level health facilities hinders the provision of comprehensive healthcare packages;
- Doors and windows of most facilities generally lacked screening from mosquitoes and none of the facilities has the resources to provide mosquito nets to patients. It is therefore likely that malaria transmission occurs commonly in health facilities, especially among admitted patients; and
- A major concern is that there is only one functional ambulance serving Buliisa District.

With the exception of Buliisa Hospital, lack of space was reported as a major challenge for all health facilities, and its effects were evident during the facility visits undertaken for the 2015 SHBS and 2016 baseline survey, including the following observations:

- In Buliisa HC IV, an admitted pregnant woman was sleeping on the floor of a store. This was because the appropriate admission ward was being used as the antenatal clinic, post-natal clinic and waiting room for all other maternal services;
- In Biiso HC III the waiting area for patients was too small to hold all patients. Numerous patients were found standing or sitting outside the facility building as they waited to be attended to. There was also considerable crowding at the laboratory and pharmacy areas at this facility;
- The scarcity of space greatly affects storage in several facilities. Appropriate designated storage for medicines, consumables or/ and equipment was lacking, and in Bugoigo HC II was found to be grossly inadequate and a significant risk for facility-acquired infections; and
- At all health facilities except Hoima RRH, there were no imminent plans to address the problem of lack of space. Construction was ongoing in Hoima RRH at the time of study field visits and this was expected to greatly improve but not solve the space constraints of the facility. Notably, at this regional hospital, which is designed to provide specialised care and serves six districts with a total estimated population of 2.23 million, there is no mortuary.

Service Availability

This section describes the ability of facilities to provide preventive, treatment/ curative and other critical services for diseases/ health conditions of public health importance. Notable healthcare service components that were found missing in the assessment of health facilities in the Study Area included surgical services, blood transfusion and ambulances to respond to emergencies. These results are corroborated by MoH reports (Ref. 18-43) which revealed that less than 30% of the HC IVs in the country provide emergency services like minor operations, caesarean sections, and blood transfusions.

A summary of health service delivery capacity is provided below:

- **Vaccination:** All facilities reported routinely providing recommended vaccination services for children aged up to one year old. Cold boxes were observed in all facilities, all of which were kept within the recommended temperature range of between 0 and 4°C;

- **Family planning and antenatal care:** All facilities provide family planning services and basic antenatal care, however it was noted that essential equipment for providing adequate quality of antenatal care, such as blood pressure machines, were missing. According to MoH guidelines for service delivery, HC IVs and all hospitals are expected to perform caesarean section deliveries. Only Masindi hospital, Hoima RRH and Pakwach HC IV (all outside of Buliisa district) provide comprehensive antenatal care (ANC) and caesarean section deliveries. This means that there is no capacity within Buliisa district to undertake even emergency caesarean section deliveries. Other aspects of comprehensive ANC care are lacking such as the ability to manage life-threatening complications of pregnancy such as pre-eclampsia/ eclampsia (severe hypertension in pregnancy) and bleeding in pregnancy;
- **Surgical and emergency services:** Notably, none of the health facilities in Buliisa can conduct surgeries, blood transfusions or deal with mass casualty incidents. In the wider Study Area minor and some major surgical services are available in Hoima at Hoima RRH, Azur Christian HC, and six other registered private clinics; at Masindi General hospital; and at Pakwach HC IV. Basic surgical procedures (incision, drainage, wound suturing) are also done at Buliisa HC IV. Blood transfusion services were available at Masindi hospital, Hoima regional referral hospital, and Pakwach HC IV. Masindi hospital and Hoima RRH are the only units with capacity to deal with serious burns. Pakwach HC IV has experience in handling road traffic accident cases including mass accidents;
- **Safe Male Circumcision:** Through the assistance of a district-wide health partner organisation – the Infectious Diseases Institute – Safe Male Circumcision services for prevention of HIV are available at most health centres either on-site (HC IIIs and above) or linked to the facilities by a referral or outreach mechanism (HC IIs);
- **HIV counselling, testing and treatment:** HIV testing is routinely done at all facilities. Seven of the twelve facilities (Buliisa HC IV, Biiso HC II, Pakwach HC IV, Purongo HC III, Latoro HC II, Masindi hospital and Hoima RRH) visited during the 2015 and 2016 surveys have HIV treatment and follow-up clinics. At HC IIs, which are not mandated to provide Prevention of Mother to Child Transmission (PMTCT) and comprehensive HIV care services, patients found to be HIV-infected are appropriately referred to facilities that provide comprehensive HIV/AIDS care. However, there is no mechanism to track the linkage between testing and enrolment into care, which is important to ensure that those who test positive are enrolled into treatment programs. Health workers at Kihungya HC II and Avogera HC III reported that it is likely that many patients who test positive at these sites do not enrol into care either because of associated stigma or poor access to treatment programs. This has important implications for the spread of the disease. With the exception of Avogera HC III, other HC IIIs and above provide comprehensive PMTCT and HIV care services. Avogera HC III is being upgraded to provide these services;
- At the time of the 2016 assessment, there were 69 health facilities in the Study Area districts that were accredited by MoH to provide ART services. These included 3 facilities in Buliisa, 4 facilities in Nwoya, 28 facilities in Hoima, 14 facilities in Masindi and 20 facilities in Nebbi. These facilities included both government and non-government organisations providing ART services. Specific to Buliisa, all the accredited facilities except Avogera and Butiaba had providers with skills in prescription of ART and provided treatment follow-up for ART clients. CD4 monitoring for HIV clients was being done at all the accredited health facilities except Buliisa general hospital and Kisaru Mission Clinic. These facilities refer their clients to other facilities for CD4 monitoring;
- **Malaria:** All facilities routinely diagnose and treat uncomplicated malaria. HC IIs and IIIs are able to recognise symptoms and signs of complicated/ severe malaria, to give the first dose of medication, and to refer patients appropriately. Village Health Teams are being trained to test and treat malaria;
- **TB and Upper Respiratory Tract Infections (URTI):** TB screening, treatment and follow up services were widely available in most public health facilities in the Study Area. Most facilities make referrals to the regional hospital after screening. Only one private clinic and 30% of the NGO/ Mission clinics visited during the 2014 HBA provided TB treatment and follow-up services.

All facilities also routinely diagnose other URTIs (such as pneumonia, cough, and asthma), but only HC IIIs, HC IVs and hospitals are able to manage pneumonia. Non-pneumonia/ URTIs are routinely managed at all health facilities;

- **Other infectious diseases:** Almost all health facilities manage a spectrum of infections including ringworm and other skin diseases, eye infections and waterborne diseases like typhoid and cholera. Health facilities providing treatment for tetanus and yellow fever were limited;
- **Tropical diseases and non-communicable diseases (NCD):** There is a severe lack of capacity to manage Schistosomiasis, NCDs, and almost no capacity to manage cancers. Cancer services were available at only 18.7% of all public and registered non-government facilities servicing LA-2, (including Hoima Regional Referral Hospital). The majority of the facilities with cancer services provided only screening of cervical cancer and breast cancer (Ref. 18-6);
- **Zoonotic diseases:** Few health facilities visited in the 2014 HBA provided treatment for rabies, but did provide treatment for other zoonotic diseases, and particularly Brucellosis. Only the HC IIs and approximately 64% of HC IIIs lacked treatment services for brucellosis/ undulant fever;
- **Mental health services:** Mental health services are provided in the HC IVs and hospitals as well as in a small proportion of private clinics and NGO/ Mission clinics. Buliisa General Hospital provides outreach programs to sensitise communities on the issue of mental health;
- **Epidemic response:** Uganda has a standing multi-sectoral and multidisciplinary task force on epidemics (The National Task Force), which is coordinated by MoH and chaired by the Director General of Health Services. All Districts have task forces composed of the district political, civic, and health leaders and agencies operational at district level. Epidemic task forces are often merged with District Disaster Committees, which have a wider remit to consider potential and man-made hazards and risks more widely. These entities operate in Buliisa and Nwoya Districts and have previously played a role in coordinating response to cholera outbreaks and preparedness for potential viral haemorrhagic fever outbreaks.

Maternal and Child Health Services

The 2014 HBA reports that maternal and child health (MCH) services such as family planning, antenatal care and treatment of children aged under-five were found at 85.9%, 62.5% and 84.4% of all public and registered non-government health facilities in LA-2 respectively (Ref. 18-6). Within facilities serving CA-1 and the wider Study Area²⁴, 100% of facilities surveyed as part of the 2015 SHBS and 2016 baseline survey offered family planning, antenatal care and treatment of children aged under-five.

Uganda has historically had one of the highest maternal death rates in sub-Saharan Africa. Maternal Mortality Rates expressed as the number of deaths per 100,000 live births was 360/100,000 in 2013, and was estimated to be 343/100,000 in 2015 (Ref. 18-9). By contrast, France was estimated by the WHO to have maternal mortality rate of 8/100,000 in 2015 (Ref. 18-44). It has been estimated that for every maternal death at least six other women survive but with chronic and debilitating ill health (Ref. 18-45). Most deaths are due to factors directly related to pregnancy and childbirth such as bleeding, obstructed labour, infection, and pregnancy related hypertension, whilst others are due to associated causes such as malaria, anaemia and hepatitis, which are exacerbated by pregnancy. It has been recognised that concerted efforts need to be made to address maternal mortality. One of the key challenges associated with this is that it requires substantial improvements in health infrastructure and service delivery in order to be able to deal with issues such as post-partum haemorrhage and obstructed labour.

Data on a number of key antenatal and post-natal care service delivery indicators for the districts covered in the Study Area (Masindi, Nebbi, Hoima, Nwoya and Buliisa) are highlighted in Table 18-12. The findings suggest that despite progress being made, substantial improvements are still required.

²⁴ This covers Hoima Regional Referral Hospital, Avogera HCII, Kigwera HCII, Biiso HCIII, Purongo HCIII, Masindi General Hospital Buliisa Hospital and Buliisa HCIV

Table 18-12: Selected service delivery indicators, ante- and post-natal care in the Study Area

Indicator	Buliisa	Masindi	Nebbi	Hoima	Nwoya	National Target
Attended ANC at least 4 times during last pregnancy	50.0%	60.5%	40.0%	45.6%	45.8%	80%
Delivered their last baby in a health facility	56.8%	57.9%	69.5%	63.2%	69.8%	80%
Were assisted by a skilled health worker during last delivery	56.8%	59.7%	73.7%	64.0%	71.9%	60%
Vitamin A supplementation within 2 months of last delivery	53.7%	71.4%	74.7%	59.7%	60.4%	100%

Source: Ref. 18-36 (LQAS assessments measured a statistical sample with 95% confidence interval)

The 2014 HBA reports that slightly over half (51.1%) of facilities that had ANC services offered it daily. However, the availability of ANC clinical protocols, educational materials and appropriate equipment in adequate numbers was markedly low. About 40% had the above listed ANC supplies in adequate numbers.

Referral for women with complications was done by 73.2% of all facilities in LA-2 and by 100% of the public facilities that service CA-1 and the wider Study Area surveyed as part of the 2015 SHBS and 2016 baseline survey. It should be noted, however, that while facilities may be able to make referrals, the majority lack the means to actually transport patients. Limited capacity to identify and make proper referral for women with complications was reported at Kaseta HC III, 45.8% of private clinics and 30% of NGO/Mission clinics providing ANC services (Ref. 18-6). In Nwoya, Pakwach Health Centre IV in Nebbi District is a key referral point for people in Purongo sub-county as it has capacity to provide comprehensive maternity services including blood transfusions.

Child Health Services

Most health facilities are supposed to provide preventive and curative care for children. Results from the 2014 HBA, 2015 SHBS and 2016 baseline survey showed that sufficient capacity exists among health facilities in the Study Area to provide comprehensive and general paediatric care services. Overall, the majority of the public health facilities provide treatment of malnutrition, de-worming, diagnostics and treatment for common cough, fever and diarrhoea, and monitoring of child growth. The management of child malnutrition, and particularly the severe forms, was mainly available at HC IV and hospital levels.

Routine vaccination for children under five constitutes the key strategy for reducing vaccine-preventable diseases and mortality. Overall, 54% of surveyed facilities in the 2014 HBA offered routine child immunization, comprised of 78% of government facilities, slightly over 50% of the NGO/Mission clinics, and 20% of the registered private clinics providing vaccination services. Of the government health facilities surveyed as part of the 2015 SHBS and 2016 baseline survey, 100% offered routine child immunization²⁵. Data on the uptake of a number of selected health interventions focused on children under five are provided in Table 18-13.

²⁵ This includes routine measles immunization, routine DPT-Hib+HepB immunization (pentavalent), BCG immunization, and pneumococcal immunization.

Table 18-13: Selected service availability and delivery indicators for child health in the Study Area

Indicator	Buliisa	Masindi	Nebbi	Hoima	Nwoya	National Target
Percentage of children aged 12-23 months that are fully vaccinated before their first birthday	36.8%	60.5%	46.3%	69.3%	79.2%	80%
Percentage of children aged 12-23 months receiving Vitamin A supplementation in last six months ²⁶	71.6%	66.7%	64.2%	78.9%	81.2%	80%
Percentage of children 0-59 months with diarrhoea in the last 2 weeks and who received Oral Rehydration Solution (ORS) within 24 hours of onset	-	-	-	-	27.3%	80%

Source: Ref. 18-36 (This data is used as HMIS data sets on these indicators are currently unreliable.) (LQAS assessments measured a statistical sample with 95% confidence interval.)

Health Facility Infrastructure

Most health facilities in the Study Area have a full package of the basic infrastructure for patient care, including a reception point, a triage area, consultation rooms, drug dispensing area, a functional laboratory, and a records and data room. Results of an assessment of available facilities in the health facilities assessed in the 2015 SHBS, 2014 HBA and 2016 baseline survey are provided in Table 18-14.

Table 18-14: Availability of amenities in the assessed health facilities

Amenity and Definition of Adequacy	Findings	
	2016 Baseline Survey and 2015 SHBS	2014 HBA
Water supply: <i>Consistent availability of safe water for use for the facility operations.</i>	<p>All facilities relied on boreholes or piped treated water for their primary source of water.</p> <p>Adequate water supply was reported in Masindi hospital, Buliisa Hospital, Buliisa HC IV, Avogera HC III and Kigwera HC II.</p> <p>Supply problems were mainly related to breakdown of boreholes, lack of water source dedicated to the facility (shared boreholes) and shortage of running water from piped water sources.</p>	<p>Nearly half (43.3%) of the private clinics either obtained their water from a protected well, a borehole or a standpipe.</p> <p>More than half of facilities had a water source within 500 meters of the health facility.</p> <p>62.5% of HC IIs and 45.5% of HC IIIs obtained their water from rainwater harvest tanks.</p> <p>Only 25% of HC IIs and 9.1% of HC IIIs had piped water. It was mostly the HC IVs, the two hospitals and non-government facilities located within Hoima Municipality that had piped water.</p>

²⁶ Vitamin A supplementation amongst children under five has been found to result in a 20% reduction in all cause child mortality

Amenity and Definition of Adequacy	Findings	
	2016 Baseline Survey and 2015 SHBS	2014 HBA
Sanitation: <i>The presence of functional toilet facilities for patients.</i> <i>The presence of separate functional toilet facilities for staff</i>	Ten of the twelve facilities reported having adequate sanitation facilities. Kigwera HC II and Kihungya HC II had shared toilets for health facility staff and patients.	Two out of 11 of HC IIIs did not have a functioning toilet. All other public and private facilities had adequate sanitation facilities.
Power supply: <i>Availability of power almost all the time for use for the facility operations (occasional loss of power was counted as adequate).</i>	All health facilities had at least one source of power but while all had solar panels installed this did not translate into consistent power supply at all sites. Only five facilities (Masindi hospital, Avogera HC III, Pakwach HC IV, Buliisa Hospital and Hoima RRH) reported having consistent power supply for critical facility needs ²⁷ .	All health facilities had at least one source of power. None of the HC IIIs reported having either fuel or battery operated generators but they did have a solar system and back-up lighting.
Communication: <i>Ability of the facility to communicate externally in real time for all facility needs - this included presence of a facility phone, radio call or a budget for communication that was considered adequate for facility communication. Email access was also assessed.</i>	Only Hoima RRH and Masindi hospital reported having adequate communication. They were the only facilities with 24 hour access to a phone (facility-owned) and regular internet access. One of the other facilities had a phone dedicated to facility needs and while all reported having a budget for Global System for Mobile Communications (GSM) airtime this was said to be either inadequate and or inconsistently provided.	Communication aides particularly radio call gadgets, internet and telephone supported by health facilities were nearly non-existent. Only two public health facilities i.e. Hoima regional referral hospital and Bugoigo HC II in Buliisa had an official mobile phone at the time of the assessment. Landlines, radio call gadgets and internet services were not available in any of the 20 public health facilities in LA-2. Similarly, among non-government health facilities, availability of official mobile phones and landlines was not universal. Only 17 out of the 30 private clinics had an official mobile phone while landlines were available in only five private clinics. Of the 11 NGO/ Mission clinics, only two had an official mobile phone and a landline telephone. Overall, infrastructure to support 24-hour emergency services was mostly available in hospitals and HC IVs, and in large PFP clinics.
Transport: <i>Consistent availability of means of transport for the facility to meet its transport needs e.g. to conduct community health programs, pick medicines and supplies from the district. This did not include ambulance services for patients.</i>	Only two of the facilities had adequate transportation for facility operations. Apart from Masindi hospital, Pakwach HC IV and Hoima RRH, no other facility had a car at their disposal and those with motorcycles or cars reported that they were out of service. This mainly affected the facilities' ability to conduct community health programs.	Not available.

²⁷ Examples of the effects of inadequate power included at Kigwera HC II where deliveries are conducted under candle light because the labour ward is not powered, and at Biiso, HC III where a new maternity ward was built in 2012 but is not powered yet and thus this area is used only during the day. After dark, an older smaller unit is used.

Amenity and Definition of Adequacy	Findings	
	2016 Baseline Survey and 2015 SHBS	2014 HBA
<p>Ambulance services: <i>Availability of ambulances to pick up and transport patients.</i></p>	<p>One ambulance based at Buliisa HCIV serves the entire district. The facility is unable to run the ambulance independently therefore referred patients are required to pay for fuel for their referral. Approximately 7 in 10 referred patients are able to pay for transport; the others have to find their own form of transportation.</p> <p>The most common emergencies requiring referral are pregnant mothers who need caesarean section delivery. Others are serious accident patients and severely anaemic children.</p> <p>Kigwera HC II, Kihungya HC II, Avogera HC II and Bugoigo HC II possess village ambulances (these are wheeled compartments that attach to motorcycles) but no motorcycles (pullers) thus none of them are in use (see Figure 18-4). Biiso HC III has an ambulance that had been out of service for three years at the time of the 2015 SHBS.</p> <p>Pakwach HC IV has an ambulance. Patients have to pay for fuel. It was not available to transport patients at the time of the 2015 SHBS because no driver was available.</p> <p>The District Health Officer in Hoima (interviewed in November 2016) noted that most facilities in the district do not have a functioning ambulance, including the RRH²⁸. The 2015-2020 District Development Plan includes plans for procurement of three ambulances for the district's HC IVs, however, this is currently an unfunded budget item.</p> <p>At least one private medical facility in Hoima Municipality (City Medical Centre) possesses an ambulance.</p> <p>Masindi General Hospital possesses one ambulance, which was available and functioning at the time of the health facility assessment (December 2016).</p>	<p>Three HC IIs²⁹ possess an ambulance to respond to emergencies, one HC IV (Buliisa HC IV), and one Hospital (Hoima RRH).</p> <p>Six private clinics and three NGO clinics possess ambulances.</p> <p>Lack of ambulances highlighted as a key factor affecting effective service delivery in public and private health service providers.</p>

²⁸ This contradicts the findings from the 2014 HBA, which note that Hoima RRH possesses an ambulance. It is understood, however, that the ambulance was procured in 2007 and has very high maintenance costs and there are concerns it will break.

²⁹ It should be noted that ambulances possessed by HC IIs refer to three wheeled bicycle ambulances.

Amenity and Definition of Adequacy	Findings	
	2016 Baseline Survey and 2015 SHBS	2014 HBA
<p><i>Waste management</i> <i>Availability of adequate medical waste disposal facilities. Observed condition of medical waste disposal sites.</i></p>	<p>Waste disposal in all visited facilities was mainly done by open burning. Even though Masindi hospital had an incinerator, this was not being used because no one had been trained to operate it.</p>	<p>Disposal of medical waste other than sharps was done in various ways. Up to 40.6% of facilities were using open burning, while incinerators were found in only 21.9%, and 18.8% had protected grounds/pits. Overall, few facilities (6.2%) used open pits to dispose medical waste. Open pits were found in 37.5% and 9.1% of HC IIs and HC IIIs respectively. None of the non-government facilities used open pits to dispose medical waste. For most of the facilities, the disposal points exhibited and denoted good waste management practices. In 42.9% of the facilities, no waste was visible at the disposal point while at another 42.9%, the waste was visible but protected. Only 14.3% of facilities, majority HC IIs (37.5%) and HC IIIs (20%) had visible and unprotected medical waste. Unprotected medical waste was seen at Butiaba HC II, Avogera HC II, Biiso HC III, Buhanka HC III, DHO's Clinic, Sunrise Clinic, Desire Medical Centre, Kings Medical Centre and Peace Community Health Centre.</p>

Source: Ref. 18-3; Ref. 18-6; 2016 baseline survey



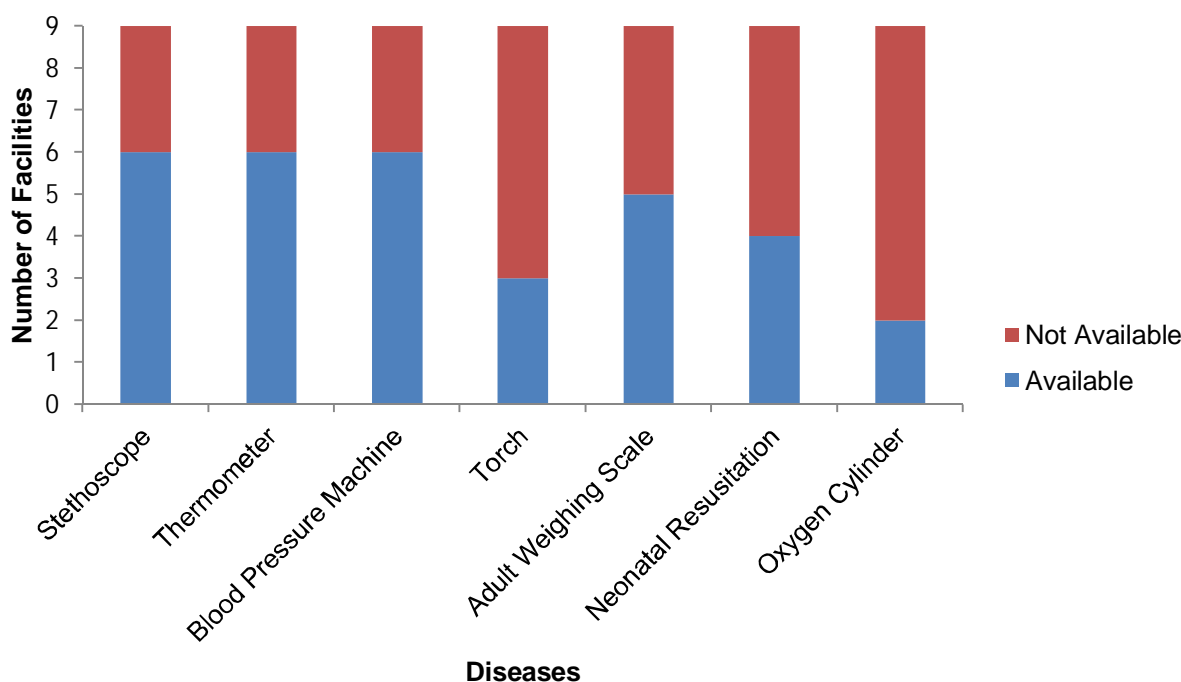
Figure 18-4: Out of use village ambulance at Kigwera HCII

Equipment availability

Availability of basic equipment in facilities assessed is represented in Figure 18-5. Basic equipment such as thermometers, weighing scales, blood pressure (BP) machines and stethoscopes was found to be available in all hospitals, HC IVs and NGO/ Mission clinics visited as part of baseline surveys. It was mostly the government HC IIs and HC IIIs and a few private clinics that lacked thermometers, weighing scales, BP machines and stethoscopes. Sterilizers were the least available. None of the Health Centre IIs visited for the 2015 SHBS, with the exception of Kihungya HC II, had the full range of the most basic equipment necessary for services that are supposed to be offered at these sites, such as stethoscopes and BP machines.

Imaging equipment such as X-ray and ultra sound scanners were found only at Masindi hospital, Hoima regional referral hospital, Azur Christian health centre and EDPA medical centre - private clinics operating in Hoima Municipality. The lack of an X-ray machine in Buliisa is a major concern as it limits the overall diagnostic and management capacity, including specific capacity to manage respiratory diseases like TB and pneumonias, and injuries such as suspected and confirmed fractures. No facility in the region has an Electrocardiogram (ECG) machine, which is essential for diagnosis and monitoring of cardiac diseases. As a result of this, cardiac diseases are often diagnosed in advanced stage which likely contributes to preventable deaths. Overall, ultra sound scanners were the most common among imaging equipment found.

Despite all facilities offering delivery services, only Buliisa hospital, Pakwach HC IV, Masindi General Hospital, and Hoima RRH had neonatal resuscitation equipment. No facility had adult resuscitation equipment. Only Pakwach HC IV, Masindi hospital and Hoima RRH reported having oxygen cylinders. Overall there is a dire lack of ability to diagnose and manage emergency conditions.



Source Ref. 18-3 & 2016 baseline survey

Figure 18-5: Availability of basic equipment in health facilities assessed

Availability of medicines

Health facility pharmacies/ dispensaries/ drug stores were visited as part of the 2015 SHBS and 2016 assessment to verify the presence of medicines. Medicines were classified as present if they were observed and not expired. The key findings of these visits were:

- Medicine stock situations varied widely. However, almost all facilities had the basic medicines and critical tracers, including paracetamol, Oral Rehydration Salts, deworming medicines and measles vaccine;
- Likewise, almost all facilities had in stock the first line medicines for treating uncomplicated malaria. In contrast only 50% had injectable artesunate, the recommended first-line for complicated/ severe malaria; a major cause of mortality in Uganda; and
- Despite all facilities conducting deliveries, only 40% of health facilities had in stock injectable oxytocin, a life-saving medicine for the control of bleeding in women after delivery. Likewise almost none had magnesium sulphate, which is the recommended drug of choice for women with eclampsia or impending eclampsia (pregnancy-associated severe high blood pressure). Haemorrhage and hypertension are the leading causes of maternal mortality in sub-Saharan Africa and likely Uganda.

Diagnostic capacity

All facilities reported routinely doing confirmatory testing for malaria. Only three facilities visited (Masindi hospital, Buliisa Hospital and Biiso HC III) have the capacity to test for anaemia – a test that is necessary for the confirmation and management of many important conditions such as severe malaria, accidents and burns, and for basic antenatal care in pregnancy. Despite its occurrence in the Study Area, schistosomiasis (bilharzia) is only diagnosed at Pakwach HC IV and Hoima RRH.

Laboratory Services

By regulation, laboratory diagnostic services are provided by facilities at the level of HC III and above for public facilities. The majority of health facilities surveyed as part of the 2014 HBA in LA-2 (including 87.5% of HC IIs) provided laboratory diagnostics. Among HC IIIs, only Tonya lacked laboratory diagnostic services at the time of the survey. Similarly, only 14% of private clinics in LA-2 lacked laboratory diagnostic services. All of the facilities assessed as part of the 2015 SHBS and 2016 baseline survey apart from Kigwera, Bugoigo and Kihungya HCIIIs offered laboratory diagnostics.

HIV rapid testing was available in all facilities surveyed as part of the 2015 SHBS and 2016 baseline survey, and in nearly all health facilities surveyed as part of the 2014 HBA except one HC II in Hoima (Kyaka Peya), two private clinics, and one NGO/Mission clinic. Among parasitology tests, rapid diagnostic test (RDT) for malaria was more common compared to blood slides (BS). All of the public health facilities in Buliisa perform RDTs at their premises and in the wider Study Area only Purongo HC III used microscopy instead of RDT, and one HC II and one HC III in Hoima did not offer RDT. Of the non-government facilities surveyed during the 2014 HBA for LA-2, 90.9% had the RDT for malaria performed at their premises.

Haematology tests, particularly complete blood count (CBC), were not commonly performed. Among public health facilities, CBC was performed at Hoima Regional Referral Hospital, Buliisa General Hospital and Masindi Hospital; two other HC IIIs in LA-2, and Purongo HCIII, the rest did not offer this test. Similarly, among non-government facilities in LA-2, CBC was provided by 53.3% of the registered private clinics and 36.4% of the NGO/ Mission clinics operating in LA-2, the rest were not performing CBC tests.

Chemistry and microbiology tests, such as CD4 count, liver and renal function tests and Cerebrospinal fluid (CSF) analysis, were the least performed lab tests. For instance, liver and renal function tests were performed by only the three government hospitals in the Study Area, Biiso HC III, as well as nine private clinics and Azur Christian health centre in LA-2. Removal of blood for CD4 count for HIV can also be done at Buliisa HC IV and Latoro HC II but the analysis is done off-site (in Hoima or Kampala for Buliisa HC IV and Anaka hospital for Latoro HC II). TB testing services (sputum microscopy) was performed at 72.7% of the HC IIIs (including Avogera and Biiso in Buliisa District); the two HC IVs (including Buliisa HC IV) and hospitals; 50% of the private clinics and 45.4% of all NGO/Mission clinics surveyed as part of the 2014 HBA in LA-2. Additional facilities surveyed as part of the 2015 SHBS and 2015 baseline survey that offer TB testing services (sputum microscopy) were Masindi General Hospital and Pakwach HC IV. Purongo HC III and Latoro HC II offer TB rapid testing (GeneXpert MTB/RIF).

Staffing

The health sector in Uganda has been faced with both acute and chronic staffing shortages. In 2011 the overall health worker to population ratio was estimated to be 1:1,298 as opposed to the WHO standard of 1:439 (Ref. 18-46). The recruitment and retention of health staff remains a major problem despite significant steps being taken to develop a HR Policy under both Health Sector Strategic Plan II (2005-2010) and III (2010-2015). In addition to challenges with recruitment and retention, high rates of absenteeism have plagued the sector with a MoH, Uganda Ministry of Finance and World Bank study in 2009 suggesting that absenteeism cost the health sector an estimated 26 billion Ugandan Shillings (UGX) (approximately 7.7 million United States Dollars (USD)) on an annual basis (Ref. 18-47). The situation in remoter districts without major population centres (such as Buliisa and Nwoya) is far worse than in major centres.

A number of interconnected factors have been found to be mainly responsible for human resource challenges. These include:

- Remuneration: overall levels of remuneration for health workers in Uganda are low even when compared with regional standards. For example; in 2013 it was estimated that a doctor in Kenya was likely to earn up to four times more than his or her counterpart in Uganda.
- Lack of promotional opportunities at Local Government level: Opportunities for promotion and professional advancement are limited at the local Government (district) health facility level.
- Shortage of staff housing: shortages of available staff housing at lower level health facilities have made staff both reluctant to either take up posts in these areas or to stay there – with high rates of absenteeism linked with staff residing in other areas (e.g. District Centres) and commuting to their more remote facilities.

In the Study Area, inadequate staff housing was cited as one of the major problems affecting staff recruitment, retention and absenteeism. Either health workers eligible for housing had no housing units at all (e.g. Kigwera), or there were too few for the available staff (e.g. Buliisa hospital). The lack of housing contributed to poor staff retention and high health worker absenteeism, late arrival/ early departure from the facility resulting in patients not being seen.

In an attempt to address the human resource challenges identified above, the MoH has been carrying out annual audits of health staff since 2009. Under HSSP III, additional resources from both the Government budget and donor partners have been allocated towards trying to address some of the issues related to staff recruitment and retention.

MoH has set staffing levels for the various health facility levels in the country; for instance, the approved staffing norm for regional referral hospitals including administrative and other support staff is 347 people, for district hospitals it is 174 people, for HC IVs it is 50 people, for HC IIIs it is 20 people, and for HC IIs it is 9 people. Comparing the MoH staffing norms and the numbers found in the health facilities operating in the Study Area reveals big deficiencies. For instance, Hoima regional referral hospital had 110 staff denoting a shortfall of 68.3%. The current staffing situation in the districts covered in the Study Area is highlighted in Table 18-15.

Table 18-15: District staffing by number of positions filled (April 2015)

District	Approved norm	Total Filled	Total Vacant	% Filled	% Vacant ³⁰
Buliisa	148	98	50	66%	34%
Nwoya	355	285	70	80%	20%
Hoima	470	331	139	70%	30%
Masindi	544	370	174	68%	32%
Nebbi	699	109	590	16%	84%

Source: Ref. 18-48

The biggest staffing deficiency was observed in Buliisa³¹ general hospital, with only 42 staff compared to the staffing norm of 170 people³² (Ref. 18-49). According to the Buliisa District website (Ref. 18-49), the hospital now has two full time medical officers of the seven expected. At the time of the 2015 SHBS the hospital had two clinical officers instead of eight. The biggest shortage was observed for midwives and nurses; the staffing norm for a district hospital is 48 nurses and 25 midwives, but Buliisa hospital had only four nurses and two midwives. Similar deficiencies were observed at the HC IV in Buliisa. The 2014 HBA found that generally, Buliisa had greater staff shortages than Hoima. This might be because Buliisa is considered a 'hard to reach and hard to stay area', making the recruiting and retaining of health workers difficult.

Overall the non-government facilities in the Study Area were found to have higher human resource capacity than government facilities. The 2015 SHBS reported that while some health facilities had an excess of a particular cadre-group (e.g. midwives) when compared to MoH norms, it was not uncommon that the facility managers reported a scarcity for the same group due to high patient loads. This was especially common in the large and busy facilities: Biiso HC III, Buliisa HC IV, Pakwach HC IV and Hoima RRH. Specific staffing issues reported at the health facilities included:

- Buliisa HC IV, the busiest facility in the district, had four midwife professionals, five enrolled nurses and one nursing officer, which is considered adequate for this level. However the facility manager stated that more nurses were needed to meet the demands of the high patient load and case-mix seen at the facility;
- Similarly Biiso HC III and Pakwach HC IV had 'enough' numbers of clinical officers and nurses for the level according to staffing norms but needed additional nurses and doctors to adequately manage the patient load and case-mix;
- Buliisa and Hoima hospitals had major staffing shortages, although in the case of Buliisa Hospital, there is a funded plan to hire staff as part of the hospitals operationalisation plan. In Hoima RRH there were only 10 out of the 38 recommended medical officers, 81 of the recommended 137 nurses, no anaesthesiologist, and one radiographer compared to the recommended four. The biggest shortages in Hoima RRH were of midwife professionals, anaesthesia staff, radiographers and specialised doctors. In Masindi hospital there were only two out of the seven recommended medical officers and six out of eight clinical officers. Overall Masindi hospital had a staffing shortage of approximately 40 staff;
- In Nwoya, Purongo HC III had two clinical officers, one nursing officer, four enrolled nurses, and one midwife professional, as well as one laboratory technician and one laboratory assistant. Overall, at the time of the 2016 baseline survey, the facility had a staffing shortage of seven technical staff and one support staff. In Latoro HC II, there was one enrolled nurse (qualified as a nursing officer), assisted by one nursing assistant, one askari (guard), one porter, and one health assistant. This represents a shortage of four staff (nursing assistant, health assistant, askari and porter);

³⁰ Overall levels of % posts filled at District Local Government Level (excluding designated municipal areas)

³¹ Similar data regarding hospital facilities in Nebbi District were not available.

³² This is an increase from only 17 at the time of the 2014 HBA.

- These staffing shortages are made worse by the fact that lower level facilities in the region are limited in their functionality, leading to very large patient numbers at the higher-level facilities; This was evidenced by the fact that at the time of the health facility visits³³ there were no patients seen at Kigwera HC II, Kihungya HC III and Avogera HC III while in Buliisa HC IV, Biiso HC III and Hoima RRH there were numerous patients; and
- Bugoigo HC II and Avogera HC III were the only facilities visited during the 2015 SHBS where staffing levels were reported to be adequate.

NGO Support for Health Service Delivery

Most health facilities receive collaborative support from partner organisations to deliver health services, with this support including capacity building, logistics, medical supplies, and community mobilisation. Collaborations were reported at 58.7% of all facilities visited for the 2014 HBA as well as at all government facilities visited as part of the 2016 baseline survey. Among non-government facilities surveyed during the 2014 HBA, collaborations were reported in 43.3% of the private clinics operating in LA-2 and 54.5 % of the NGO/Mission clinics (Ref. 18-6).

Health Monitoring

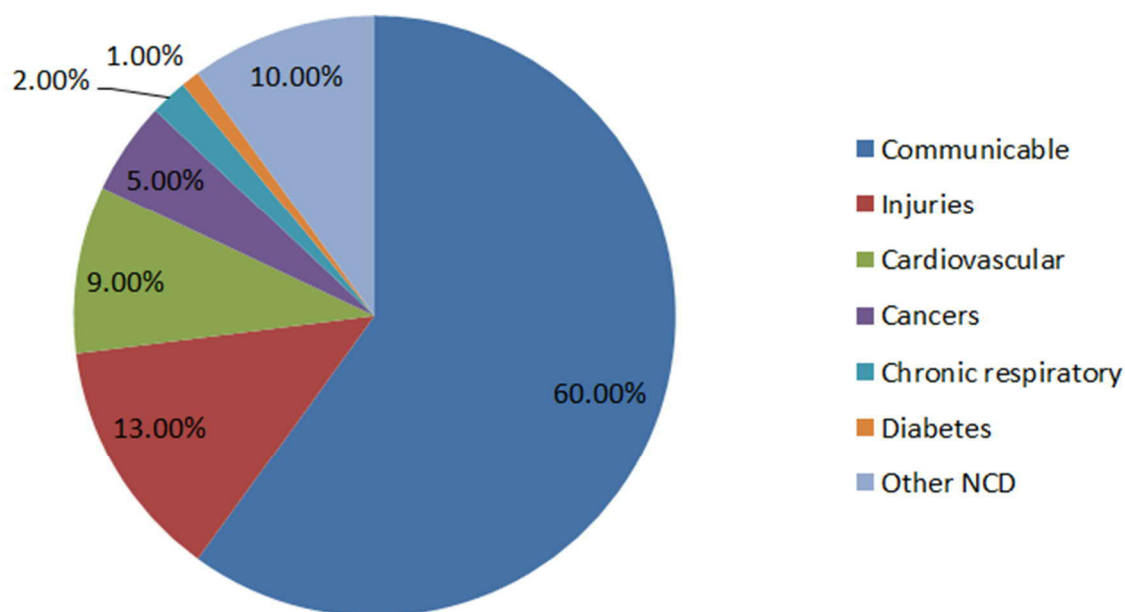
All health facilities that were visited reported collecting data through patient registration, recording of prescriptions and drugs dispensed, as well as completed laboratory tests. However, not all were using HMIS registers. The 2015 SHBS found that HMIS registers were used in public health facilities, 31% of the private clinics, and 81.8% of the NGO/ Mission clinics visited. Others (34.9%) used improvised registers. The collected data is reported mostly to the district and owners/ managers of the facilities.

18.5.3.4.12EHA 12: Non-Communicable Disease

Reports on non-communicable diseases such as hypertension, heart disease, depression, asthma, diabetes, cancer and arthritis were relatively low across the Study Area compared to infectious diseases, though this could be in part attributed to low levels of diagnosis, lack of routine screening, and misdiagnosis at health facilities. Figure 18-6 shows distribution of all causes of deaths of all age groups in Uganda.

The burden of NCDs in Uganda as a whole, and in Buliisa District specifically, appears to be on the increase. According to WHO estimates, NCDs contribute to 27% of deaths in Uganda (Ref. 18-50). According to this data, cardiovascular diseases including hypertension and cancers are the leading NCDs contributing to mortality in Uganda. While the HMIS system is designed to capture data on many of these diseases, constraints at district level in terms of screening and diagnostic capacity means that reliable, routinely collected data is currently unavailable at sub-national level.

³³ All health facility visits were made before 2PM.



Total Annual Deaths = 353,000 NCDs estimated to account for 27% of these

Figure 18-6: Distribution of all causes of deaths in all age groups in Uganda

Anecdotal evidence from health worker interviews during the 2015 SHBS suggests that NCDs are becoming an increasingly important public health concern in the Study Area:

- The medical director of Hoima RRH reported that the number of patients attending the hospital’s hypertension and diabetes clinics is increasing exponentially and the number of patients with cancers, particularly cancers of the cervix, stomach, liver and prostate, is also steadily increasing;
- There is no clear evidence of an increase in chronic respiratory illnesses like asthma or bronchitis, or in mental illnesses;
- Health workers in Buliisa HC IV, Biiso HC III and Buliisa Hospital also reported a rising number of patients presenting with hypertension, diabetes mellitus and cancers, and a limited capacity to manage these patients. For example, the hospital administrator of Buliisa Hospital stated that one of the critical capacity needs of Buliisa Hospital is training of clinicians in the management of NCDs;
- In addition to inadequately trained clinicians in NCD management, lack of imaging equipment such as X-ray machines, echocardiograms and electrocardiogram machinery has negatively impacted control of these diseases. The medical director of Hoima RRH stated that this lack of diagnostic and monitoring equipment continues to affect early diagnosis and effective monitoring and management; and
- The increased NCD burden is likely a result of changes in lifestyle such as increased alcohol intake in the community as well as population aging associated with increased life expectancy.

At national level the only routine NCD surveillance system is for cancers. Under the Uganda Cancer Institute (UCI) a cancer registry was recently set up to capture all cancer cases that arise in the greater Kampala region. UCI data illustrates the increase in cancer diagnosis in Uganda. In 2012, 2,800 new cancer cases were diagnosed, compared to 1,000 new cases in 2011. Cancer visits to the UCI increased from 45,000 in 2013 to 70,000 in 2014³⁴. However, these data are not complete as only 20-40% of all cancer patients in Uganda are estimated to be treated at UCI. UCI is the only site

³⁴ Uganda Cancer Institute. Cancer registry extracts gathered during 2015 SHBS (Ref. 18-5).

in the country with comprehensive cancer care, and Kampala is currently the only region in Uganda where cancer cases can be accurately tracked. The UCI is hoping to set up additional cancer registries in other regions of Uganda in order to improve the country's capacity to accurately track changes in the cancer risk (Ref. 18-3).

18.6 Impact Assessment and Mitigation

This section presents the methodology for assessing potential community and occupational health and safety impacts associated with the development of the Project, and is based on the approach outlined below in Section 18.6.1. It also describes (in Section 18.6.3) the in-built design and Good International Industry Practices (GIIP) that will be adhered to and that form the basis of the impact assessment (in Section 18.6.2). The additional mitigation measures required to reduce the significance of potential impacts are also presented.

18.6.1 Impact Assessment Methodology

The assessment of potential community health and safety impacts took into consideration Ugandan national standards and applicable international standards such as the IFC (Ref. 18-4); UNDP (2017) *Guidelines on Integrating Health and Gender into Environmental and Social Impact Assessments in Sub-Saharan Africa* (Ref. 18-51), and IPIECA (2016), *Health impact Assessment. A guide for the Oil and Gas Industry* (Ref. 18-52), and recognised GIIP regarding the control of community health and safety impacts.

The closest human receptors to the Project Activities have been identified and used to define the spatial scope of the assessment; as defined in Section 18.4. The sensitivities of individual receptors have been categorised by their nature using the criteria in Table 18-19 to help determine the potential significance of impacts.

The potential health impacts are discussed by the respective EHA category. Potential impacts on the health and safety of Project workers are also considered. The key activities that could generate community health and safety impacts during each of the Project phases are included below in Table 18-16. It should be noted, however, that although certain Project phases and components typically are attributed to potential impacts, for community health and safety the impacts are often indirect or induced (e.g. due to influx or increased employment and income generation) and not associated with specific components of the Project. In other words all activities and Project components are considered relevant to community health and safety impacts. The Community Health and Safety Impact Assessment therefore does not assess impacts per phase as in other chapters.

Table 18-16: Project Activities which may lead to Potential Impacts

Phase	Activity
Site Preparation and Enabling Works	Land acquisition for all Project components; Mobilisation of plant and construction vehicles to the Project Site; Transportation of construction personnel to and from the Project Site; Deliveries of materials and supplies (including fuel and other hazardous substances) to the Project Site; Increased vehicle movements on the local and national road network; Physical presence of construction personnel; Drilling of boreholes for water abstraction (Buliisa camp, Bugungu camp, Tangi Camp, well pads and Industrial Area); Abstraction of water from boreholes for potable, washing and dust suppression purposes; Use of water to suppress dust generation; Waste generation, storage and disposal (hazardous and non-hazardous);

Phase	Activity
	<p>Disposal of treated waste water (grey and black);</p> <p>Storage of fuel and hazardous materials;</p> <p>Refuelling of plant and machinery within Project Site;</p> <p>Use of power generation plant (e.g. diesel generators);</p> <p>Lighting emissions;</p> <p>Excavation from borrow pits and quarries and the movement of excavated materials;</p> <p>Resource use (i.e. construction materials);</p> <p>Physical movement of vehicles and plant (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities);</p> <p>Clearance of vegetation and soils (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities);</p> <p>Demolition of existing buildings at the Industrial Area, well pads, Water Abstraction System, if present;</p> <p>Civil works activities at well pads and Water Abstraction System sites;</p> <p>Installation of temporary facilities at the Masindi Vehicle Check Point (i.e. containers);</p> <p>Construction of Victoria Nile Crossing Facility, including piling for the jetties, installation of facilities;</p> <p>Construction of new access roads (W1, C1, C3, N1, N2, inter field access roads south of the Victoria Nile) and upgrade works of existing roads (A1, A2, A3, A4, B1 and B2) including the installation of drainage;</p> <p>Discharge of surface runoff from roads; and</p> <p>Restoration of temporary Right of Way (RoWs).</p>
<p>Construction and Pre-Commissioning</p>	<p>Mobilisation of plant and construction vehicles to the Project Site;</p> <p>Transportation of construction personnel to and from the Project Site;</p> <p>Deliveries of materials and supplies (including fuel and other hazardous substances) to the Project Site;</p> <p>Increased vehicle movements on the local and national road network;</p> <p>Physical presence of construction personnel;</p> <p>Abstraction of water (ground and surface) for use at well pads, camps and Masindi Vehicle Check Point for potable, washing and dust suppression purposes;</p> <p>Abstraction of water (ground and surface) for drilling operations;</p> <p>Use of water to suppress dust generation;</p> <p>Operation and discharge from temporary SuDS drainage system (including use of storm water facility);</p> <p>Discharge of treated waste water from Waste Water Treatment plant;</p> <p>Installation of structures around all key Project components;</p> <p>Waste generation, storage and disposal (hazardous and non-hazardous);</p> <p>Refuelling of plant and machinery within Project Site;</p> <p>Storage of fuel and hazardous materials;</p> <p>Nighttime working (24/7) at well pads and Horizontal Directional Drilling (HDD) Construction Area;</p> <p>Use of temporary power generation plant (e.g. diesel generators);</p>

Phase	Activity
	<p>Construction activities at the Industrial Area and Water Abstraction System;</p> <p>Excavation of construction material from quarries and movement of excavated materials;</p> <p>Resource use (i.e. construction materials);</p> <p>Restoration of borrow pits and quarries;</p> <p>Physical movement of construction vehicles and plant within the Project Site;</p> <p>Transportation of materials and supplies including hazardous substances (i.e. drill cuttings) within the Project Site;</p> <p>Drilling of wells (on a 24 hour basis);</p> <p>Containment and storage of drilling fluids and drill cuttings;</p> <p>Clearance of vegetation and soils for Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area;</p> <p>Painting and coating of pipeline at Tangi and Industrial Area Construction Support Base;</p> <p>Construction of Production and Injection Network (i.e. Pipelines and Flowlines) and Water Abstraction System pipeline RoW including trenching, welding, pressure testing, storage of material, backfilling etc.;</p> <p>Horizontal Directional Drilling activities at the Victoria Nile Crossing Points (on a 24 hour basis);</p> <p>Pre-commissioning activities including use and disposal of treated water and associated chemicals;</p> <p>Restoration of Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area;</p> <p>Clearance of vegetation and soils for the expansion of the existing Tangi Camp; and</p> <p>Construction activities at Tangi Camp to expand facilities.</p>
<p>Commissioning and Operations</p>	<p>Operations at Central Processing Facility (CPF) and well pads;</p> <p>Transportation of operational personnel to and from the Project Site;</p> <p>Delivery of materials and supplies (including fuel and other hazardous substances) to the Project Site;</p> <p>Physical movement of vehicles and plant within the Project Site;</p> <p>Abstraction of water from boreholes for potable, washing and dust suppression purposes;</p> <p>Abstraction of water via the Water Abstraction System for re-injection;</p> <p>Waste generation, storage and disposal (hazardous and non-hazardous);</p> <p>Discharge of treated waste water from Waste Water Treatment plant;</p> <p>Refuelling of plant and machinery within Project Site;</p> <p>Storage of fuel and hazardous materials;</p> <p>Lighting emissions from Industrial Area, Tangi Camp, and well pads (during work over activities only);</p> <p>Fuel and energy consumption from operational activities;</p> <p>Treatment of produced water generated at CPF;</p> <p>Operation of power generation facility at the CPF;</p> <p>Non-routine Release of emissions (CO₂,NO_x,CO,CH₄,VOC) from flare;</p> <p>Well pad maintenance activities (including the use of workover rig);</p> <p>Projection and Injection Network maintenance (e.g. pigging activities);</p>

Phase	Activity
	Operation and maintenance of Water Abstraction System; Operation and maintenance of the Victoria Nile Ferry; Discharge of surface runoff from all permanent facilities via drainage system (SuDS); and Storage of Non Hazardous and Hazardous Wastes.
Decommissioning	Dependent upon Decommissioning strategy - but expected to be the same as those for Construction

18.6.1.1 Impact Assessment Criteria

The health assessment deviates from the standard approach presented in Chapter 3: ESIA Methodology. The criteria used for rating and ranking of potential health impacts are different from other disciplines due to the inherent indirect nature of health impacts and the challenges of quantifying them. Professional judgment is used within defined criteria to semi-quantify the rating process using a severity (consequence) and probability (likelihood) matrix as shown in Table 18-18.

Severity of potential health impacts is rated using the *Dimensions of Health Impacts* as described by IPECA (2016) (Table 18-17).

Probability estimates the likelihood of the impact, (**unlikely; possible; likely** or **very likely**), which provides a context to consider the impact. For example polluting a major waterway would have serious impacts but the likelihood due to embedded mitigation measures built into the Project makes it very unlikely. Conversely, Project induced influx causing overcrowding and poor housing condition conducive to infectious disease transmission is considered very likely (Ref. 18-53).

The final significance ranking of “**Insignificant**”, “**Low**”, “**Moderate**”, and “**High**” considers the severity and the probability of the impact occurring, with the goal of accurately and realistically characterising potential health impacts to support prioritising how to effectively mitigate the potential impacts. The significance criteria utilised are based on applicable Ugandan legislation, international guidance (e.g. IFC performance standards, WHO Guidelines) and recognised GIIP. The required and voluntary standards for community health and safety are detailed under Section 18.3.

Table 18-17: Dimensions of Severity in Health Impact Assessment

Dimension	Description
“Nature of the potential Impact”	Determines if the Project potential impacts are “Direct”, “Indirect” or “Induced”; for example: mishandling Project waste resulting in contaminating a village water source causing sickness is a “direct” impact; whereas contaminating a waterway affecting downstream fishing and subsequent food sources for shoreline populations is an “indirect” impact. Increase in cholera due to an increase in population and limited availability of sanitary facilities may be regarded as an “induced” impact. In many cases direct impacts lead to multiple indirect impacts (UNDP 2017).
Duration	Describes the Project phase(s) when the impact is likely to occur and gives a temporal criterion typically scaled in days, months or seasons or in years (typically 6 years or more) with the longer durations being considered more impactful. For the purposes of this assessment the following scales have been used: <ul style="list-style-type: none"> ● Low: Scale in days or weeks. ● Medium: Scale in months. ● High: Scale in years (six or more).

Dimension	Description
Frequency	<p>Establishes the rate of occurrence with greater frequency rates considered more impactful. Often times for health endpoints such as disease the frequency would be considered the disease term (for example, the frequency for AIDS/HIV health endpoint would be year-round). For the purposes of this assessment the following frequencies have been used:</p> <ul style="list-style-type: none"> • Low: bi-annual or less. • Medium: monthly. • High: daily.
Extent	<p>Describes the localities most likely to experience the projected impact or the number of people likely to be affected:</p> <ul style="list-style-type: none"> • Local: Small number of people affected and/ or impact is localised. • Regional: Moderate number of people affected and/ or impact extends to regional population. • National to international: Large number of people affected and/ or impact extends to national population or beyond.
Magnitude	<p>Is a key criterion and denotes the intensity of the impact with regard to existing baseline conditions. For this assessment, the magnitude criteria is scaled “Low”, “Medium”, and “High” and to aid in their interpretation, the following provides general descriptors for a sickness endpoint example:</p> <ul style="list-style-type: none"> • “Low” which means the receptor can adapt or recover readily. • “Medium” meaning the receptor could adapt or recover with medical assistance. • “High” means a permanent or semi-permanent condition. <p>It should be noted that the potential impact may also be beneficial and the scales interpreted as follows:</p> <ul style="list-style-type: none"> • “Low” which means the benefit is fleeting. • “Medium” the benefit requires ongoing maintenance for fulfilment. • “High” the benefit is far reaching and almost indefinite.
Stakeholder Concern	<p>Represents how consistent and emphasised the impact concern was during meetings and interviews with government, health, social workers, local leaders and local community:</p> <ul style="list-style-type: none"> • Low: Not a point of emphasis in stakeholder discussions. • Medium: Moderate stakeholder concern noted in approximately half of stakeholder meetings but not necessarily a concern shared across all groups. • High: Key and consistent stakeholder concern raised frequently in meetings and by a majority of stakeholder groups.
Manageability	<p>Manageability of the potential impact by Project is considered in the rating to differentiate between aspects that could be well controlled, monitored, or influenced such as worker activity during the job, and aspects that are harder to manage such as workers behaviour during off-work hours.</p> <ul style="list-style-type: none"> • Low: outside the influence of the Project management team. Can only influence impact. • Medium: within the influence of the Project management team. Can influence probability or impact (or both). • High: within the control of the Project management team. Can control probability or impact (or both).

Table 18-18: Health Impact Significance Rating

		Potential Impact Probability			
		Unlikely	Possible	Likely	Very Likely
Impact Severity	Negligible	Insignificant	Insignificant	Insignificant	Insignificant / Low*
	Low	Insignificant	Low	Low Moderate*	Moderate
	Medium	Insignificant	Low Moderate*	Moderate	High
	High	Insignificant / Low	Moderate	High	High

* Professional expertise will determine the impact significance

18.6.2 Community Health and Safety Impacts

This section describes the potential health impacts identified based on the Project description and the Community Health and Safety Baseline. The potential impacts are listed according to their respective EHA category. Each impact is characterised in relation to baseline data and related through the ranking criteria.

A project of this scale and visibility for this region has created significant expectations for jobs and wider economic benefits. Therefore the potential for influx into the region of people seeking to benefit from jobs and wider economic opportunities created by the Project is the primary force that drives many of the potential community health and safety impacts under each EHA category. Influx 'hotspots' identified in the In-Migration Report are:

High risk of in-migration:

- Buliisa Town and surrounding communities (Kigwera, Kisansya and Kijangi);
- Wanseko Town and surrounding communities (Ndandamire);
- Pakwach Town;
- Hoima Town; and
- Kaiso and Tonya Towns.

Moderate risk of in-migration:

- Ngwedo (Ngwedo village and Kibambura village);
- Biiso sub county and Biiso Town; and
- Masindi Town.

18.6.2.1 Receptor Sensitivity and Identified Receptors

Although receptor sensitivity is not considered in the significance assessment of potential health impacts in the same way as for other impacts, it is used to identify particular population groups who are likely to be more vulnerable or susceptible to potential health impacts so that mitigation measures can be targeted accordingly. For example, it is generally recognised that children are more susceptible to communicable disease due to their lack of immunity (Ref. 18-52). As well as biophysical and genetic causes of vulnerability (e.g. age, gender, and disability), vulnerability to ill-health is largely determined by receptors' access to livelihood assets or capital. For example if people have a shortage of economic assets they may be unable to afford healthcare, while weak physical capital in an area may mean people cannot access health infrastructure.

Community health and safety receptor sensitivity is outlined in Table 18-19. Table 18-20 lists population groups present within the Project Affected Communities (PACs) and describes their particular health sensitivities.

Table 18-19: Community Health and Safety Receptor Sensitivity

Sensitivity	Description	Receptors
High	<p>Low existing levels of livelihood assets and/ or inadequate access to structures and processes to protect or improve livelihoods resulting in profound or multiple levels of vulnerability that undermine the ability to adapt to changes brought by the Project and opportunities associated with it.</p> <p>Highly susceptible to ill-health for biophysical or genetic reasons (e.g. old age, very young, pregnant women, pre-existing genetic condition).</p>	<p>Children (especially under five)</p> <p>Elderly</p> <p>Pregnant women</p> <p>People with a disability</p> <p>Chronically ill (including people living with HIV/AIDS)</p> <p>Fishermen</p> <p>Sex workers</p> <p>Long distance truck drivers</p> <p>Boda boda drivers</p> <p>Casual farm labourers</p>
Moderate	<p>Moderate existing levels of livelihood assets and/ or some restricted access to structures and processes to protect or improve livelihoods resulting in some, but few areas of vulnerability; still retaining an ability to at least in part adapt to change brought by the Project and opportunities associated with it.</p> <p>Some increased susceptibility to ill health for genetic or biophysical reasons.</p>	<p>Women and men in the Project Study Area.</p> <p>Unskilled workers</p>
Low	<p>High level of existing livelihood assets and good access to structures and processes to protect or improve livelihoods resulting in minimal vulnerability; consequently with a high ability to adapt to changes brought by the Project and opportunities associated with it.</p> <p>Mild susceptibility to ill health for genetic or biophysical reasons.</p>	None
Negligible	<p>No shortage of existing livelihood assets or access to structures and processes to protect or improve livelihoods resulting in no vulnerability; consequently receptor will not have any difficulty adapting to changes brought by the Project or accessing opportunities associated with it.</p> <p>No genetic or biophysical causes for increased susceptibility to ill health.</p>	Skilled workers

18.6.2.2 Description of Identified Receptors

Table 18-20 lists population groups present within the PACs and details their particular health sensitivities. As mentioned in Section 18.6.2.1, receptor sensitivity is not used to assess impact significance for health impacts but it is used to highlight if certain population groups are likely to be more susceptible to a particular potential impact.

Table 18-20: Description of Identified Receptors

Receptor	Description
Children (especially under five)	Children generally have lower levels of immunity and are at higher risk of accident and injury due to lower health and safety awareness.
Elderly	Elderly are considered more vulnerable due to high dependence on others and reduced accessibility to access health infrastructure.
Pregnant women	Pregnant women are more vulnerable to disease in general due to lower levels of immunity and to complications related to pregnancy and childbirth, which can be fatal or have lifelong debilitating effects.
Women	Women are often at higher risk of housing related disease and disease related to sanitation and waste due to higher proportion of time spent at home. They are also more vulnerable to gender based violence (GBV).
Men	Men generally have poorer health seeking behaviour than women but compared to women they are less exposed to risk of housing, water, sanitation and waste related disease. They also tend to have higher food security due to higher disposable incomes meaning they can go out and purchase food.
People with a disability	People with a disability are considered more vulnerable due to high dependence on others and reduced accessibility to access health infrastructure.
Chronically ill (including people living with HIV/AIDS)	The chronically ill are considered more vulnerable due to lower levels of immunity, high dependence on others and, in some cases, stigma around their disease limiting their access to health care.
Fishermen	Fishermen are a most at risk population (MARP) ³⁵ .
Sex workers	Sex workers are a MARP. They are also at risk of GBV.
Long distance truck drivers	Long distance truck drivers are a MARP.
Boda boda riders	Boda boda drivers are a MARP. They are also more vulnerable to injury or death from road traffic accidents.
Casual farm labourers	Casual farm labourers (mainly in Masindi and Nwoya Districts) are a MARP.
Unskilled workers	Unskilled workers are likely to have lower levels of health and safety awareness making them more susceptible to OHS risks.

³⁵ MARPs are population groups that are recognised as being more at risk than others of contracting HIV/AIDS.

Receptor	Description
Skilled workers	Skilled workers are likely to have good health and safety awareness that will protect them from OHS risks as well as good overall access to livelihood assets.

18.6.3 Embedded In-built Design Mitigation

A list of relevant embedded mitigation measures already built into the design of the Project are outlined within **Chapter 4: Project Description and Alternatives**. These measures have been taken into account when predicting the significance of the potential impact. Some specific embedded measures relevant to Health are outlined below.

18.6.3.1 Occupational Health and Safety (OHS) Policies and Procedures

The Project Proponents have a strong health and safety culture already in practice amongst existing staff and a strong Health, Safety and Environment (HSE) Management system which is based on Occupational Health and Safety Management System (OHSAS) 18001, International Standards Organisation (ISO) 14001 and Ugandan legislation requirements which consist of series of management policies, plans and procedures to address risks of OHS impacts (including the provision of a HSE charter). This includes provisions for OHS and HSE leadership; HSE induction and ongoing training requirements; provision of Personal Protective Equipment (PPE) appropriate for various tasks and activities; specific HSE rules and procedures for undertaking different types of work tasks including risk assessment procedure, use of Permit to Work for hazardous activities, Journey Management Plans; communication procedures including use of toolbox talks, dedicated HSE meetings; incident reporting and investigation; and ongoing monitoring and auditing of HSE performance. In addition, there is an adequate emergency organisation in place with adequate equipment ready for potential risks, e.g. Fire Fighting and Medical Evacuation (MEDEVAC) means are all in place. Details are provided in **Chapter 23: Environmental and Social Management Plan**.

HSE performance criteria is considered in the contractors selection process. Further, dedicated HSE exhibits are part of all the contracts. Prior to works, contractors will be required to develop HSE and OHS plans and procedures proportionate to the level of risks created by their activities. Contractors' HSE management systems will need to be compliant with Ugandan legal requirements as well as Project Proponents' corporate standards and recognized international safety standards such as OHSAS 18001, International Oil and Gas Producers (IOPG) standards, etc. prior to commencing work. All contractors will appoint personnel responsible for implementation of HSE management system and for monitoring on site of health, safety, security, social and environment aspects pertaining to their activities as detailed in **Chapter 23: Environmental and Social Management Plan**. Compliance with the HSE management systems will be checked by the Proponents during the Contractors' operations.

18.6.3.2 Workforce Accommodation & Healthcare Provision

It is expected the majority of the casual workforce will come from nearby villages and towns with higher workers (supervisors and operators) travelling from outside the area. The rest of the Project workforce will be accommodated in camps as detailed in **Chapter 4: Project Description and Alternatives**.

Camps will operate a closed gate policy meaning only authorised visitors will be permitted to enter the camp and movement of workers in and out of the camp will be strictly controlled. All workers' needs will be provided for in the camps, which will include living facilities such as kitchen/ dining, healthcare, offices, leisure activities etc. The camps will operate a strict ban on consumption of alcohol and drugs, and smoking will only be permitted in designated areas, in accordance with the Project Proponents' procedures.

All Construction Camps will be supported by one main medical centre located within the Industrial Area throughout the Site Preparation and Enabling Works, Construction and Pre-Commissioning, and Commissioning and Operations phases. A doctor will also be present and will be responsible for

coordinating the satellite facilities located within the Buliisa, Bugungu and Tangi Construction Camps. In addition, all rigs which will be required for the drilling of wells will be equipped with their own sickbay and will be coordinated from the main medical centre based in the Industrial Area. There will also be standby ambulance cover at all times at the Camps and rig sites to cover any emergencies.

All workers, contractors and subcontractors accommodated in Construction Camps are required to complete a fitness for work assessment prior to coming to site. All workers accommodated in Construction Camps will also receive a medical induction and medical check on arrival at camp. Emergency medical care will be provided for all workers (including locally hired day labourers) while they are engaged in Project work.

All workers, contractors and subcontractors in Construction Camps are required to get vaccinations against common infectious diseases for example rabies, pneumococcal, influenza, tetanus, and yellow fever, before going to camps.

In accordance with the Project Proponent's 'STOP MALARIA Guide', indoor residual spraying with insecticides is conducted at camps, as well as provision of mosquito repellents to cater for all vectors, including tsetse flies.

18.6.3.3 Site access restrictions

During each phase of the project, there will be site access restrictions in place. These will include (but not be limited to):

- Use of barriers and fences to isolate work areas.
- For the upgraded roads, it will be necessary to cordon off the road (while retaining pedestrian access) before widening the road.
- Containing construction activities within the permanent RoW which will have a width of 30 m and is designed to accommodate the pipeline trench(s), stockpile areas, laydown, welding, and the movement of construction equipment alongside the trench(s).

18.6.3.4 Access to water

The installation of boreholes across the Project Area to support the Project's needs is subject to the outcome of the Water Abstraction Feasibility Study currently being undertaken by the Project Proponents.

18.6.4 Assessment of Impacts: All Phases

18.6.4.1 Introduction

This section assesses potential health impacts that could occur across all phases of the Project. Additional mitigation measures are discussed in Section 18.6.4.3, after assessment of all potential impacts because measures are cross cutting.

18.6.4.2 Potential Impacts

18.6.4.2.1 EHA 1: Vector Related Disease

The main vectors in the Study Area are mosquitoes (*Anopheles gambiae* and *Anopheles fenestus*) which transmit malaria, black flies which transmit onchocerciasis (river blindness), snails which spread bilharzia (also known as schistosomiasis), and tsetse flies which transmit sleeping sickness. Vector related diseases affecting PACs include malaria, schistosomiasis (bilharzia), onchocerciasis (black flies), and trachoma.

Potential Health Impact 1 – Increase in Malaria

There is a potential risk of increase in malaria due to:

- **Land use change due to construction:** changes in habitat/ land use (e.g. clearing trees) and temporary phases of development (i.e., trenching) can create new breeding grounds for vectors;

- **Land use change due to influx:** changes in habitat /land use due to influx (e.g. population pressure leading to clearing of natural habitats to create more residential or agricultural areas) can create new breeding grounds for vectors or hosts;
- **Resettlement:** people may move to areas closer to vector habitats;
- **Influx:** influx may increase the size of a vector host community (e.g. people carrying malaria); it will likely lead to an increased number of people living in makeshift housing without use of mosquito nets and with limited protection against mosquito ingress; and it may lead to an increased movement of populations into malaria hotspots including, for example, close to swampy areas around Lake Albert; and
- **Improper drainage:** causing pooling of water and creating new vector breeding grounds.

Malaria is the number one illness in all five districts included in the Health Baseline Study Area and one of the leading causes of morbidity/mortality for Uganda. Malaria rates are highest amongst children. Prevalence is rising in the Study Area. There is widespread misuse of mosquito nets. Villages near the lake and swampy areas have particularly high rates of malaria due in part to overcrowded housing (mud huts) that allows mosquito ingress.

The dimensions of the potential impact of increase in malaria are presented in Table 18-21.

Table 18-21: Rating of dimensions - increase in malaria

Dimension	Rating
Nature	Direct – land use change due to construction. Indirect – Resettlement of people closer to vector habitat and improper draining creating new vector breeding grounds. Induced – influx causing land use change and increase in host population.
Project phase	All phases
Duration	Scale in years
Frequency	Year round
Extent	Local to regional
Magnitude	Medium: Malaria can be treated and cured. Potential direct impacts from the Project are unlikely to increase rates significantly above baseline which is already high for PACs.
Level of stakeholder concern	Medium – influx driven rise in disease is a significant stakeholder concern, however, stakeholders did not express significant concerns about other potential causes of rise in vector related disease.
Manageability	High – land use change due to construction and improper drainage. Medium – resettlement of people closer to vector habitat. Low – influx leading to land use change and increase in host population.
Probability	Possible – land use change due to influx and resettlement of people closer to vector habitat. Likely – land use change due to construction and improper drainage and increase in host community due to influx.

Significance Ranking

The overall ranking for potential increase rate of vector related disease is of a **Moderate Adverse** significance based on medium magnitude; low to high manageability of the main causes of the potential impact; medium stakeholder concern (overall moderate severity) and possible / likely probability of the main causes of the potential impact.

This potential impact is likely to affect all PACs particularly those living in influx hotspots. Groups within the population considered particularly at risk (high sensitivity) are children under five, women, people living with HIV/AIDS, and communities living near the lake and in swampy areas.

18.6.4.2.2 EHA 2: Housing and Respiratory Issues

Potential Health Impact 2 – Increase in rates of TB and other respiratory disease

There is a potential risk of increase in TB and other respiratory diseases due to:

- **Influx:** in-migration of disease-carriers; growth in population living in unplanned settlements and makeshift housing with overcrowding and poor ventilation increasing exposure to infection or to particulate matter generated in combustion of cooking fuels;
- **Poor worker accommodation standards in supply chain:** poor provision of worker accommodation in the supply chain (secondary contractors and subcontractors who house their employees outside the camps that are under direct management of the Project) can result in overcrowding and increased exposure to respiratory disease amongst the workforce, which can be transmitted back to the community;
- **Resettlement:** Some physically displaced households who opt for cash compensation may resettle to more crowded areas or into housing with poor ventilation; and
- **Increased dust from construction traffic and increased bare ground:** Increased exposure to dust can increase risk of respiratory conditions e.g. flu and cough; especially among children. Exposure to dust is assessed in **Chapter 6: Air Quality and Climate**.

While there was limited data available on TB from health facilities surveyed as part of the Health Baseline, it is recognised that cases are widely unreported. The spread of multi-drug resistant TB is a major public health concern, especially in the setting of high HIV prevalence and overcrowding, which both issues are of concern in parts of the Project Area particularly influx hotspots. TB treatment is expensive and there is a general lack of education about it. There is weak adherence to TB treatment programmes. Acute respiratory infections are a common cause of illness in the Study Area. The prevailing environmental conditions are a contributing factor to the prevalence of respiratory diseases. Risk factors for respiratory infections observed in the Study Area include poor household ventilation, overcrowding, burning fuels from indoor cooking, or cooking close to households using solid fuels, especially wood.

The dimensions of the potential impact of increase in TB and respiratory disease are presented in Table 18-22.

Table 18-22: Rating of dimensions increase in TB and respiratory disease

Dimension	Rating
Nature	Indirect
Project phase(s)	Site Preparation and Enabling Works Construction and Pre-Commissioning Decommissioning <i>Not considered to be a significant risk during Commissioning and Operations because level of influx will be far lower during this phase and level of accommodation</i>

Dimension	Rating
	<i>required for subcontractor workers will also be far lower.</i>
Duration	Scale in years
Frequency	Year round
Extent	Local to regional
Magnitude	Medium - the main respiratory diseases (e.g. TB and pneumonia) can be treated and cured (although there is limited capacity within health centres to adequately diagnose pneumonia and there is weak adherence to TB treatment programmes). Potentially high for sensitive population groups.
Level of stakeholder concern	Medium - influx driven rise in disease is a significant stakeholder concern. Risk of poor hygiene standards and overcrowding in workers accommodation was not raised as a specific concern.
Manageability	Medium for workers accommodation standards in the Project supply chain. Low for influx/ Medium for resettlement. High for increased dust from construction and exposure to bare ground.
Probability	Possible for workers accommodation standards in the Project supply chain. Likely for influx - baseline conditions indicate existing housing within PACs especially influx hotspots are unable to absorb influx.

Significance Ranking

The overall ranking for increase in TB and respiratory disease is of a **Moderate Adverse** significance based on regional extent; medium magnitude; low to medium manageability of the main causes of the potential impact; medium stakeholder concern (overall moderate severity) and possible to likely probability of the main causes of the potential impact.

This potential impact is likely to affect all PACs particularly those living in influx hotspots. Groups within the population considered particularly at risk are children under five (lower immunity), women (women spend more time at home and are primary care givers and therefore more exposed), and people living with HIV/AIDS.

18.6.4.2.3 EHA 3: Veterinary medicine and zoonotic disease

Potential Health Impact 3 – Increased rates of zoonotic disease (including Rabies, Ebola, Ascariasis and Brucellosis)

There is a potential risk of increase in rates of zoonotic disease from the following sources:

- **Land use change due to construction:** land use change can lead to loss of pasture and farming land, which may push farmers and pastoralists (and their livestock) into new areas in closer proximity to wild animals creating greater risk of disease transmission from wild animals to humans or to livestock (who can then pass it to humans). Potential project impacts on animal watering areas can lead to increased shared use of water resources by people and animals meaning closer contact between people and cattle;
- **Land use change due to influx:** newcomers may clear land for housing or agriculture and increased pressure on existing farming areas due to population increase may push people and

livestock into protected areas and in closer proximity to wild animals creating increased risk of transmission of disease. Influx can also place pressure on existing water resources, which could lead to increased use of shared resources by people and animals;

- **Overcrowding due to influx:** Influx can lead to the development of unplanned, overcrowded settlements. There is increased potential for rapid spread of disease in more densely populated areas due to increased person-to-person contact and person-to-livestock contact due to people living in closer proximity to their livestock (sharing living space with domestic animals in some cases). There is also greater risk of attracting rodents and bats in settlements with poor sanitation and waste disposal; and
- **Resettlement:** Some physically displaced households who opt for cash compensation may resettle to more crowded areas where there is increased potential for rapid spread of disease due to increased person-to-person contact and person-to-livestock contact.

The prevalence of zoonotic disease is reported to be very low in the Study Area although potential exposure to zoonosis is noted to be high. Exposure may be through contact with wildlife, sharing living space with domestic animals, keeping unvaccinated pets, consumption of game meat and consumption of undercooked animal products. Ebola and other haemorrhagic fever outbreaks have not been experienced in the Study Area but there have been cases in nearby districts that may contribute to population movements into the region (see Section 0). Baseline conditions indicate that existing housing within PACs, especially influx hotspots, are unable to absorb influx.

The dimensions of the potential increased rates of zoonotic disease are given in Table 18-23.

Table 18-23: Dimension ratings – increase in zoonotic disease

Dimension	Rating
Nature	Indirect
Project phase	Site Preparation and Enabling Works Construction and Pre-Commissioning Decommissioning <i>Not considered to be a significant risk during Commissioning and Operations because level of influx will be far lower during this phase and there will be no more land use change effects due to Project construction.</i>
Duration	Scale in years
Frequency	Year round
Extent	Local to regional
Magnitude	Low – many zoonotic diseases (i.e. rabies, brucellosis and ascariasis) can be treated and cured. Potentially high for sensitive population groups. High – Diseases causing haemorrhagic fever cause severe, often fatal, illnesses in humans.
Level of stakeholder concern	Low – Increase in zoonotic disease was not raised as a concern by stakeholders.
Manageability	High for land use change due to construction. Low for influx causing land use change and overcrowding.

Dimension	Rating
	Medium for resettlement.
Probability	Unlikely

Significance Ranking

The overall ranking for increase in zoonotic disease is classed as being of **Low Adverse** significance based on low to high magnitude and low stakeholder concern, high to low manageability (resulting in overall severity of low to high) and unlikely probability.

This potential impact is likely to affect all PACs particularly those living in influx hotspots. Those tending livestock are most vulnerable to this potential impact.

18.6.4.2.4 EHA 4: Sexually Transmitted Infections (STIs)

Potential Health Impact 4: Increased prevalence of HIV/AIDS and other STIs

There is a potential risk of increased prevalence of HIV/AIDS and other STIs, including Hepatitis B, due to:

- **Increased presence of commercial sex workers:** Commercial sex workers are recognised as a MARP for HIV/AIDS. In-migration is likely to lead to an increase in commercial sex workers in the Project area due to increased demand for prostitution from the mainly male workforce and job seekers who come to the area without their families. There is also a risk that women who come to the area hoping to benefit from the boost to the local economy end up being dependent on commercial sex work if they cannot find other work. Increased disposable incomes amongst people directly and indirectly employed by the Project may also lead to an increased demand for commercial sex workers;
- **Increased presence of long distance truck drivers:** Truck drivers (both directly and indirectly employed by the Project) are recognised as a MARP for HIV/AIDS. The Project will directly and indirectly lead to a significant increase in the transfer of truck drivers in and out of the region as well as along transport corridors from Mombasa to the Project Area; and
- **Increased practice of risky sexual behaviour:** Increased disposable incomes in the local population due to direct, indirect and induced employment can lead to increased alcohol consumption. People under the influence of alcohol are more likely to engage in risky sexual behaviour. Young girls and women may also be tempted to engage in risky sexual behaviour to attract workers with money.

HIV/AIDS is a significant public health concern in Uganda and prevalence rates in the Study Area are higher than the national average. The Uganda AIDS Commission recognises that the region where the Project is located has the potential of increasing HIV infections due to the economic activities, influx of different personnel, and the rise in risky sexual behaviour. HIV management is particularly challenging amongst migrant populations due to the fact they do not transfer their treatment from one health centre to another when they move in and out of areas.

Other STIs are also common causes for health facility attendance in the Study Area. Hepatitis B is reported to be highly prevalent in the north-west region of Uganda including Nwoya district.

There is a widespread perception that the rate of HIV and other STI cases across the Study Area has been increasing in recent years due mainly to an increase in the number of commercial sex workers and migrants. Further increase in HIV and STIs is a key stakeholder concern.

The dimensions of the potential increase in rates of HIV/AIDSs and other STIs are presented in Table 18-24.

Table 18-24: Dimension ratings – Increased prevalence of HIV/AIDS and other STIs

Dimension	Rating
Nature	Indirect
Project phase	All phases but likely to be most significant during the Construction and Pre-Commissioning Phase
Duration	Scale in years
Frequency	Year round
Extent	Local to International
Magnitude	High – based on HIV/AIDS and Hepatitis B which do not have a cure. Other STIs may have lower magnitude.
Level of stakeholder concern	High – key and consistent stakeholder concern.
Manageability	Medium for management of movements and behaviour of direct Project workers. Low for management of movements and behaviour of indirect workers. Low for management of influx including movement of commercial sex workers into the region.
Probability	Very likely – based on known patterns in similar contexts.

Significance Assessment

The overall ranking for increase in HIV/AIDS and other STIs is considered to be of a **High Adverse** significance based on high magnitude, high stakeholder concern, low manageability (resulting in overall high severity) and very likely probability.

The most at risk populations for HIV and other STIs identified across the Study Area are: female sex workers, fishermen, boda boda drivers, long-distance truck drivers and persons in uniformed services. In Purongo and Got Apwoyo Sub-Counties (Nwoya district) and Masindi district, casual labourers in the farming community (mainly men) are also considered a MARP. The hotspots or places where MARPs operate vary, ranging from bars and night clubs (particularly in urbanised areas such as Hoima and Pakwach Town Council) to landing sites. Other places where MARPs operate include streets, restaurant, hotels, lodges, trailers, truck parking yards, and barracks.

18.6.4.2.5 EHA 5: Diseases related to soil, water, sanitation and waste

Potential Health Impact 5: Improper management of Project waste or discharge leading to contamination of local environment and impact on human and livestock health

Accidental pollution of the local environment (drinking water sources, soil, and air quality) due to potential improper management of waste or discharge could affect the health of people or livestock. Those potential impacts are also assessed in the following chapters:

- Chapter 8: Geology and Soils;
- Chapter 9: Hydrogeology;
- Chapter 10: Surface Water; and

- Chapter 20: Unplanned Events.

Chapter 12: Waste provides an overview of the waste management strategy for the Project through the four phases of the Project, including volumes of waste and the proposed disposal routes.

The dimensions of this potential impact are presented in Table 18-25.

Table 18-25: Dimensions ratings – improper management of Project waste or discharge leading to contamination of local environment and impact on human and livestock health

Dimension	Rating
Nature	Indirect
Project phase	All phases but likely to be most significant during Site Preparation and Enabling works and the Construction and Pre-Commissioning Phases.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	Medium – illness due to exposure to pollutants introduced to the local environment from Project waste is likely to be treatable and curable. Potentially high for sensitive receptor groups. Changes to environment likely to be remediable.
Level of stakeholder concern	Medium – while there is a general expectation that the Project will be developed to GIIP, legacy issues relating to poor waste management have left some concerns amongst local stakeholders that their health could be at risk due to poor waste management practices employed by the Project.
Manageability	High – a Waste Management Plan will be in place and the Project will apply GIIP for waste management.
Probability	Unlikely – use of GIIP in embedded and additional mitigation measures minimises the likelihood of this potential impact occurring.

Significance Ranking

The overall ranking for improper management of Project waste or discharge leading to contamination of local environment and potential impact on human and livestock health is considered to be of a **Low Adverse** significance based on medium magnitude, medium stakeholder concern, high manageability (resulting in overall moderate severity) and unlikely probability.

This potential impact could affect PACs living within the Project Area or along transport corridors for waste trucks.

Potential Health Impact 6 – Increase in prevalence of water, sanitation and waste related disease

There is a potential risk of increase in prevalence of water, sanitation and waste related disease due to:

- **Influx:** Increased populations living in unplanned settlements and makeshift housing without adequate water and sanitation provision can increase the spread of disease and worsen sensitive groups' existing ailments. Increased pressure on water and sanitation infrastructure due to population increase can lead to deterioration in the quality and availability of such infrastructure, which can further exacerbate the risk of disease; and
- **Resettlement:** Some physically displaced households who opt for cash compensation may resettle to more crowded areas and may move to houses with reduced access to safe drinking water sources and insufficient latrine coverage.

The most common sanitation and hygiene related diseases reported in the Study Area include diarrhoea, intestinal worms, cholera, dysentery, typhoid and scabies. The most common gastrointestinal condition diagnosed in Buliisa District is acute diarrhoea. There are frequent cases of typhoid reported across all districts in the Study Area. Intestinal worms are common in Buliisa District especially among children. Buliisa and Hoima, and especially areas along the lake shores, experience frequent outbreaks of cholera.

The most prominent risk factor for acute diarrhoea in Buliisa district is poor hygiene and sanitation (i.e. a lack of handwashing facilities, open defecation and unsafe cooking and food handling practices) and poor access to potable water to WHO standards. Risks factors for cholera similarly include poor hygiene, lack of safe water and the shortage of toilet facilities along the lake shores.

The dimension ratings for potential increase in prevalence of water, sanitation and waste related disease are provided in Table 18-26.

Table 18-26: Dimension ratings – increase in prevalence of water, sanitation and waste related disease

Dimension	Rating
Nature	Indirect and induced
Project phase	Site Preparation and Enabling Works Construction and Pre-Commissioning Decommissioning <i>Not considered to be a significant risk during Commissioning and Operations because level of influx will be far lower during this phase and there will be no further displacement.</i>
Duration	Scale in years
Frequency	Year round but particularly in wet seasons.
Extent	Local
Magnitude	Medium - although illnesses such as diarrhoea (a common health issue for the region) are relatively minor and easily curable, chronic cases may cause susceptibility to more severe diseases.
Level of stakeholder concern	Medium – influx driven rise in disease was a consistent concern but risk that resettlement will lead to deterioration in access to improved water and sanitation provision was not a consistent concern.

Dimension	Rating
Manageability	Low for influx. Moderate for resettlement.
Probability	Possible to Likely - increase in water, sanitation and waste related disease is commonly related to influx, however, risk that resettlement will lead to deterioration in water and sanitation provision is uncertain.

Significance Ranking

The overall ranking for increase in water, sanitation and waste related disease is considered to be of a **Moderate Adverse** significance based on local extent, medium magnitude, low to medium manageability, medium stakeholder concern, (overall low to moderate severity) and possible to likely probability.

This potential impact is likely to affect all PACs particularly influx hotspots. Diarrhoeal diseases mostly affect children, especially under-fives, and cases rise during the rainy season.

18.6.4.2.6 EHA 6: Food and Nutrition Related Issues

Potential Health Impact 7 – Deterioration in nutritional status

There is a potential risk of adverse impacts on nutritional status of PACs, leading to adverse health and development outcomes, due to:

- **Changes in land use due to Project construction:** Acquisition of land for the Project will reduce the overall availability of land for farming and livestock rearing;
- **Displacement:** loss of access to subsistence resources (farming areas, fruit trees and wild foods) and decrease in household income due to displacement can reduce PAPs food security and affect nutritional status;
- **Increased pressure on land and resources due to influx:** Pressure on available agricultural land and other subsistence resources (including fishing) due to population growth and changes in land use can reduce the overall availability of land for farming, and can also reduce the size of farming plots leading to over-farming and over-grazing and consequent deterioration in yield size and quality. Fishing is the primary source of protein and income for the Lake Albert shoreline population, which is greatly threatened by influx and over-fishing; and
- **Food price inflation:** There is likely to be an increase in demand for food products due to increased disposable income in the local population due to direct, indirect and induced employment. There is also likely to be procurement of food from local suppliers for the Project (directly and indirectly). This increased demand for food products without parallel increase in supply in the short term is likely to drive up food prices, possibly making some items unaffordable for poorer households and therefore threatening food security.

The majority of people within the Study Area consume fresh foods supplemented with processed maize meal. The main sources of protein for communities in the Study Area are fish, meat (beef), beans, millet, sorghum and bushmeat. Most communities, especially along the lake and River Nile, eat fish for protein regularly when supplies are available. There were frequent anecdotal reports of food shortages made during the 2016 baseline survey (reports of food shortages were made in Buliisa district, Hoima district, and Masindi district but not in Nwoya or Nebbi). This was mostly attributed to poor harvests, blamed on crop diseases and changing weather patterns.

The dimension ratings for potential deterioration in nutritional status are provided in Table 18-27.

Table 18-27 Dimension ratings – deterioration in nutritional status

Dimension	Rating
Nature	Indirect/ induced
Project phase	All phases though likely to be most significant during the Construction and Pre-Commissioning phase when level of influx and direct, indirect and induced employment will be highest.
Duration	Scale in years
Frequency	Year round
Extent	Regional
Magnitude	Medium – malnutrition can have long term health effects and can further aggravate baseline disease rates.
Level of stakeholder concern	Medium – there are some concerns about future availability of agricultural land due to land acquisition and influx, and concerns about increased competition for resources and overfishing due to influx.
Manageability	Low for influx and inflation. Moderate for displacement and changes in land use due to Project construction.
Probability	Likely – influx will lead to greater competition for resources and land, and increased demand for food products. Overfishing has already been observed in Lake Albert. Increased incomes are also likely to increase demand for food products causing inflationary pressure on these products in the short term.

Significance Ranking

The overall ranking for deterioration in nutritional status is considered to be of a **Moderate Adverse** significance due to low to medium manageability, medium stakeholder concern and medium magnitude (overall moderate severity) and likely probability.

This potential impact is likely to affect all PACs but groups particularly at risk will be PAPs affected by displacement and households with very low levels of disposable income and limited access to land as well as communities that are dependent on fishing for subsistence and income generation. Children, people with chronic illness, and pregnant women are particularly at risk of malnourishment.

Potential Health Impact 8 – Improvement in nutritional status

The Project may lead to improvement in nutritional status for those households who spend increased household income (due to direct, indirect or induced employment opportunities) on improved diets. Improved nutritional status can result in improved overall health status and other positive development impacts (see *Potential Health Impact 7* for discussion on the adverse consequences of malnutrition).

All PACs who benefit from direct, indirect and induced employment opportunities have the potential to benefit from this impact. Individuals (and their households) within PACs who have higher baseline skills and education levels are more likely to benefit as they are more likely to secure longer term employment. Without additional mitigation, women are less likely to benefit from increased employment and indirect economic benefits related to the Project.

The dimension ratings for potential improvement in nutritional status are provided in Table 18-28.

Table 18-28: Dimension rating - Improvement in nutritional status

Dimension	Rating
Nature	Indirect/ induced
Project phase	All phases though likely to be most significant during the Construction and Pre-Commissioning phase when direct, indirect and induced employment will be highest.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	Medium – improvement in nutrition can have long term health benefits and can alleviate baseline disease rates, however, temporary nature of employment (including widespread job losses at the end of construction) means that incremental improvements may be reversed.
Level of stakeholder concern	Low – potential for improved nutritional status was not raised as a key stakeholder expectation or perceived benefit of the Project.
Manageability	Low – very limited ability for the Project to manage how increased disposable incomes are spent.
Probability	Likely – gain of employment and income levels is likely to lead to an overall improvement in household wellbeing including increased food security and nutritional status.

Significance ranking

The overall significance of improved nutritional status is ranked as of a **Low Beneficial** significance due to low manageability, low level of stakeholder concern and medium magnitude (overall low to moderate severity) and likely probability.

All PACs who benefit from direct, indirect and induced employment opportunities have the potential to benefit from this potential impact. Individuals (and their households) within PACs who have higher baseline skills and education levels are more likely to benefit as they are more likely to secure longer term employment. Without additional mitigation, women are less likely to benefit from increased employment and indirect economic benefits related to the Project.

18.6.4.2.7 EHA 7: Accidents and Injuries

This section looks at potential for accident and injuries during routine operations. Potential risk of accident and injury due to spills and releases and other unplanned events is discussed in detail under **Chapter 20: Unplanned Events**.

Potential Health Impact 9 – Injuries from road traffic accidents due to increase in traffic on public roads

During Site Preparation and Enabling Works there will be an increase in the volume of traffic using local roads with a total additional 806 daily traffic movements expected (see **Chapter 4: Project Description and Alternatives**). During Construction and Pre-Commissioning there will be an

increase in the volume of traffic using local roads with a total additional 6,929 monthly traffic movements expected and 2,400 estimated monthly trips on the inter field access roads south of the Victoria Nile. Traffic will include a mixture of heavy and light machinery, which will operate seven days a week. Influx will further increase the number of vehicles and pedestrians using roads in the Project Area, particularly around influx hotspots.

The increase in traffic on roads due to Project traffic and increases in traffic linked to Project-induced in-migration increases the potential risk of road traffic accidents resulting in injury or death to people and livestock.

Road safety and driving standards amongst PACs are poor and enforcement of road and vehicle safety laws is weak. The main causes of road traffic accidents cited by respondents in the 2016 baseline survey were drunk driving, speeding, people driving without permits, and overloading of vehicles. The majority of traffic accidents were reported to involve boda bodas and the rate of accidents is reported to be higher in the rainy season and around festive periods. Accident rates are reported to be higher on tarmacked roads due to speeding and the Hoima-Kaiso Tonya road (the road running down the escarpment from Biiso), and the Gulu-Arua road (running through Got Apwoyo and Purongo sub counties) are perceived to have high rates of accidents. Accidents on the Gulu-Arua road are perceived to be increasing due to an increase in the volume of traffic along the road. Surgical and emergency services in the Project Area are extremely limited.

The dimension ratings for potential increased injury from road traffic accidents are given in Table 18-29.

Table 18-29: Dimension Rating – Increase in Injuries from Road Traffic Accidents

Dimension	Rating
Nature	Direct / Indirect
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when Project vehicle movements will be highest and level of influx is expected to be highest.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – while recovery will be possible from the majority of injuries from traffic accidents there is potential for long term disability or death.
Level of stakeholder concern	Medium – risk of increase in traffic accidents was occasionally raised as a concern amongst stakeholders.
Manageability	Low – High: Manageability of Project vehicle movements is high, however, management of increases in non-Project related traffic due to influx is low.
Probability	Possible

Significance Ranking

The overall significance of potential increased injury from road traffic accidents due to increased Project traffic on roads and increased level of traffic on roads due to influx is considered to be of a **Moderate Adverse** significance based on high magnitude, medium stakeholder concern and manageability ranging from low to high (medium to high severity) but relatively low probability (possible).

Children are considered particularly vulnerable to this potential impact due to lower road safety awareness. Boda boda drivers are also considered more vulnerable due to the greater amount of time they spend on local roads.

Potential Health Impact 10 - Personal injury due to excessive use of force by government or private security staff

The Project will hire local security personnel to guard Project facilities. Public security will likely also support security provision for oil and gas activities in the region. In addition there is likely to be a general increase in the presence of government security staff in the region to manage influx and the increased movement of people and goods into and out of the region. This includes an increased need for Uganda Wildlife Authority (UWA) rangers to patrol protected areas.

Without adequate training of security personnel on the appropriate use of force, there is a potential risk of violent confrontation with members of the local community, which could result in injury or death.

Unlawful killings and absence of accountability by security forces is highlighted in the social baseline as a key human rights concern in Uganda (see **Chapter 16: Social**). Surgical and emergency services in the Project Area are extremely limited. The dimension ratings for potential increased injury due to excessive use of force by government or private security staff are given in Table 18-30.

Table 18-30: Dimension ratings - Increased injury due to excessive use of force by government or private security staff

Dimension	Rating
Nature	Direct / Indirect
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when the need for increased security presence will be highest due to higher levels of construction activity and influx.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – while recovery will be possible from the majority of injuries there is potential for long term disability or death.
Level of stakeholder concern	Low – risk of increase in injury due to excessive use of force by security personnel was not consistently raised as a major stakeholder concern.
Manageability	Low – High: Manageability of privately contracted security personnel is high, however, management of the conduct of public security personnel is low.

Dimension	Rating
Probability	Possible

Significance Rating

The overall significance of increased injury due to excessive use of force by government or private security staff is considered to be of a **Moderate Adverse** significance based on high magnitude but relatively low stakeholder concern and manageability ranging from low to high (overall medium severity) and probability of 'possible'.

All PACs within the Project Area are considered at risk of this potential impact although young men are considered more likely to have interactions with public or private security staff.

Potential Health Impact 11 – Risk of accident of injury due to community exposure to worksites and Project equipment

There is a potential risk of injury if members of local communities gain unauthorised access to worksites and are then exposed to construction activities and Project equipment.

Members of PACs are unaccustomed to industrial worksites and can be assumed to have low awareness of appropriate health and safety behaviours to protect themselves from accident or injury at worksites from construction activities and equipment.

Surgical and emergency services in the Project Area are extremely limited.

All Project components (well pads, Industrial Area, Lake Water Abstraction System, Masindi vehicle check point, and camps etc) will be secured with barriers/fencing and unauthorised access by the public will be strictly controlled. The Industrial Area will also require lighting during the hours of darkness for safety and security reasons. During construction and hydrotesting activities, there will be access restrictions to the pipeline Right of Way (RoW) for safety reasons. At special points such as crossings, excavations and tie-in bell holes, safety fences shall also be installed along the RoW to prevent human or animal ingress.

The dimension ratings for potential risk of accident of injury due to community exposure to worksites and Project equipment are given in Table 18-31.

Table 18-31: Dimension ratings - risk of accident of injury due to community exposure to worksites and Project equipment

Dimension	Rating
Nature	Direct
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – while recovery will be possible from the majority of injuries there is potential for long term disability or death.

Dimension	Rating
Level of stakeholder concern	Medium – risk of increase in accident and injury due to community exposure to worksites and equipment was raised as a concern by some stakeholders at local level.
Manageability	High - manageability of unauthorised access to worksites and exposure to equipment is high through use of in-built design controls including use of security fencing.
Probability	Unlikely

Significance Ranking

The overall significance of potential increased injury due to exposure to worksites and Project equipment is **Insignificant** based on high magnitude but medium stakeholder concern and high manageability (overall medium severity) and unlikely probability.

All PACs within the Project Area are considered equally at risk of this potential impact.

18.6.4.2.8 EHA 8: Exposure to Potentially Hazardous Materials

Potential exposure to hazardous materials for local communities may arise due to the causes outlined in Table 18-32. These impacts are assessed and appropriate mitigation measures provided in the other chapters of the ESIA as indicated in Table 18-32.

Table 18-32: Exposure to Potentially Hazardous Materials

Potential Source of Exposure	Chapter where Impact is Assessed
<ul style="list-style-type: none"> Fugitive dust from increased road traffic; Exhaust from Project generators and vehicles; Fugitive emissions of fine particulates; Fugitive emissions of VOCs; and Fugitive odour emissions. 	Chapter 6: Air Quality and Climate
Exposure due to improper management of liquid and solid wastes.	Chapter 8: Geology and Soils Chapter 9: Hydrogeology Chapter 10: Surface Water Chapter 12: Waste
Accidental spills and releases causing exposure to fuels and chemicals.	Chapter 8: Geology and Soils Chapter 9: Hydrogeology Chapter 10: Surface Water Chapter 20: Unplanned Events
Groundwater contamination from well drilling activities, on-site activities, hydrotesting, leakage of grouting and drilling fluids.	Chapter 9: Hydrogeology Chapter 20: Unplanned Events
Surface water contamination from ground levelling, excavation and infrastructure development; uncontrolled discharge/ flooding off site; onsite activities; hydrotesting; slurry ingress during tunnelling	Chapter 10: Surface Water

Potential Source of Exposure	Chapter where Impact is Assessed
and leaks and spills of slurry; drilling and associated activities.	

18.6.4.2.9 EHA 9: Psychosocial Effects (Social Determinants of Health)

Potential impacts on social determinants of health such as gender, ethnicity, social and cultural cohesion, education levels, poverty or economic disadvantage, and dependence on unique natural resources are covered in **Chapter 16: Social** and **Chapter 19: Ecosystem Services**.

Potential Health Impact 12 – Injury resulting from increase in violence at the household or community level due to introduction of Project related stress factors

There is a risk of increase in violence between individuals, groups or at the household level (including gender based violence (GBV)) resulting in injury due to the following Project-related stress factors:

- **Influx:** The increase of migrants into the area may create new tensions between newcomers and host communities due to competition over jobs and resources and perceived differences in behaviour and values;
- **Resettlement and compensation process:** The resettlement and compensation process is likely to exacerbate land related conflict as well as fighting within and between families over the distribution and management of compensation payments (see also **Chapter 16: Social**); and
- **Employment:** Unmet expectations around employment and perceived uneven distribution of employment benefits can lead to increased community unrest, which can manifest in violence. In addition, increased disposable incomes from direct and indirect employment may be spent on alcohol and drug consumption fuelling anti-social behaviour. Widespread job losses and economic slowdown at the end of the construction and decommissioning phases can lead to frustration and feelings of emasculation amongst men, which can also manifest in increased alcohol and drug consumption and anti-social behaviour.

The majority of disputes within the baseline Study Area were reported to relate to land issues. Conflicts sometimes manifest in a violent way including with use of weapons, trespass and destruction of crops or property, but this is reportedly not very common. Domestic violence is reported to be very common amongst PACs. The main causes of domestic violence are perceived to be polygamy, infidelity, poverty, early marriage and alcohol abuse. The baseline reports that alcohol abuse is a serious issue across the Project Area especially in villages along the lake shores and peri-urbanised areas. While violent discrimination against migrants was not reported during baseline surveys, some prejudice against recent migrants was detectable and could become pronounced if it is perceived that migrants are benefitting more from the Project than host communities, or available resources are constrained as a result of increased use by migrants.

The dimension ratings for potential injury due to increase in violence are given in Table 18-33.

Table 18-33: Dimension rating - Injury resulting from increase in violence at the household or community level due to introduction of Project related stress factors

Dimension	Rating
Nature	Indirect / Induced
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when the resettlement and compensation process is ongoing, Project employment levels are

Dimension	Rating
	highest and level of influx is expected to be highest.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – while recovery will be possible from the majority of injuries from violence there is potential for long term disability or death.
Level of stakeholder concern	Medium – risk of increase in violence at the community level was not consistently raised as a major stakeholder concern, however, risk of increase in domestic and gender based violence was raised as a concern amongst several stakeholders.
Manageability	Low to Medium - the project will have little influence to influence household level causes of violence but may have moderate ability to influence the likely causes of increases in violence at community level.
Probability	Likely - there has been a precedent of increase in domestic and GBV linked to compensation payments for economic and physical displacement linked to previous phases of oil and gas development in the region.

Significance ranking

The overall significance of injury resulting from potential increase in violence at the household or community level due to introduction of Project related stress factors is considered to be of a **High Adverse** significance based on high magnitude, medium level of stakeholder concern, low to medium manageability (overall medium severity) and likely probability.

Women and children are most likely to be victims of domestic violence. Prostitutes are also considered particularly vulnerable to GBV.

Potential Health Impact 13 – Increased prevalence of substance misuse (drugs, alcohol, smoking) due to Project related stress factors

There is a potential risk that the prevalence of substance misuse (drugs, alcohol, smoking) will rise, resulting in adverse health and safety outcomes, due to the factors outlined below:

- **Resettlement and compensation:** Compensation payments may be used to purchase alcohol, drugs or cigarettes. In addition the resettlement and compensation process may lead to increased stress amongst those affected, which can manifest in increased consumption of alcohol;
- **Employment:** Increased disposable income gained from direct and indirect employment may be spent on alcohol, drugs or cigarettes particularly by those who are not accustomed to dealing with large amounts of cash; and
- **Influx:** Influx can lead to increased stress within PACs, which may manifest itself in increased substance abuse.

The baseline reports that alcohol abuse is a serious issue across the Project Area especially in villages along the lake shores and peri-urbanised areas. The consequences of alcohol abuse include:

- Diseases attributable to alcohol consumption, such as cirrhosis, cardiovascular diseases, birth defect and foetal alcohol syndrome;
- Risk of road traffic accidents (boda boda motorcycles, bicycles, pedestrians and vehicles);
- High risk behaviours, such as unprotected sex with commercial sex workers (risk of HIV/AIDS infection);
- Social disorder (fighting);
- Domestic violence and family disruption (separation and divorce); and
- Lower productivity (for instance in crop fields) and absenteeism from work.

The dimension ratings for potential increased prevalence of substance misuse due to Project related stress factors are given in Table 18-34.

Table 18-34: Increased prevalence of substance misuse due to project related stress factors

Dimension	Rating
Nature	Indirect / Induced
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when the resettlement and compensation process is ongoing, Project employment levels are highest and level of influx is expected to be highest.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	Medium – in the majority of cases the effects of increases in substance use will not be permanently debilitating.
Level of stakeholder concern	Low – risk of increase in substance misuse was not consistently raised as a major stakeholder concern.
Manageability	Low - the Project will have limited ability to control for the likely causes of increases in substance misuse.
Probability	Possible - there is already a high level of alcohol abuse amongst PACs therefore any increases introduced due to Project related stress factors is likely to be marginal.

Significance Ranking

The overall significance of potential increased prevalence of substance misuse due to Project related stress factors is considered to be of a **Low Adverse** significance. This is based on medium magnitude, low level of stakeholder concern but low manageability (overall medium severity) and relatively low probability (possible).

Potential increased prevalence of substance misuse is likely to affect all PACs within the direct Project Area and in influx hotspots. While both men and women consume alcohol, men are more common in public drinking places and it is recognised that certain groups of men, such as fishermen,

are more likely to be heavy drinkers. Men are therefore considered particularly vulnerable to this potential impact.

Potential Health Impact 14 – Increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and newborn health

Perceived economic benefits of having relationships with men who have increased disposable incomes as a result of direct, indirect or induced employment from the Project may potentially persuade young women and girls to practice more risky sexual behaviour (e.g. having unprotected sex or engaging with multiple partners) resulting in underage and unwanted pregnancies and a rise in abortion seeking. This can in turn lead to several adverse health and development outcomes including increased risk of maternal and newborn death, or childbirth complications leading to long term chronic and debilitating ill health, increased school drop out by the girl child, and increased risk of impoverishment for single unmarried mothers.

Uganda has historically had one of the highest maternal death rates in sub-Saharan Africa. Lack of emergency healthcare services is one of the key challenges associated with the factors leading to death and disability from pregnancy and childbirth such as bleeding, obstructed labour, infection, pregnancy related hypertension, post-partum haemorrhage and obstructed labour.

The dimension ratings for potential increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and newborn health are presented in Table 18-35.

Table 18-35: Increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and new-born health

Dimension	Rating
Nature	Indirect
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when Project employment levels are highest and level of influx is expected to be highest.
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – unwanted pregnancies and complications related to abortion or child birth particularly for young girls can have irreversible health and wellbeing impacts.
Level of stakeholder concern	High – risk of increase in unwanted pregnancy particularly for underage girls is a high stakeholder concern.
Manageability	Low - the Project will have limited ability to control for increase in unwanted pregnancies.
Probability	Likely - based on precedent from other Projects in Uganda and previous phases of oil and gas development in the region.

Significance Ranking

The overall significance of increase in teenage and unwanted pregnancy leading to potential adverse impacts on maternal and new-born health is considered to be of a **High Adverse** significance, based on high magnitude, high level of stakeholder concern, low manageability (high severity) and likely probability.

This potential impact is likely to affect teenage girls in the Project Area and particularly in influx hotspots.

*18.6.4.2.10EHA 10: Cultural Health Practices**Potential Health Impact 15 – Improved health seeking behaviour*

The Project may potentially lead to improved health seeking behaviour due to:

- **Employment:** Employment can lead to increased incomes that can be spent on accessing healthcare. Employment on the Project will also expose employees to a strong health and safety culture, which employees may pass back on to their families and wider community;
- **Improved road network:** One reason some people do not currently use public health services is travel distance and associated time and costs. Improved road networks within the Project Area are likely to improve accessibility to health centres for some communities, which will likely encourage them to begin using these services; and
- **Influx:** An influx of people could attract providers of public transport e.g. more taxis plying routes in the Project Area. This would also contribute to having more people access health centres.

The baseline reports that women and children form the majority of those that seek treatment at health centres. People located in remote rural areas were reported to delay treatment seeking and this was attributed to lack of means of transport to access the services, lack of awareness about services available, fear, and uncertainty about costs involved.

The dimension ratings for potential improved health seeking behaviour are presented in Table 18-36.

Table 18-36: Dimension ratings – improved health seeking behaviour

Dimension	Rating
Nature	Induced
Project phase	All phases though likely to be most significant during the Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when direct and indirect employment levels are highest.
Duration	Scale in years
Frequency	Year round
Extent	Regional
Magnitude	Medium – improvements in health seeking behaviour due to increased disposable income invested in health care are reversible if/ when employment ceases. Improved accessibility due to road upgrades and construction of new roads will continue on a long term to permanent basis.
Level of stakeholder concern	Low – expectation of improvements to health seeking behaviour was not frequently raised in relation to the Project.

Dimension	Rating
Manageability	Low - the Project will have limited ability to control people's health seeking behaviour.
Probability	Possible - while cost and travel distance are some of the factors limiting people's access to healthcare at present, several other factors are also involved.

Significance Rating

The overall significance of the potential impact of improved health seeking behaviour is considered to be of a **Low Beneficial** significance. This is based on medium magnitude, low manageability and low level of stakeholder concern (overall low severity) and relatively low probability (possible).

All PACs are likely to benefit from this potential impact, however, those who benefit from direct and indirect employment as well as those who live in proximity to improved road networks are particularly likely to benefit.

18.6.4.2.11EHA 11: Health services infrastructure and capacity including programme management delivery

Potential Health Impact 16 – Overburdening of health services infrastructure and delivery (including emergency health services)

Influx will potentially place increased pressure on existing health services used by PACs particularly in influx hotspots, which is likely to lead to deterioration in quality and availability of services for local populations.

Existing health services used by PACs are extremely constrained. Nearly all public health facilities visited as part of baseline survey work lacked sufficient human resource capacity both in terms of numbers and training. The baseline reports that the number of patients receiving care at facilities is growing and yet the infrastructure and staff are not adequate to handle the patient workload appropriately. There is also a severe lack of emergency health services. This has a particular potential impact on pregnant women and Uganda has historically had one of the highest maternal death rates in Sub-Saharan Africa.

All PACs are likely to be affected by this potential impact. Those that have a higher need to access public health services are also considered particularly vulnerable including the chronically ill, those living with HIV/AIDS, persons with disabilities, pregnant women and children under five. Health centres in influx hotspots are likely to face the most pressure including Hoima Regional Referral Hospital, Biiso Health Centre III, Buliisa Health Centre IV, Kigwera Health Centre II, Pakwach Health Centre IV, Purongo Health Centre III, and Masindi General Hospital.

The dimension ratings for potential overburdening of health services infrastructure and delivery are presented in Table 18-37.

Table 18-37: Dimension ratings – overburdening of health services infrastructure and delivery

Dimension	Rating
Nature	Induced
Project phase	Site Preparation and Enabling Works phase and Construction and Pre-Commissioning phase when influx is likely to be highest. Once the Project is operational it is expected that the capacity of local health services will be improved as a result of increased budget from local and national government, funded in part by Project revenue in the form of royalty payments and increased tax revenues directly

Dimension	Rating
	and indirectly linked to the Project.
Duration	Scale in years
Frequency	Year round
Extent	Regional
Magnitude	Medium – potential deterioration in quality and availability of health services due to overburdening of services can be reversed.
Level of stakeholder concern	High – stakeholders expressed high level of concern about influx and availability of health infrastructure as an extremely important issue for PACs.
Manageability	Medium to high - the Project will have moderate ability to control pressure on available health infrastructure due to influx of non-Project workers or workers living outside camps but high ability to control pressure on health infrastructure from Project workers living in camps.
Probability	Very likely: based on inadequacy of existing health infrastructure and predicted level of influx and overcrowding in influx hotspots.

Significance rating

The overall significance of overburdening of health infrastructure and services is considered to be of a **High Adverse** significance. This is based on high stakeholder concern, medium to high manageability, medium magnitude (resulting in overall medium severity) and very high likelihood.

PACs in influx hotspots are likely to be most affected by this potential impact. Children under five, pregnant women and the chronically ill are considered particularly vulnerable to this potential impact as they are the main users of health services.

Potential Health Impact 17 - Improved regional health planning and programme delivery

Regional health planning and programme delivery may potentially be improved due to sharing of data with NGO and government health partners from ongoing Project related health monitoring.

Health data is currently collected at facility level and reported using the national HMIS. HMIS data is limited by a number of factors including incomplete reporting, incomplete coverage of diseases that may be important at the local level such as Neglected Tropical Diseases, and suboptimal data quality.

Dimension ratings for potential improvement in regional health planning and programme delivery are provided in Table 18-38.

Table 18-38: Improvement in regional health planning and programme delivery

Dimension	Rating
Nature	Induced
Project phase	All phases

Dimension	Rating
Duration	Scale in years
Frequency	Year round
Extent	Regional
Magnitude	Medium – due to long term nature of potential impact and its potential to reach a large number of people. There is some potential that benefits will be negated when Project activity slows down and monitoring frequency reduces.
Level of stakeholder concern	Medium – stakeholders expressed high level of expectation that the Project would somehow lead to improved health delivery for PACs and health service delivery is an extremely important issue for PACs.
Manageability	Low - while the Project has high control over sharing of health monitoring data, it has limited ability to influence how that data will be used by external stakeholders to improve service and programme delivery.
Probability	Likely - based on similar impact experienced on past projects of similar context and scale (referred to in Ref. 18-51).

Significance ranking

The overall significance of potential improvement to regional health planning and delivery is considered to be of a **Moderate Beneficial** significance. This is based on medium magnitude, stakeholder concern and low manageability (overall moderate severity) and likely probability.

18.6.4.2.12EHA 12: Non-Communicable Disease

Potential Health Impact 18 – Increase in Non-Communicable Disease (NCD)

Reports on non-communicable diseases such as hypertension, heart disease, depression, asthma, diabetes, cancer and arthritis were relatively low across the Study Area compared to infectious diseases, though this could be in part attributed to low levels of diagnosis. The burden of NCDs in the Study Area appears to be on the increase. The increased NCD burden is likely a result of changes in lifestyle such as increased alcohol intake in the community as well as population aging associated with increased life expectancy.

The Project may potentially lead to an increase in NCD (including cardiovascular disease, cancer, respiratory disease, and Type 2 diabetes) for the following reasons:

- **Employment:** increase in disposable incomes due to direct and indirect employment can result in change in lifestyle, which can potentially result in increased consumption of unhealthy foods, cigarettes, and alcohol. Transition from subsistence to wage based employment can also lead to changes in diet that can increase risk of NCD (e.g. increased spend on foods with higher fat, sugar and salt content instead of consuming fresh produce from subsistence activities);
- **Improved network and influx:** Increased population and improved road network can lead to an increased importation of cheap, less nutritious foods, alcohol and tobacco products to local shops and markets;
- **Project induced changes to physical and social environment:** Increased stress levels due to Project induced changes to the physical and social environment could lead to increased risk of NCD; and

- **Resettlement:** Stress associated with the resettlement process could cause increase in NCD.

The dimension ratings for potential increase in non-communicable disease are given in Table 18-39.

Table 18-39: Dimension ratings – increase in non-communicable disease

Dimension	Rating
Nature	Induced
Project phase	All phases
Duration	Scale in years
Frequency	Year round
Extent	Regional
Magnitude	Medium – NCDs can be cured or improved to an extent (e.g. high blood pressure and high cholesterol are reversible, but lung cancer from smoking is not).
Level of stakeholder concern	Low – increase in NCD was not a point of emphasis in stakeholder discussions.
Manageability	Low - the Project will have limited ability to influence peoples' consumption patterns or how they will respond to changes in the wider environment.
Probability	Possible - there is some uncertainty about causes of the increase in NCD. For example, there is uncertainty about whether increased disposable incomes will lead to good or bad health choices and uncertainty about how much the change in the physical and social environment will affect stress levels. There is some evidence from examples on other projects that improved road networks and increased population centres will lead to greater import of cheap food products, tobacco and alcohol products (referred to in Ref. 18-51).

Significance Rating

The overall significance of potential increase in NCD is considered to be of a **Low Adverse** significance based on medium magnitude, low manageability, low stakeholder concern (overall low severity) and relatively low likelihood (possible).

This potential impact is likely to affect all PACs equally.

18.6.4.2.13OHS Impacts

Potential Health Impact 19 – Potential Exposure of Workforce to Insufficient Occupational Health and Safety Standards

The Project will employ, directly and indirectly through contractors and subcontractors, approximately 4,000 employees at the peak of construction. There are inherent dangers associated with the types of activities that will be performed for the Project. Without sufficient management of health and safety issues the workforce may potentially be exposed to risk of an occupational health and safety incident that could result in injury or death.

In 2011, Uganda was reported to have the highest rate of construction accidents in the world, with 4,200 major injuries occurring per year. Underreporting of workplace accidents and diseases and lack of data on workplaces, as well as absence of District OHS officers were identified as issues in the Social Baseline (see **Chapter 16: Social**).

The Project has a number of corporate policies and standards in place outlining its commitment to the health and safety of its workers that are in alignment with international good practice (see Section 18.6.3). However, the challenges of working in a remote area, in a country with a low occupational health and safety culture, and using subcontractors and suppliers who may not be experienced in meeting the requirements of international oil companies may create challenges for the Project to meet the requisite national and corporate OHS standards.

The dimension ratings for risk of potential exposure of workforce to insufficient OHS standards are provided in Table 18-40.

Table 18-40: Dimension Ratings – Potential exposure of Workforce to Insufficient Occupational Health and Safety Standards

Dimension	Rating
Nature	Direct
Project phase	All phases
Duration	Scale in years
Frequency	Year round
Extent	Local
Magnitude	High – while recovery will be possible from the majority of injuries there is potential for long term disability or death.
Level of stakeholder concern	Medium – concerns about occupational health and safety were raised by some stakeholders mainly at national level.
Manageability	High - the Project has a high ability to manage OHS standards for direct workers and primary contractors. Medium - the Project has some limitations on its ability to manage OHS standards for secondary contractors and supply chain workers.
Probability	Possible - while likelihood of direct and primary contractor workers being exposed to insufficient OHS standards is low, there is a possibility that workers further down the supply chain will be exposed to insufficient standards.

Significance Rating

The overall significance of potential exposure of workforce to insufficient OHS standards is considered **Moderate Adverse** based on high magnitude, medium to high manageability, medium stakeholder concern (overall medium to high severity) and relatively low likelihood (possible).

Receptors to this potential impact may include those contracted or subcontracted to work on the Project. Unskilled workers who have a poor understanding of HSE practices and procedures and low awareness of national and international requirements for labour and health and safety standards are considered particularly vulnerable to this potential impact. Workers and supply chain workers lower

down in the 'subcontractor hierarchy' are also considered more vulnerable to exposure to insufficient OHS standards.

18.6.4.3 Additional Mitigation and Enhancement

It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

18.6.4.3.1 Community Impact Management Strategy (Mitigation H.6)

Chapter 16: Social provides details of the requirements for development of a Community Impact Management Strategy, which will include an overarching policy statement on the key principles of community impact management (compliant with IFC PS, Ugandan regulations and Project Proponent HSE, Ethics, Anti-Corruption and Anti-Bribery standards). Participative monitoring and evaluation will be part of the Community Impact Management Strategy and, as far as possible, will be integrated into the Environmental and Social Management Plan for ongoing monitoring of wider environmental and social mitigation implementation. Further detail on the Community Impact Management Strategy is provided in **Chapter 16: Social**.

Community Health, Sanitation, Safety & Security Plan (Mitigation H.1)

The Community Health, Sanitation, Safety & Security Plan will be an overarching plan within the Community Impact Management Strategy that will set out overall objectives and targets for management of impacts on community wellbeing and overall health, safety and security. The Community Health, Sanitation, Safety & Security Plan will comprise a subset of plans, programmes and procedures that include mitigation and enhancement measures relevant to community health and wellbeing, and will provide details of resource requirements and management responsibilities to deliver the required measures.

The Community Health, Sanitation, Safety & Security Plan will include the following specific measures:

- **Health and wellness education and communication campaigns programme for local communities:** The Project Proponents will work with local government, the Ministry of Health, District Health Teams and selected NGO partners to deliver education and communication on key public health issues in PACs using media advertisements and talk shows on FM radio, through village health teams, placing posters and banners in public places (such as in health centres, local government offices, schools, police stations). Topics that will be covered will include, but will not be limited to:
 - Malaria prevention and management;
 - Hygiene and sanitation, including diarrhoeal disease prevention;
 - Indoor air pollution and household ventilation;
 - STI and HIV/AIDS prevention and management;
 - TB prevention and management;
 - Community Road safety (including messaging aimed particularly at children and delivered in partnership with local schools);
 - Access to clean and safe water;
 - Family planning (especially targeted at girls and young women);
 - Nutrition; and
 - Zoonotic disease including Emerging Infectious Disease delivered in partnership with the District Veterinary Officer. This component will include information on the use of protective equipment when handling livestock, early diagnosis and treatment of infectious disease, vaccination programs, disposing of infected animals appropriately, appropriate sanitation

practices, controlling for infestation of pests which can carry zoonotic infections; proper preparation of wild animal products before consumption (e.g. blood and meat should be properly cooked before eating); and raising awareness on human-to-human transmission of Emerging Infectious Diseases.

- **Community Engagement Capacity Building programme for local government:** Measures will be taken to enhance local government's role in community engagement and their capacity to provide proactive information dissemination and feedback on their monitoring activities to local communities. Strengthening technical capacity will need to be supported with an increased resource capacity provided through local and national government budget allocation to provide for sufficient resources to mobilise to communities and undertake engagement activities.
 - Focus will be placed on communicating around some of the key Project impacts and mitigation measures linked to employment, resettlement and influx, including but not limited to:
 - The resettlement process including information about land rights, the valuation process, and mediation mechanisms;
 - Land speculation through community sensitisation, campaign to raise awareness of land rights implemented in partnership with government, local civil society organisations and community leaders;
 - The Project's Local Employment Procedure to anticipate conflicts over Project employment and;
 - The dangers of alcoholism, drug abuse, domestic violence, prostitution and the importance of safe sex.
- **Mobile Health Clinic:** Assess feasibility of establishing a mobile clinic to provide healthcare services to communities in Buliisa District particularly those located remote from health centres. The equipment for the clinic would be provided by the Project and the clinic would be managed by the district health team. Specifically the project proponents would be responsible for undertaking the feasibility study for the clinic. If the project proponents can provide equipment for the set-up (i.e. fully equipped vehicle) the feasibility and sustainability of this measure will depend on input from national and local government stakeholders and/or community associations to provide resources for the ongoing operation and upkeep of mobile clinic (i.e. staff, fuel for vehicle, vehicle maintenance, medicine supplies, and replacing equipment when required). This will be established through an MoU between relevant parties with potential support from donor organisations;
- **Infection Prevention and Control Program:** The Project Proponents will develop an Infection Prevention and Control Program to minimise the transmission of infectious diseases and to prepare for and prevent disease outbreaks. The Infection Prevention and Control Plan will include:
 - Requirements for health screening and vaccination of workers against common infectious diseases before admittance to the accommodation camps (provided for under the Labour Management Plan);
 - Sensitisation of workers and local communities on prevention and management of infections (delivered through wider education and communication campaigns for communities and workers);
 - Provide the District Health Team with information in regards to the identified infectious risks in the environment that Company medical team may have documented amongst the workers at the different facilities. The District Health Team will also be provided with the appropriate interventions undertaken by the Company; and
 - Disease surveillance and rapid response measures developed in partnership with District Health Teams, local health centres, and the Office for the Prime Minister.

- **HIV Workplace Policy:** See Labour Management Plan below;
- **Health monitoring and reporting:** The Project Proponents will also collaborate with the District Health Office and Ministry of Health to produce reporting on key community health and safety indicators (to be selected in partnership with government and NGO partners) in Buliisa District, Hoima Municipality, Masindi Municipality, Pakwach Town Council and Purongo and Got Apwoyo sub counties; and
- **Human Rights Training for Security Personnel:** The Project will comply with the Voluntary Principles on Security and Human Rights. Project Proponents will agree a MoU with the Uganda Human Rights Commission (UHRC) or any relevant entity for provision of human rights training for all Project security personnel as well as local and regional security personnel in the Voluntary Principles on Security and Human Rights. The Project will also implement an incident reporting and investigation mechanism specifically covering incidents of excessive use of force by security personnel. Feasibility of implementing the mechanism via the Grievance mechanism will be explored.

The Community Health, Sanitation, Safety & Security Plan and Labour Management Plan will also include the following additional measure to mitigate adverse community health and safety impacts:

- Refresher training for Village Health Teams / Community extension workers.

Vector and Malaria Control Programme (Mitigation H.2)

A Vector and Malaria Control Programme will be developed and measures will be put in place and appropriately monitored to minimise the risk of malaria transmission. Resourcing requirements for implementation of activities under the Vector Control Programme will be met through employment of local staff as far as possible, provided they meet the requisite skills and education requirements.

The Vector and Malaria Control Programme will include:

- A Vector Control Policy, Management Plan and Standard Operating Procedures for vector and malaria control;
- Measures to partner with government on malaria prevention through a Memorandum of Understanding. The MoU will include specifications that the Project Proponents will:
 - Align their activities with the National Malaria Control Program;
 - Collaborate with District Health Offices to work with district vector control office, Community Extension Health Workers (When rolled out by MoH in Buliisa), Village Health Teams and Community-Based Distributors, and selected NGOs in the fight and treatment of malaria and other vector related disease. Measures to be considered may include application of selected insecticides for indoor residual spraying; larvae control programmes; distribution of insecticide treated nets (ITN) and initiatives to promote the correct use of ITN;
 - Undertake vector control awareness within public health and education facilities (e.g. use of screens, environmental management);
 - Review training needs and specific skills requirements for personnel involved in vector control; and
 - Provide the District health office with monthly reporting on malaria cases among Project workers in Buliisa District, Hoima Municipality, Masindi Municipality, Pakwach Town Council and Purongo and Got Apwoyo sub counties.
- Specifications for surveillance and monitoring of vectors and vector control activities in the community: Sustained sensitization of the population on the causes and prevention of malaria (implemented through the health education programme delivered under the mitigation Health and wellness education and communication campaigns for local communities H1) with a focus on children by working with schools and educators; and
- Specifications for surveillance and monitoring of vectors and vector control activities: Review of building design for resettlement housing to reduce vector-human contact to minimise disease risk.

Community Environmental Conservation Plan (Mitigation H.9)

A number of environmental conservation initiatives will be undertaken in partnership with local communities and relevant organisations (e.g. UWA), following feasibility studies, to give communities a sense of ownership over the management of their local environment and natural resources. Proposed activities relevant to Community Health include:

- **Community Wildlife Conflict Prevention:** The community-wildlife conflict prevention program will align with the goals and actions set out in the Community-Based Wildlife Crime Prevention Action Plan (2017-2023) prepared by UWA (April 2017). Specific actions include:
 - Sensitising workers about MFNP rules (Labor Management Plan);
 - Monitoring during all phases in support of rules enforcement;
 - Partnering with UWA to raise awareness of MFNP rules amongst local communities especially in Nwoya district; and
 - Monitoring of the movement of key species (as per mitigation provided in Chapter 14 – Terrestrial Wildlife) will be undertaken. If it is found that species are encroaching into community areas outside the park suitable additional mitigation will be investigated and implemented. Any additional mitigation to address this issue will be developed in consultation with UWA and local communities.
- **Livestock Health:** The CHSSP will include provision of support for monitoring and surveillance of livestock health to identify any diseases that can be transmitted from livestock to humans. A monitoring and alert programme will be developed in partnership with District Veterinary Officer and District Health Teams; and
- **Community Natural Resources Enhancement:** The Plan will provide for extension of tree nurseries, including for trees with medicinal values, tree cover, honey for medical and other purposes.

RAPs for future Land Acquisition (Mitigation H.4)

Chapter 16: Social provides more details of the requirements for development of future RAPs, including specific requirements in relation to community health and safety.

Influx Management Strategy (Mitigation H.3)

Chapter 16: Social provides more details on the requirements for an Influx Management Strategy. The Project will set-up a Community Health, Sanitation, Safety and Security plan to:

- Monitor water quality and use in PACs;
- Monitor community health and safety impacts related to influx with the District local governments; and
- Provide health and wellness education and communication campaigns programme for local communities in particular on the dangers of alcoholism, drug abuse, domestic violence, prostitution and safe sex.

The plan will also include measures to:

- Work with district health teams and health service providers in influx hotspots to identify gaps and provide capacity building measures amongst local health providers;
- Mitigate impact of increased demand for natural medicines and rise in harvesting pressures on medicinal plants and animals; and
- Support Central Government working together with Buliisa District Authorities to implement a robust policing system to curtail the increasing criminal tendencies associated to increased influx.
- Management of influx hotspots through support of public infrastructure:

- The Project Proponents will, in consultation with relevant stakeholders (local communities and government, donor agencies, NGOs etc), evaluate the feasibility and consider investments to improve access to and capacity of public infrastructure to meet the increased demand particularly in influx hot spots for the following key services: health, water, sanitation, education, etc. Investments will be based on feasibility studies and will align with government development plans and the land use plan (to be developed). The feasibility and sustainability of any measures to support improvement in public infrastructure will depend on input from national and local government stakeholders and/or community associations to provide resources for the ongoing management, staffing and upkeep of such infrastructure. This will be established through an MoU between relevant parties with potential support from donor organisations.

Labour Management Plan (Mitigation H.5)

Chapter 16: Social provides more details of the requirements for development of a Labour Management Plan. Specific measures to address community health and safety issues include:

- Emergency healthcare provided for all workers while engaged in project activities at worksites;
- Treatment of non-emergency illness and disease will only be provided for workers accommodated in camps;
- Pre-employment health screening and vaccination against common infectious diseases will be required for all workers with annual health screening thereafter, while ensuring the protection of employee rights and confidentiality;
- Health and safety education will be provided for all workers including:
 - Hygiene training (e.g. hand washing) in worker health and safety induction briefings;
 - Nutrition and health lifestyle messages as part of continuous employee communications;
 - Prevention and management of diseases including HIV/AIDS and other STIs, malaria and TB; and
 - Community road safety.
- The project will provide a Workforce Accommodation Plan consistent with national and international guidelines (IFC, WB, EBRD). Provisions will be included within the supply chain management component of the Labour Management Plan to perform an HSE and sanitation check of contractor/sub-contractor accommodation outside the construction camps directly managed by the Project proponents or primary contractors, within the Project Area of Influence.
- Workforce Health monitoring and reporting: Disease cases amongst the Project workforce will be monitored and procedures will be put in place for notification to relevant government health agencies and programmes of cases (including the National TB Control Program, Malaria Control Program, AIDS Control Program, and Onchocerciasis Program); All primary and secondary contractors will implement a health surveillance programme for personnel working in areas where occupational exposures are close to or might exceed occupational exposure limits. Should the surveillance programme indicate any potential problem, further mitigation measures will be used to reduce exposure levels.
- Vector and Malaria Control Programme - Specifications for surveillance and monitoring of vectors and vector control activities within the workforce:
 - Training specifications for all staff and contractors in vector control and malaria prevention and management;
 - Specifications for personal protection measures for all Project workers e.g. use of bed nets, limiting outside activity from dusk to dawn, use of mosquito repellents particularly after dusk, use of chemoprophylaxis to decrease risk infection for non-immune personnel (i.e., workers from non-endemic areas);

- Review of waste and water management practices against requirements to minimise pooling of water and avoid creation of vector breeding grounds as far as possible;
- HIV Workplace Policy: The Project Proponents will partner with the Ministry of Health (specifically the AIDS Control Program and Uganda AIDS Commission) and District Health Teams to develop a site specific HIV Workplace Policy for the Project that is aligned with the International Labour Organisation (ILO) HIV workplace policy as well as national requirements for HIV workplace policy

The Project and its contractors will implement a Workforce Code of Conduct, including (but not limited to) the following specifications:

- Most project workers will reside at the Project camp where services like meals, waste management services and clean water will be provided, minimising need for worker interaction with local communities;
- Requirement that all workers (direct and contracted) must do Anti-Bribery and Corruption and Ethics and Compliance training annually;
- Cultural awareness induction training for all new staff regarding local customs, traditions and responsible community relations;
- Ban on alcohol and drug use for workers;
- Rules to forbid staff/contractors from purchasing charcoal & provide sensitisation against unsustainable use of firewood and charcoal; and
- General site rules will include ban on bushmeat hunting/purchase for employees and employee sensitisation against bush meat hunting/purchase (Within component on environmental awareness training).

Road Safety and Transport Management Plan (Mitigation H.7)

To address potential impact of road traffic accidents due to increase in traffic on public roads, the Proponents will develop and implement a Road Safety and Transport Management Plan. **Chapter 16: Social** (Section 16.7.3.3.5) provides more details of the requirements for a Road Safety and Transport Management Plan.

Community Road Safety: In conjunction with the Project Road Safety and Transport Management Plan, additional mitigation measures involving the affected community, local authorities and other project developers will be developed, including (but not limited to):

- Community Transport Communication Plan (within the SEP):
 - Providing regular information to stakeholders regarding timing of the Project;
 - Use of the Grievance Mechanism, to allow recording and follow up of any complaints related to Project traffic and road maintenance;
 - Safety briefings for all drivers entering the Project Area; and
 - Coordinate with UNRA on scheduling of roadworks to avoid works on multiple roads taking place simultaneously in order to ensure reasonable access through Project Area for local communities is maintained at all times.
- Road safety campaign and initiatives: Agree MoU with local government and Uganda Police about a road safety campaign that will include:

- Sensitisation on road safety e.g. wearing seatbelt, respecting speed limits, not overloading vehicles, keeping safe distance from other vehicles, safe road crossing, dangers of driving under influence of drugs or alcohol, managing the presence of livestock and cattle crossing roads;
 - Targeted campaigns and provision of equipment to ensure that bicycle and motorcycle users wear appropriate protective helmets and reflective jackets'; and
 - Provision of equipment to traffic police to help monitor and enforce speed limits, verification of vehicle safety and driving licenses, use of protective helmets and other driving rules.
- Monitoring & Evaluation framework of the implementation of Community Road Safety initiatives with the definition of key performance indicators for inputs, outputs and outcomes.

National and Community Content Programme (Mitigation H.8)

In order to enhance the beneficial impacts identified, the community members would have to improve their standards of living, and have more income. This could be as a result of direct, indirect or induced employment from the Project. Project Proponents will, in consultation with local communities, government and civil society, consider investments to extend livelihood programs (targeting PAPs only) to the wider project affected communities, in order to improve food security and economic resilience of affected communities, develop local capacities and enhance activities such as fishing, crop farming, livestock farming, and trade, as well as programmes that support economic diversification. These programmes will be aligned with the strategic objectives outlined within the Project National and Community Content Programme and will consider how affected communities can enhance their capacity to participate in the project supply chain, and how skills learned on the Project can be applied to other sectors in the local area. Specific training and job readiness support programmes that will be considered will include (but are not limited to):

- Institutional capacity building (targeting local government, local institutions);
- Business management training and links to microfinance;
- Food security and agriculture programs (irrigation, crops, vegetables, trees, honey, livestock, fishing); and
- Improve access to health, water and sanitation.

Refer to **Chapter 16: Social** for the full details on the requirements for development of a National and Community Content Programme.

Occupational Health and Safety Management Measures (Mitigation H.10)

All Project staff, including contractors, will be subject to the Project Proponents' Workplace HSE Policies and Standards and the Project's overall HSE Management System – this will be specified in contracts and contractors' capacity to meet these standards will be assessed as part of the tendering process. Special emphasis shall be placed on Malaria Management, Medical Fitness for Contractor and Subcontractor employees, and Land Transportation. Contractors auditing will be done to check compliance with Corporate standards and Ugandan regulations on a regular basis at each phase of the Tilenga Project and throughout Life Of Field. Specifically, contracts will include the following:

- All primary and secondary subcontractor contracts will specify H&S performance and monitoring requirements through training, site visits, audits, etc. Verification of the effectiveness of prevention and control strategies will include:
 - Safety inspection and testing of all safety features and hazard control measures and calibration of monitoring equipment;
 - Surveillance of the working environment;
 - Surveillance of workers health as appropriate;
 - Record of training provided to employees, contractors and visitors;
 - Reporting and investigation of all occupational injuries and near misses, suspected cases of occupational disease and dangerous occurrences and incidents;
- All contractors and subcontractors will follow the Project's incident reporting requirement for the documentation and reporting of occupational accidents, diseases and incidents. Investigation of

incidents should establish what happened, determine the cause and identify measures to prevent recurrence;

- All workers (including contractors and subcontractors) will have contracts that clearly state the H&S terms of their employment and their legal rights. This will include requirements to undertake as per project proponents specification mandatory medical fitness examination prior to and during contract execution, mandatory declaration of any pre-existing medical conditions, and commitment to undertake chemoprophylaxis as part of malaria management. Mandate to stop any job they feel is unsafe- without fear of reprimand, In addition, report all anomalies and unsafe situations, participate in H&S inductions and training, adherence to the H&S reporting system and access to an employee grievance mechanism to allow workers to report grievances related to insufficient OHS standards;
- Identification of potential hazards to workers will be undertaken prior to the start of each phase and periodically during each phase and appropriate mitigation/controls specified;
- All contractors and subcontractors working or staying at Project sites will follow the Project's procedures for emergency preparedness and response; and all primary and secondary contractors will implement a health surveillance programme for personnel working in areas where occupational exposures are close to or might exceed occupational exposure limits. Should the surveillance programme indicate any potential problems, further mitigation measures will be used to reduce exposure levels; and
- HSE Policies and Procedures will be developed and implemented to include details of required safety measures (including personal protective equipment (PPE)) for construction and maintenance workers.

18.6.4.4 Residual Impacts – All Phases

A summary of the significance of residual impacts following the implementation of the additional mitigation is given in Table 18-41.

Table 18-41: Residual Health and Safety Impacts – All Phases

Impact	Applicable Mitigation and Enhancement Measures	Potential Impact Significance	Residual Impact Significance
Health Impact 1 - Increase in malaria	H.1, H.3, H.4, H.5	Moderate adverse	Low Adverse
Health Impact 2 - Increase in rates of TB and other respiratory disease	H.1, H.2, H.3, H.4, H.5	Moderate adverse	Low Adverse
Health Impact 3 - Increased rates of zoonotic disease	H.1, H.2, H.3, H.9 Also refer to Chapter 14: Terrestrial Wildlife and Chapter 19: Ecosystem Services	Low adverse	Low Adverse
Health Impact 4 - Increased prevalence of HIV/AIDS and other STIs	H.1, H.3, H.5	High adverse	Moderate Adverse

Impact	Applicable Mitigation and Enhancement Measures	Potential Impact Significance	Residual Impact Significance
Health Impact 5 - Improper management of Project waste or discharge leading to contamination of local environment making people sick	Refer to Chapter 8: Geology and Soils, Chapter 9: Hydrogeology, Chapter 10: Surface Water and Chapter 12: Waste	Low adverse	Insignificant
Health Impact 6 - Increase in prevalence of water, sanitation and waste related disease	H.1, H.3, H.4, H.5, H.6	Moderate adverse	Low Adverse
Health Impact 7 - Deterioration in nutritional status	H.1, H.2, H.3, H.4, H.5, H.8	Moderate adverse	Low Adverse
Health Impact 8 - Improvement in nutritional status	H.1, H.2, H.3, H.4, H.5, H.8	Low beneficial	Low Beneficial
Health Impact 9 - Injuries from road traffic accidents due to increase in traffic on public roads	H.1, H.3, H.7 Refer also to Chapter 20: Unplanned Events	Moderate adverse	Low Adverse
Health Impact 10 - Personal injury due to excessive use of force by government or private security staff	H.1, H.5	Moderate adverse	Low Adverse
Health Impact 11 – Risk of accident or injury due to community exposure to worksites and Project equipment	H.1, H.3, H.5, H.7 Refer also to Chapter 20: Unplanned Events	Insignificant	Insignificant
Health Impact 12 - Injury resulting from increase in violence at the household or community level	H.3, H.4, H.5, H.6	High adverse	Low Adverse
Health Impact 13 - Increased prevalence of substance misuse (drugs, alcohol, smoking) due to Project stress factors	H.1, H.3, H.4, H.5, H.6, H.8, H.9	Low adverse	Low Adverse
Health Impact 14 - Increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and new born health	H.1, H.3, H.5, H.6	High adverse	Moderate Adverse

Impact	Applicable Mitigation and Enhancement Measures	Potential Impact Significance	Residual Impact Significance
Health Impact 15 - Improved health seeking behaviour	H.1, H.5, H.6	Low beneficial	Moderate Beneficial
Health Impact 16 - Overburdening of health services infrastructure and delivery (including emergency services)	H.1, H.3, H.5, H.6	High adverse	Low Adverse
Health Impact 17 - Improved regional health planning and programme delivery	H.1, H.6	Moderate beneficial	Moderate Beneficial
Health Impact 18 - Increase in non-communicable disease	H.1, H.3, H.4, H.5	Low adverse	Low Adverse
Health Impact 19 – Potential exposure of workforce to insufficient OHS standards	H.5, H.10	Moderate adverse	Insignificant

18.7 In-Combination Effects

As described in **Chapter 4: Project Description and Alternatives**, the Project has a number of supporting and associated facilities that are being developed separately (i.e. they are subject to separate permitting processes and separate ESIA or EIAs). These facilities include:

- Tilenga Feeder Pipeline;
- East Africa Crude Oil Export Pipeline (EACOP);
- Waste management storage and treatment facilities for the Project;
- 132 Kilovolt (kV) transmission line from Industrial Area to Kabaale; and
- Critical oil roads.

As these facilities are directly linked to the Project and would not be constructed or expanded if the Project did not exist, there is a need to consider the in-combination impacts of the Project and the supporting and associated facilities. This is distinct from the Cumulative Impact Assessment (CIA) which considers all defined major developments identified within the Project's AoI (and not just the associated facilities) following a specific methodology which is focussed on priority Valued Environmental and Social Components (VECs) (see **Chapter 21: Cumulative Impact Assessment**).

The in-combination impact assessment considers the joint impacts of both the Project and the supporting and associated facilities. The approach to the assessment of in-combination impacts is presented in **Chapter 3: ESIA Methodology**, Section 3.3.5.

The identified residual impacts of the Project listed in Table 18-42 are predicted to have the potential to be exacerbated due to in-combination effects with supporting and associated facilities. A comment is provided on the potential in-combination impacts and the need for additional collaborative mitigation between Project Proponents to address these impacts. For the purpose of this ESIA, in-combination impacts are determined when we consider the joint impacts of both the Project and the Supporting Infrastructure and Associated Facilities, as described in **Chapter 4: Project Description and Alternatives**.

Table 18-42: In-Combination Effects – Health Impacts

Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
Health Impact 1 - Increase in malaria	Land use changes and influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities. This may create more breeding ground for vectors and is likely to exacerbate increase in malaria transmission rates.
Health Impact 2 - Increase in rates of TB and other respiratory disease	Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure, which is likely to exacerbate increases in rates of TB and other respiratory disease. Increased dust from construction traffic, particularly in areas where construction periods overlap, will increase respiratory traffic.
Health Impact 3 - Increased rates of zoonotic disease	Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities, which is likely to, in turn, exacerbate increases in rates of zoonotic disease.
Health Impact 4 - Increased prevalence of HIV/AIDS and other STIs	Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities. This along with increased levels of disposable income due to the additional economic opportunities created by supporting infrastructure and associated facilities is likely to significantly exacerbate increases in the prevalence of HIV/AIDS and other STIs.
Health Impact 5 - Improper management of Project waste or discharge leading to contamination of local environment and impact on human and livestock health	Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities, which will increase the proximity of the community to project facilities and waste discharge, potentially causing contamination of human and/or livestock.
Health Impact 6 - Increase in prevalence of water, sanitation and waste related disease	Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities, which is likely to exacerbate increases in prevalence of water, sanitation and waste related disease.
Health Impact 7 - Deterioration in nutritional status	There will be an increased level of displacement due to land take for supporting infrastructure and associated facilities, which will reduce the overall availability of farming land. Increased levels of influx into the region together with increased demand for food products to supply staff working on the development of supporting infrastructure and associated facilities is likely to exacerbate food price inflation. Together these effects may exacerbate deterioration in nutritional status amongst PACs.
Health Impact 8 - Improvement in nutritional status	The high number of combined direct and indirect employment opportunities will enhance this impact.
Health Impact 9 - Injuries from road traffic accidents due to increase in traffic on public roads	Traffic required for construction of supporting infrastructure and associated facilities will increase the likelihood of road traffic accidents on public roads. Influx into the region will be exacerbated due to in-migration and resettlement related to development of supporting infrastructure and associated facilities. This will likely lead to increased traffic on roads in the region further increasing the likelihood of increased road traffic accidents.

Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
Health Impact 12 - Injury resulting from increase in violence at the household or community level	This impact is likely to be exacerbated due to the higher level of influx and resettlement associated with development of supporting infrastructure and associated facilities.
Health Impact 13 - Increased prevalence of substance misuse (drugs, alcohol, smoking) due to Project stress factors	This impact is likely to be exacerbated due to the higher level of influx and resettlement associated with development of supporting infrastructure and associated facilities and increased levels of disposable income due to employment opportunities and compensation payment linked to associated facilities and supporting infrastructure.
Health Impact 14 - Increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and new born health	This impact is likely to be exacerbated due to the higher level of influx and resettlement associated with development of supporting infrastructure and associated facilities and increased levels of disposable income due to employment opportunities and compensation payment linked to associated facilities and supporting infrastructure.
Health Impact 16 - Overburdening of health services infrastructure and delivery (including emergency services)	This impact is likely to be exacerbated due to the higher level of influx and resettlement associated with development of supporting infrastructure and associated facilities.
Health Impact 17 - Improved regional health planning and programme delivery	There will be greater opportunity to share larger amounts of data collected in relation to health monitoring for associated facilities and supporting infrastructure.
Health Impact 18 - Increase in non-communicable disease	This impact is likely to be slightly exacerbated due to the higher level of influx and resettlement associated with development of supporting infrastructure and associated facilities and higher levels of disposable income linked to employment and compensation payment opportunities created by these projects.

In response to the potential for In-Combination events outlined above, the following additional mitigation should be considered:

- The Project Proponents will invite other developers, local and national government and other relevant stakeholders to participate in joint planning initiatives to address influx. Feasibility of jointly sponsoring a regional level Influx Management Strategy will be assessed.
- Project Proponents will invite other developers to participate in joint planning initiatives with local government and other relevant stakeholders, and will continue to share best practices to allow other developers to learn from successful implementation of mitigation measures addressing displacement for the Project.
- Project Proponents will invite other developers to participate in joint planning initiatives with local government and other relevant stakeholders to (i) optimise traffic flows in consideration of required vehicle movements for all developments (ii) jointly invest expertise and/ or resources to enhance the capacity of local traffic police (iii) jointly invest expertise and/ or resources to implement a road safety campaign within local communities and (iv) provide a platform to share 'lessons learned' in relation to vehicle and traffic management.
- The Project Proponents will invite other developers to share health monitoring data for the benefit of public health planning and will share best practice on how this can be done.

18.8 Unplanned Events

Further details on unplanned events relevant to the Project are detailed in **Chapter 20: Unplanned Events**.

18.9 Cumulative Impact Assessment

Chapter 21: Cumulative Impact Assessment provides an assessment of the potential cumulative effects of the Project together with other defined developments in the Project Aol. The CIA focussed on VECs that were selected on the basis of set criteria including the significance of the effects of the Project, the relationship between the Project and other developments, stakeholder opinions and the status of the VEC (with priority given to those which are of regional concern because they are poor or declining condition). On the basis of the selection process, “Community Health and Safe Communities” and “Food Security” were considered to be priority VECs and are therefore considered further in the CIA.

18.10 Conclusions

Impact assessment criteria were developed and utilised for assessing the potential impacts to Health and Safety through the lifetime of the Project, incorporating the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations; and Decommissioning phases. The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the four phases of the Project.

The main source of community health and safety impacts will be from Project induced in-migration due to employment and procurement opportunities. Additional mitigation measures outlined in Section 18.6.4.3 will help to mitigate the adverse impacts identified in this chapter to ensure that the majority are not significant. However, some moderate adverse impacts could remain despite additional mitigation, related to Health Impact 4 - Increased prevalence of HIV/AIDS and other STIs; and Health Impact 14 - Increase in teenage and unwanted pregnancy leading to adverse impacts on maternal and new born health.

The Project Proponents will develop an influx management strategy however due to the indirect nature of potential health impacts, successful adverse impacts minimization also relies on capacity of both national and local authorities to address the issues.

The Project is also expected to lead to a number of residual moderate beneficial impacts that could be experienced at the local and national level, related to Health Impact 15 - Improved health seeking behaviour; and Health Impact 17 - Improved regional health planning and programme delivery.

Additionally, enhancement measures will be put in place to further increase any identified beneficial impacts, where practical.

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19 – Ecosystem Services

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19 Ecosystem Services

19.1 Introduction

This Environmental and Social Impact Assessment (ESIA) chapter provides the Ecosystem Services (ESS) baseline and impact assessment, covering the potential impacts to ecosystem services to which the Project may give rise.

International Finance Corporation (IFC) Performance Standard (PS) 6 defines ecosystem services as “the benefits that people, including businesses, obtain from ecosystems” (Ref. 19.1), which accords with the definition provided by the Millennium Ecosystem Assessment (MA) (Ref. 19.2). While there is no single system for categorising ecosystem services, the MA framework is widely accepted and, as acknowledged in IFC PS Guidance Note 6 (paragraph 2), provides a useful starting point. The MA identifies four broad categories of ecosystem service:

- **Provisioning services** – the products people obtain from ecosystems. These may include (i) crops, livestock, seafood and game, wild foods, and ethno botanical plants; (ii) water for drinking, irrigation, and industrial purposes; and (iii) vegetated areas which provide the basis for many biopharmaceuticals, construction materials, and biomass for renewable energy. Goods may be provided by managed ecosystems, such as agricultural and aqua-cultural systems and plantation forests, or by natural or semi-natural ones, for example in the form of capture fisheries and the harvest of other wild foods;
- **Regulating services** – the benefits people obtain from the regulation of ecosystem processes. These may include *inter alia* (i) local climate regulation and carbon storage and sequestration; (ii) natural hazard mitigation; (iii) purification of water and air; (iv) control of pests and disease; and (v) pollination;
- **Cultural services** – the cultural, educational, and spiritual benefits people obtain from ecosystems. These may include *inter alia* (i) cultural, spiritual, or religious upliftment from cultural heritage, spiritual, or sacred sites; (ii) opportunities for recreation such as sport, hunting, fishing, ecotourism; and (iii) opportunities for scientific exploration, knowledge-building, and education; and
- **Supporting services** – the natural processes that maintain the other services such as soil formation, nutrient and water cycling, or primary production.

Supporting services differ from provisioning, regulating, and cultural services in that, unlike the other types of service from which people can directly benefit, their impacts on human well-being are indirect (Ref. 19.3 and Ref. 19.4) and mostly long-term in nature; the formation of soils, for example, takes place over decades or centuries. All other ecosystem services – regulating, provisioning, and cultural – ultimately depend on them. Supporting services are strongly interrelated to each other and are generally underpinned by a vast array of physical, chemical, and biological interactions. Supporting services are linked to particular biophysical structures or processes of an ecosystem, such as the way water storage is linked to soils, trees, plants, and other vegetation, and underpin the provision of the services which are of direct value to people, such as reduced surface water runoff, filtering of air and water quality, timber provision, and wild foods. These final ecosystem services provide benefits to people such as reduced damages from flooding as presented in Figure 19-1.

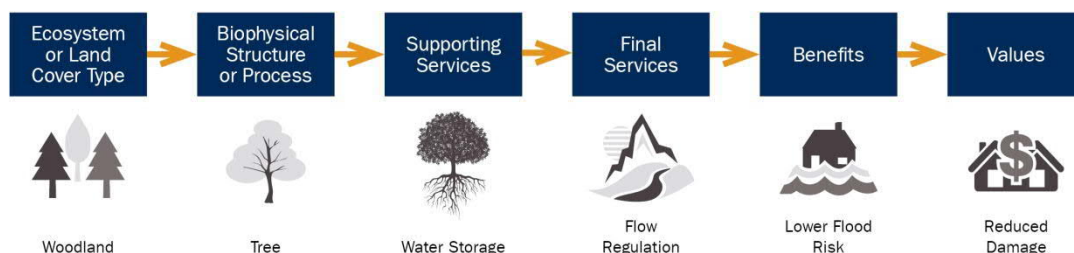


Figure 19-1 Relationship between Ecosystems, Services and Benefits

The benefits of ecosystems are conferred at many scales and often to multiple beneficiaries. At the local level, ecosystem services are frequently the basis for rural livelihoods and subsistence, particularly for the poor. Artisanal fishing of coastal waters and rivers, for example, provides both cash income and food for low-income families. Similarly, harvesting of plants for traditional medicine can provide an important substitute for more expensive commercially available pharmaceuticals. Benefits can also be regional – such as the provision of flood protection and erosion control afforded to communities and businesses by wetlands – or national, such as sites that form part of a country’s cultural heritage. At a global scale, ecosystems regulate climate and support the biodiversity which underpins all biological production.

Projects may also benefit from ecosystem services through, for example, the direct use of inputs such as water or through protection from natural hazards such as flooding. Identifying and protecting such services can have further benefits such as avoiding punitive regulation and negative publicity, strengthening the organisation’s reputation and, in some cases, providing effective natural alternatives to more expensive engineering solutions.

Despite the widespread benefits of ecosystem services, a number of recent high-profile reports have revealed that a significant number of global ecosystems are in a degraded state (Ref. 19.2, Ref. 19.5, and Ref. 19.6). This has led to a growing shift in national and international policy, away from looking at the environment in separate “silos” – air, water, soil, biodiversity – towards a more integrated approach based on entire ecosystems. Identifying impacts in this manner stresses the linkages and trade-offs between different services, allowing the ecosystem approach to identify areas which provide multiple benefits. Further, the emphasis placed on looking at the environment in terms of the benefits that people derive from it helps to ensure that the full value of ecosystem services and people’s preferences for these are incorporated into decision-making processes.

Other chapters covering aspects of relevance to this ecosystem services study include: **Chapter 7: Noise and Vibration**, **Chapter 9: Hydrogeology**; **Chapter 10: Surface Water**; **Chapter 11: Landscape and Visual**; **Chapter 13: Terrestrial Vegetation**; **Chapter 14 Terrestrial Wildlife**; **Chapter 15: Aquatic Life**; **Chapter 16: Social**; **Chapter 17: Archaeology and Cultural Heritage**; and **Chapter 20: Unplanned Events**. These are referenced throughout the chapter.

19.2 Scoping

Details were provided within the ESIA Scoping Report/ Terms of Reference document relating to the initial extent of the ESS assessment. A copy of the approval is contained with Appendix A. The initially identified impacts are summarised in Table 19-1. It is worth noting that the Project phasing and identified list of potential impacts have evolved during the completion of this ESIA and consequently build and expand on those originally identified in Table 19-1 during the Scoping phase.

Table 19-1: Potential Ecosystem Services Impacts as defined in Scoping Report

Potential Impact	Potential Cause	Potential Sensitivity	Phase
Potential impact on the supply and demand of ecosystem services.	All construction/ decommissioning activities and operation of the Project. Key activities include induced development and in migration as a result of project activities and opportunities.	Local communities (residents, business, agriculture and visitor attractions such as MFNP) within and potentially out-with the Project Area.	Construction Operation Decommissioning

19.3 Legislative Framework and International Standards

19.3.1 National Standards

A detailed analysis of national legislation is presented in **Chapter 2: Policy, Regulatory & Administrative Framework** of this ESIA. Of these national legislative instruments, a number are indirectly relevant to the ecosystem services assessment and are listed in Table 19-2.

Table 19-2: National Policies, Laws and Regulations

Key Relevant National Policies, Laws and Regulations
The Uganda Wildlife Act, Cap 200
The Water Act, Cap 152
The Fish Act, Cap 197
The National Forestry and Tree Planting Act, 2003
The Prohibition of the Burning of Grass Act, Cap 33
The Historical Monuments Act, Cap 46
The Uganda National Land Policy (2013)
Uganda Sustainable Energy for All (SE4All) Initiative Action Agenda (2015)
Uganda Vision 2040 (2013)
The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000
Uganda Wildlife (Murchison falls National Park) Regulations-S.I 200-3

19.3.2 International Standards and Guidelines

International standards and guidelines of relevance to ecosystem services are the IFC PSs. The IFC PSs provide guidance on how to identify and manage potential risks and impacts in a sustainable way, including stakeholder engagement and disclosure obligations. The IFC PSs relevant for the ecosystem services study are presented below (Table 19-3):

Table 19-3: Ecosystem Services in the 2012 IFC Performance Standards

Performance Standard	Summary of Requirements
PS1: Assessment and Management of Environmental and Social Risks and Impacts	Where a project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project's area of influence. This area of influence encompasses, as appropriate, indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.

Performance Standard	Summary of Requirements
PS4: Community Health, Safety, and Security	A project's direct impacts on priority ecosystem services may result in adverse health and safety risks and impacts to Affected Communities. With respect to this PS, ecosystem services are limited to provisioning and regulating services as defined in paragraph 2 of PS6...where appropriate and feasible, the client will identify those risks and potential impacts on priority ecosystem services that may be exacerbated by climate change. Adverse impacts should be avoided, and if these impacts are unavoidable, the client will implement mitigation measures in accordance with paragraphs 24 and 25 of PS6. With respect to the use of and loss of access to provisioning services, clients will implement mitigation measures in accordance with paragraphs 25–29 of PS5.
PS5: Land Acquisition and Involuntary Resettlement	This PS applies to physical and/or economic displacement resulting from the following types of land-related transactions...restriction on access to land or use of other resources including communal property and natural resources such as marine and aquatic resources, timber and non-timber forest products, freshwater, medicinal plants, hunting and gathering grounds and grazing and cropping areas (natural resource assets referred to in this PS are equivalent to ecosystem provisioning services as described in PS6).
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Where a project is likely to adversely impact ecosystem services, as determined by the risks and impacts identification process, the client will conduct a systematic review to identify priority ecosystem services...with respect to impacts on priority ecosystem services of relevance to Affected Communities and where the client has direct management control or significant influence over such ecosystem services, adverse impacts should be avoided. If these impacts are unavoidable, the client will minimise them and implement mitigation measures that aim to maintain the value and functionality of priority services. With respect to impacts on priority ecosystem services on which the project depends, clients should minimise impacts on ecosystem services and implement measures that increase resource efficiency of their operations, as described in PS3.
PS8: Cultural Heritage	Where the client has encountered tangible cultural heritage that is replicable and not critical, the client will apply mitigation measures that favour avoidance. Where avoidance is not feasible, the client will apply a mitigation hierarchy as follows...minimise adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any ecosystem processes needed to support it (consistent with requirements in PS6 related to ecosystem services and conservation of biodiversity).

In addition, IPIECA (The global oil and gas industry association for environmental and social issues) has produced a 'Biodiversity and Ecosystem Services Fundamentals' document (Ref. 19-7) which provides best practice guidance on ecosystem services. The six management practices listed by IPIECA are:

- Build biodiversity and ecosystem services into governance and business processes;
- Engage stakeholders and understand their expectations around biodiversity and ecosystem services;
- Understand biodiversity and ecosystem services baselines;
- Assess biodiversity and ecosystem services dependencies and potential impacts;

- Mitigate and manage biodiversity and ecosystem services impacts and identify biodiversity and ecosystem services opportunities; and
- Select, measure, and report on biodiversity and ecosystem services performance indicators.

19.3.3 International Conventions and Agreements

Uganda is a signatory to a number of international agreements that are relevant for ecosystem services aspects of the proposed Project. Table 19-4 below summarises these international conventions and agreements.

Table 19-4: Summary of International Conventions and Agreements

Treaty, Convention, Agreement	Subject	Signed / Accepted	Ratified	Application to Proposed Project
Convention on Biological Diversity	Multilateral agreement for the conservation of biodiversity, the sustainable use of its components, and the equitable sharing of genetic resources.	29 December 1993	8 September 1993	The Project area is home to many species of international biodiversity interest.
Convention on Wetlands (the 'Ramsar Convention')	Multilateral agreement for the conservation and sustainable use of wetlands.	2 February 1971	4 July 1988	The Project area includes the Murchison Falls-Albert Delta Ramsar site.
Convention on International Trade in Endangered Species (CITES)	Multilateral agreement that regulates international trade in wild animals and plants.	3 March 1973	16 October 1991	The Project area is home to a number of species in which trade is regulated by CITES (i.e. elephant).
Revised African Convention on the Conservation of Nature and Natural Resources	Aims to improve environmental protection, promote the conservation and sustainable use of natural resources, and coordinate policy.	28 March 2014	7 March 2017	The Project area is home to a range of natural processes which will have the potential to be affected by the unsustainable use of natural resources.

19.4 Approach

The approach to, and methodology for, the ecosystem services assessment in this chapter is based on the AECOM's Ecosystem Services Identification, Valuation, and Integration (ESIVI) approach (Ref. 19.8). The ESIVI tool was created in order to provide a rigorous and transparent framework for ecosystem service assessments that meets the requirements set out in the 2012 IFC PSs.

The development of the ESIVI tool was informed by both the conceptual framework established by the MA, which explicitly links ecosystem services and human well-being, and the World Resources Institute's (WRI) conceptual framework for Ecosystem Services Review for Impact Assessment (Ref. 19.9). The WRI framework puts the Project at the centre of the interactions between human well-

being, ecosystem services, ecosystems, and drivers of ecosystem change, recognising that the Project has the potential to affect all the components of the framework and is itself affected by them. It reflects the two ways the Project relates to ecosystem services in terms of:

- Potential impacts on the existing relationships between human well-being, ecosystem services, and ecosystems; and
- Project dependence on these relationships for the achievement of successful performance.

The development of the ESIVI tool was informed by expertise built up from carrying out policy and project level work on ecosystem service assessments over the past ten years as well as a number of Good International Industry Practices (GIIP) and guidelines, including:

- IFC PSs 1, 4, 5, 6, 7, and 8 and their accompanying Guidance Notes (Ref. 19.1);
- Landsberg et al. (2011), 'Ecosystem Services Review for Impact Assessment: Introduction and Guide to Scoping' (Ref. 19.9);
- IPIECA/OGP (2011), 'Ecosystem Services Guidance: Biodiversity and Ecosystem Services Guide and Checklists' (Ref. 19.10);
- Convention on Biological Diversity (2006), 'Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment' (Ref. 19.11);
- TEEB (2010), 'The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature' (Ref. 19.5);
- Bateman et al. (2010), 'Economic Analysis for Ecosystem Service Assessments' (Ref. 19.12);
- Burkhard et al. (2009), 'Landscapes' Capacities to Provide Ecosystem Services – A Concept for Land-Cover Based Assessments' (Ref. 19.3);
- Landsberg et al. (2013), 'Weaving Ecosystem Services into Impact Assessment: A Step-by-Step Method' (Ref. 19.13); and
- UNEP-WCMC (2012), 'UK National Ecosystem Services Assessment' (Ref. 19.14).

The ecosystem services impact assessment process follows the method described in **Chapter 3: ESIA Methodology**.

Figure 19-2 provides a schematic overview of the assessment process and the key sources of data at each stage.

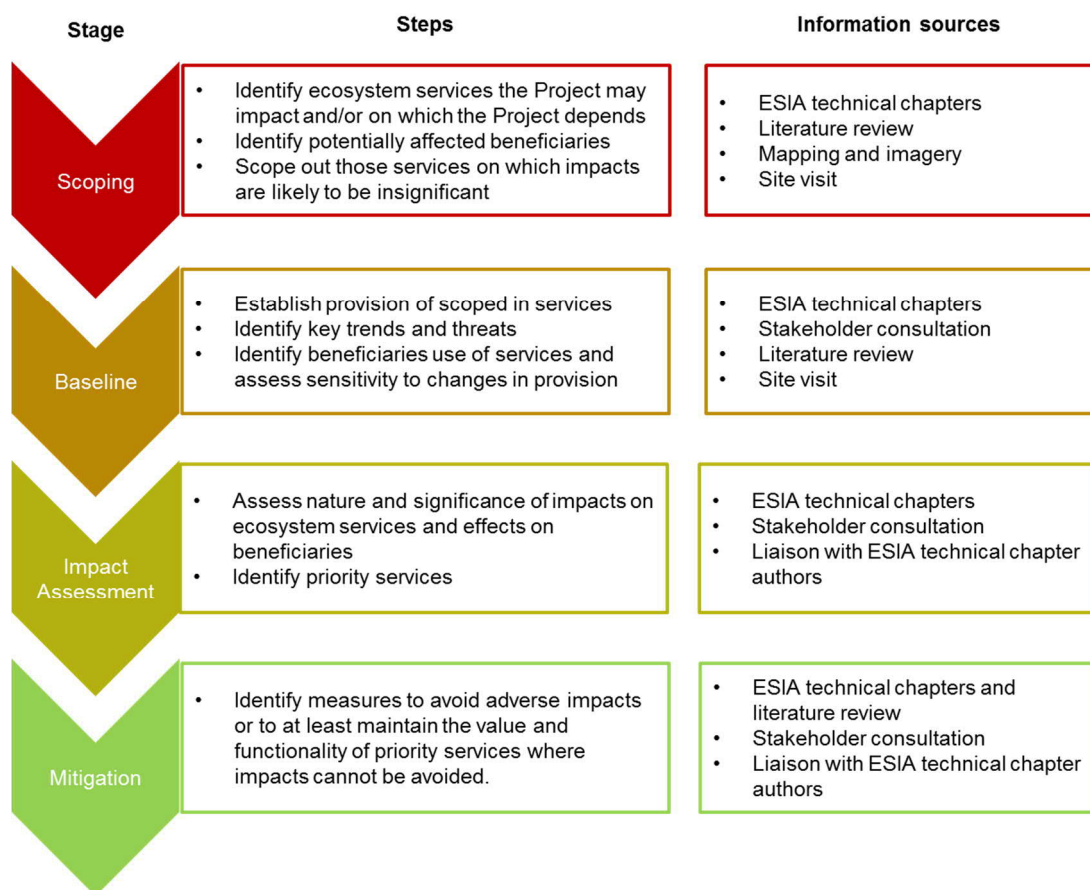


Figure 19-2 Methodology Ecosystems Services Assessment Process

19.5 ESS Scoping Stage Development

The objective of the scoping exercise is to identify those ecosystem services which could potentially be affected by Project activities or that the Project may depend upon and which therefore ought to be subject to more detailed investigation.

Due to the complexity and interconnectivity of ecosystems, together with the uncertainty surrounding how each process within an ecosystem is likely to respond to change, isolating and assessing each of the likely impacts of a project on particular ecosystem services is a difficult task. Further, the potentially wide range of people who benefit from ecosystem services and the different values they attach to such services mean that assessing the potential impacts and dependencies of a project on ecosystem services is an extensive undertaking.

As such, a comprehensive assessment of every potential impact or dependency on each ecosystem service and an economic valuation of each type of use are beyond the scope of an ESIA¹. An effective ESIA should therefore focus resources on assessing the services which are likely to be of highest priority, with further, more detailed assessments being carried out where necessary to inform the development of follow up reports. For example, while it is not appropriate to undertake a full economic valuation for each ecosystem service within an ESIA, valuing certain services may be a useful exercise for informing the development of Livelihood Restoration Plans which depend on ecosystem based forms of income such as fishing and farming.

In this ESIA, ecosystem services were identified and scoped into the assessment in the following stages:

¹ Note, IFC Guidance Note 6 states that “client requirements are focused on the mitigation of impacts on ecosystem services and the benefits that ecosystem services might bring to companies rather than on the economic valuation for such services”.

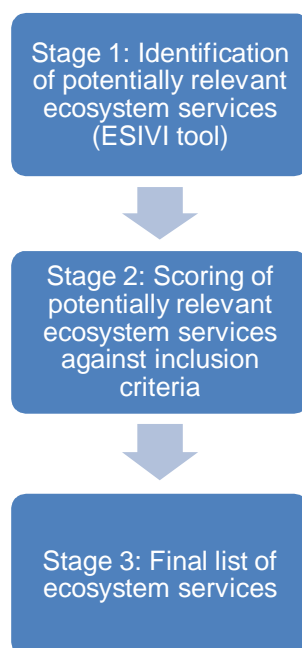


Figure 19-3: Methodology for identifying relevant Ecosystem Services

19.5.1 Stage 1: Identification of Potentially Relevant Ecosystem Services

An important element of the scoping stage is to identify which services can be excluded from the ESIA in order to provide a comprehensive and manageable assessment for the most relevant and important ecosystem services.

In this assessment a checklist of ecosystem services (An important exception is nevertheless made in the case of biodiversity as biodiversity underpins ecosystem function and could potentially be categorised as a supporting service. However, a number of other studies suggest that the existence of biodiversity is itself a service, regardless of whether or not it provides a supporting role in the provision of any other services, and that people are willing to pay to preserve global biodiversity even if they do not benefit from any of the ecosystem services it supports (Ref. 19.15, 19.16, and 19.17). Excluding biodiversity from the ecosystem services assessment would fail to capture such values.

Therefore, in order to capture as wide a range of benefits as possible, and following the approach of the landmark UK National Ecosystem Assessment (Ref. 19.14), “*wild species diversity*” is included in this assessment as a distinct cultural service in its own right. To avoid double counting, the ecosystem services assessment distinguishes between biodiversity as a supporting function, and wild species diversity that is valued for its own sake (i.e. the existence value that people are willing to pay for the preservation of particular species, or local values attached to particular species which are not captured within other services). As a result, the assessment for wild species diversity focuses on any threats to populations of locally, regionally, nationally, or globally significant species.

Table 19-5) was used to systematically identify the services which may potentially be impacted by the Project or upon which the Project may depend.

Each of the ecosystem services above represents the last item in the chain of ecosystem functioning which inputs to the production of goods. They are the aspects of the natural environment which most directly affect human well-being. This focus on the final item in the chain of ecosystem services is to avoid the double counting which would occur if an attempt is made to value those intermediate ecological processes or outcomes (e.g. weathering, photosynthesis, nutrient cycling, etc.) which are captured elsewhere in the provisioning, regulating, and cultural services that they support. For example, the potential impacts of supporting services such as photosynthesis are accounted for in terms of their support of crop growth and timber production.

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Table 19-5: Ecosystem Services Checklist

Provisioning Services	Regulating Services	Cultural Services
Crop products	Local climate regulation	Tourism and recreation values
Livestock and fodder	Global climate regulation	Cultural and spiritual values
Capture fisheries	Air quality regulation	Scientific and knowledge values
Aquaculture	Hazard regulation (including storm protection and erosion control)	Wild species diversity
Wild foods and bushmeat	Water quality regulation	
Timber and woody biomass	Pollination	
Energy	Disease and pest control	
Biochemicals/natural medicine	Noise regulation	
Water (for drinking and supply)	Soil quality regulation	
Fibres and ornamental resources		
Genetic resources		

Using the above checklist (Table 19-5), the range of ecosystem services potentially provided by the affected ecosystems, and the likely beneficiaries (direct or indirect) of each of those services were identified. As set out in PS 1, the emphasis during the initial identification stage is on covering the broadest possible scope of beneficiaries, including:

- Local beneficiaries, such as those who benefit from growing crops in a household plot close to where they live;
- Regional beneficiaries, such as those living within a watershed who benefit from flood protection;
- National beneficiaries, such as those across the country who visit an area for tourism / recreational purposes; and
- Global beneficiaries, such as those across the world who for example, benefit from carbon sequestration.

Identifying the type of beneficiary is important at this stage because different types of beneficiary are assessed differently with regard to mitigation requirements. For example, IFC PS6 applies to ESS whose beneficiaries are at the local or regional scale, while PS 1 applies to ESS with global beneficiaries, such as carbon sequestration. Further, the type of beneficiaries also informs whether an ecosystem service is classed as a Type 1 service, where potential impacts on ecosystem services may adversely affect communities, or a Type 2 service, where the project directly depends on an ecosystem service for its operations. Identification of beneficiaries at this stage also informs the baseline data collection plan by identifying the particular groups or individuals who need to be consulted about the extent to which they presently benefit from (or value) each of the ecosystem services identified.

19.5.2 Stage Two: Consideration of Potentially Relevant Ecosystem Services

Once the broadest possible range of potential ecosystem services and their associated beneficiaries were identified, each service was reviewed to identify which ecosystem services should be included in the more detailed impact assessment, and which ecosystems services should be scoped out of the assessment. This engaged a systematic approach which considered each ecosystems service in relation to the following elements:

- Is the Project likely to have a potential impact on the ecosystem which provides this service?
- Is the Project likely to reduce any of the potential benefits that any people derive from this ecosystem service?²
- Does the Project depend on this ecosystem service for successful performance?
- Does the client have direct management control or significant influence over this ecosystem service?³
- Is the Project likely to have an overall potential beneficial impact on service use or provision?⁴

The relevance of each ecosystem service was then established, based on the criteria defined in Table 19-6.

² Note, this criterion specifically refers to potential impacts on users of a service while the preceding criterion refers to potential impacts on the ecosystem which provides the service. This is an important distinction because a Project may have significant impacts on an ecosystem (such as by withdrawing water from a water source), however, whether or not people are using this service is an important factor in assessing the significance of the impact.

³ Note, this criterion follows the guidelines set out in the IFC PS and identifies whether a client can be said to have control over a Project's impacts on an ecosystem service and whether the impacts are likely to be of significant influence (while a Project may impact on a service, for example, it may be possible to exclude these impacts from the assessment if it is known at the scoping stage that the impacts will be insignificant in terms of beneficiaries well-being).

⁴ These inclusion criteria are based on those utilised through AECOM's ESIVI tool. The ESIVI tool was developed by AECOM to reflect the requirements of the IFC Performance Standards. The tool is aligned with the WRI guidance on incorporating ecosystem services into impact assessment, and it was used in preference to other tools (e.g. the World Business Council on Sustainable Development's Corporate Ecosystem Services Review or inVEST) because of the successful results in other ESIA's in Gabon and the Black Sea.

Table 19-6: Relevance of Ecosystem Service⁵

Ecosystem Service Relevance	
Negligible	Service not present and unlikely to be affected Does not have to be assessed further
Low	Project may have an insignificant impact / dependence on the service Does not have to be assessed further
Moderate	Project likely to have a significant impact on beneficiaries of the service or likely to be dependent on the service Must be assessed further
High	Project likely to have a significant impact on beneficiaries of the service and likely to be dependent on the service Must be assessed further
Benefit	Project is likely to have a beneficial impact on service provision Does not have to be assessed further

The final list of ecosystem services was then established. A summary of the rationale for inclusion or exclusion of each ecosystem service is provided in Appendix S.

19.5.3 Stage Three: Final List of Ecosystem Services

The scoping exercise resulted in the identification of 16 ecosystem services to be taken forward for more detailed assessment. These are listed in Table 19-7.

Table 19-7: Final list of Ecosystems Services

Provisioning services	Regulating services	Cultural services
Crop products	Local climate regulation	Tourism and recreation values
Livestock and fodder/pastoralism	Global climate regulation	Cultural and spiritual values
Capture fisheries	Air quality regulation	Scientific and knowledge values
Wild foods and bushmeat	Hazard regulation	Wild species diversity
Timber and woody biomass		
Biochemicals/natural medicine		
Water (for drinking, supply and quality regulation) ⁶		
Fibres and ornamental resources		

Each priority ecosystem service is subsequently discussed in turn in this chapter. In some cases two ecosystem services are discussed at the same time to avoid overlap. The following ecosystems are therefore grouped:

⁵ Note, under the criteria a service can only be classed as high relevance if it is both a Type 1 and a Type 2 service i.e., the Project could reduce the benefits that people derive from the service and the Project itself depends on the service for successful performance.

⁶ Note, for the purposes of the assessment, and due to overlaps, water quality regulation has been considered alongside water for drinking and supply.

- Timber and woody biomass and energy;
- Local climate regulation and global climate regulation;
- Tourism and recreational values and wild species diversity.

19.5.4 Comparison of Final Ecosystem Services against Previous Ecosystem Services Review (Advisian and Treweek, 2015)

An ecosystem service study was completed as part of a preliminary Ecosystem Services Review (ESR) by Advisian and Treweek in 2015 (Ref. 19-18). Designed to consider the potential implications of multiple projects over a larger spatial area than the current Project, the ESR was commissioned by the Joint Venture Partners to develop a good understanding of the potential impacts across a wide area of their planned operations on ecosystems and the services they supply. The ESR would inform subsequent ESIA's for specific development proposals, including this ESIA.

The ESR is in line with the Ugandan Ministry of Water and Environment's "Strategic Plan for the Northern Albertine Rift 2011-2020" (Ref. 19-19), which identifies the need to "improve corporate responsibility to mitigate threats and realize benefits from industrial or other private sector development" in partnership with government, communities and other stakeholders.

The prioritisation exercise undertaken by Advisian and Treweek identified 12 ecosystem services whose supply might be impacted by oil extraction and processing activities in the wider spatial area considered by the study. These 12 ecosystem services are listed in Table 19-8 below.

Table 19-8: Ecosystem Services Identified in the Advisian and Treweek Report

Provisioning services	Regulating services	Cultural services
Crop products from subsistence farming	None identified	Recreation and ecotourism based on wildlife populations
Livestock products		Ethical and spiritual values
Freshwater for drinking		Educational values
Woody biomass for building and cooking		Pastoral way of life
Capture fisheries		
Biological raw materials		
Wild food		
Natural medicines		

The ecosystem services identified in the Advisian and Treweek report overlap significantly but not completely with the priority ecosystem services identified for this ESIA. The primary difference is in the absence of regulating services in the Advisian and Treweek ecosystem services. In addition, Advisian and Treweek include 'pastoral way of life' as a cultural service, which is absent from the priority ecosystem services identified for this ESIA. Pastoralism was judged to be an important aspect of livestock and fodder/pastoralism, and is included within this ESIA in the discussion of livestock and fodder/pastoralism in the Study Area.

The assessment in the Advisian and Treweek report (Ref. 19-18) was undertaken at a wider spatial scale relating to multiple projects, and is therefore wider in scope than the ecosystem services assessment in this ESIA. As a result, it was concluded that priority ecosystem services specific to the Study Area should be identified for the purposes of this ESIA, rather than re-using the ecosystem services identified in the Advisian and Treweek report. It was anticipated, however, that there would be some overlap between the Advisian and Treweek report ecosystem services, and the priority ecosystem services identified for this ESIA. This was in keeping with the recommendations of the

Advisian and Treweek report, which stated that the ‘ESIA for planned development projects will include a detailed impact assessment for priority ecosystem services, including those that were not addressed in detail in this review’.

19.6 Spatial and Temporal Boundaries

The assessment in this chapter differs from other ESIA chapters in that it involves a two-stage process. First, the potential impacts on the ecosystem and its associated services (the physical receptor) need to be understood before the implications for ecosystem service beneficiaries (the social receptor) can be assessed.

19.6.1 Spatial boundaries

The spatial boundaries of this assessment are determined by: the Project Area and the ecosystems which are affected by the construction, operation, and decommissioning phases of the Project (a physically defined area); the flows of ecosystem services generated by these ecosystems; and, ultimately, the locations of the ecosystem service beneficiaries (a socially defined area).

The relationship between the Project Area, the Affected Ecosystems, and the Affected Beneficiaries is illustrated in Figure 19-4 below. Further details on each of the assessment areas, which mirror the spatial boundaries for the different technical assessments undertaken for the ESIA, are provided in the following sections.

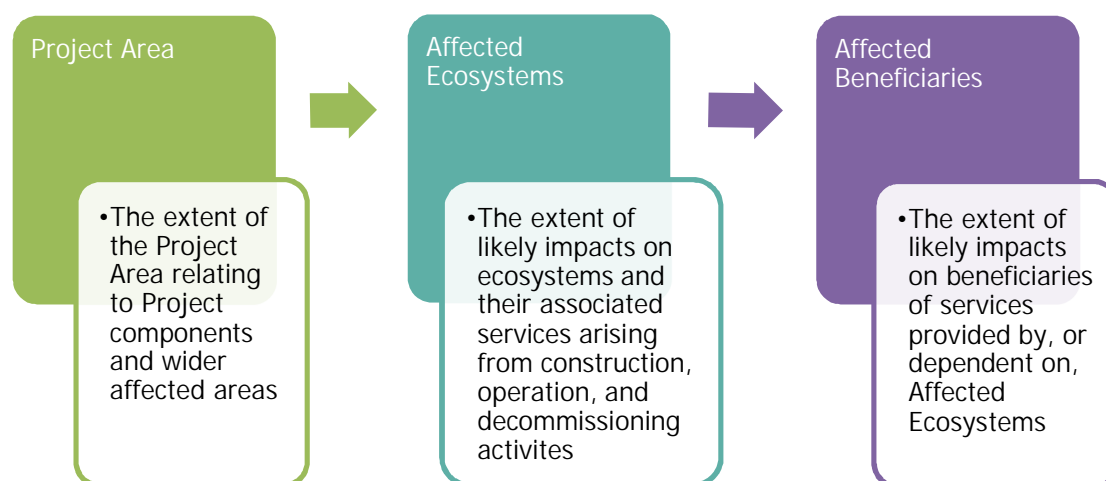


Figure 19-4: Defining Spatial Boundaries for Assessing Impacts on Ecosystem Services

Given the different contexts for the Affected Ecosystems, the spatial boundaries for each study vary by the different ecosystem service components.

In many cases the Study Area for each component reflects those defined for the other technical assessments undertaken for the ESIA. In most of the cases where this occurs, the Study Area reflects the full Project Area of Influence (Aoi) for the relevant technical assessment. However, for three ecosystem services, the Study Area only encompasses the social Primary Study Area, and not the wider Aoi as defined by the social Secondary Study area. This is due to the likelihood of beneficiaries only being affected within this more limited area in these cases. In the context of the above, Table 19-9 therefore presents the Study Area for each of the ecosystem services.

Table 19-9: Study Area for each ecosystem service

Ecosystem service	Ecosystem Service Study Area
Crop production	As per social Primary Study Area (Chapter 16: Social)
Livestock and fodder/pastoralism	As per social Primary Study Area (Chapter 16: Social)
Capture fisheries	Landscape Context A, which includes the Murchison Falls Protected Area (MFPA) including the Victoria Nile and Landscape Context C, which covers Lake Albert, rivers and wetlands. (Chapter 14: Terrestrial Wildlife)

Ecosystem service	Ecosystem Service Study Area
Wild foods and bushmeat	As per Terrestrial Wildlife Aol (Chapter 14: Terrestrial Wildlife)
Timber and woody biomass (including energy)	As per Terrestrial Vegetation Aol (Chapter 14: Terrestrial Vegetation)
Biochemicals and natural medicines	As per Terrestrial Vegetation Aol (Chapter 14: Terrestrial Vegetation)
Water (for drinking, supply and regulation)	As per social Primary Study Area (Chapter 16: Social)
Fibres and Ornamental Resources	As per Terrestrial Vegetation Aol (Chapter 14: Terrestrial Vegetation)
Local and Global Climate Regulation	As per Terrestrial Vegetation Aol (Chapter 14: Terrestrial Vegetation)
Hazard Regulation	As per Terrestrial Vegetation Aol (Chapter 14: Terrestrial Vegetation)
Cultural and Spiritual Values	As per Study Area for traditional religious cultural sites, sacred trees, sacred watercourses, springs and marshes, and traditional healers (Chapter 17: Archaeology and Cultural Heritage)
Tourism and recreation values and wild species diversity	MFPA, Budongo Central Forest Reserve
Scientific and Knowledge Values	MFPA, Budongo Central Forest Reserve

19.6.2 Temporal boundary

The proposed timescales for the different phases of the Project are set out in **Chapter 4: Project Description and Alternatives**. A brief summary of the timescales are provided below:

- Site Preparation and Enabling Works Phase expected to take approximately 5 years;
- Construction and Pre-Commissioning is expected to take up to 7 years;
- Commissioning and Operations is expected to commence approximately 36 months after effective date of the main construction contract award. The lifetime of the Project is 25 years; and
- Decommissioning is planned for the end of the 25 year operation.

It should be acknowledged that potential impacts on ecosystems may occur as a result of direct losses and to indirect effects due to induced and other factors. If impacts are not adequately identified and mitigated such changes to ecosystems may far outlast the lifetime of the project.

19.7 Baseline Conditions

A key stage in an ESIA is establishing a baseline of existing environmental and social conditions in a project area. This section provides a baseline assessment of ecosystem services in each of the defined Study Areas (as defined in Table 19-9). The baseline assessment of ecosystem services builds on data gathered as part of the scoping stage for the ESIA, as outlined above.

Information collected during the baseline data collection stage revealed locally important ecosystem services. As additional data was collected, the outcomes of the original scoping exercise were updated to ensure that these more accurately reflected the importance of each of the ecosystem services to beneficiaries as suggested by the evidence from the baseline data analysis.

Following the initial scoping exercise, the next step was to establish in more detail the present condition of the scoped-in services as well as broad trends in their provision and use. The baseline provides an analysis of the existing condition of an ecosystem and the services it provides in the absence of the Project, taking into account external factors (i.e. not related to the Project) that may affect future service provision including, for example, climate change, population growth, and changes in land management. The assessment is based on the potential impacts of the Project in relation to this baseline and covers:

- Current provision of services and how the habitat / land cover supports their delivery;

- The importance of ecosystem services to beneficiaries; and
- How ecosystem services and the benefits they provide are likely to change in future in the absence of the Project.

The data used for the baseline assessment was obtained from a wide range of sources including secondary sources (i.e. existing data including government or academic reports etc.) and primary sources (i.e. new data collected through interviews, field surveys, and stakeholder engagement activities as described in **Chapter 5 Stakeholder Engagement**).

Other baseline sections covering aspects of relevance to the ecosystem services baseline, referenced throughout the chapter, include: **Chapter 7: Noise and Vibration**, **Chapter 9: Hydrogeology**; **Chapter 10: Surface Water**; **Chapter 11: Landscape and Visual**; **Chapter 13: Terrestrial Vegetation**; **Chapter 14 Terrestrial Wildlife**; **Chapter 15: Aquatic Life**; **Chapter 16: Social**; **Chapter 17: Archaeology and Cultural Heritage**; and **Chapter 20: Unplanned Events**.

The remainder of this section sets out the data sources in more detail and the limitations of the assessment in terms of the availability of data collected.

19.7.1 Secondary Data

Secondary data and information was obtained through a literature review of relevant peer-reviewed journal articles, research reports, newspaper articles, and publically available databases.

Secondary data were gathered in a review of existing literature of the Albertine Rift. The review of these data started during the scoping stage of the ESIA. The reference list at the end of this chapter highlights studies which were utilised for the purposes of baseline collection.

The literature review provided a basis for understanding patterns of ecosystem service provision and use within the wider region. However, the review did not pick up the specific ecosystem functions and behaviours of people using services provided by the affected ecosystems within the Project area. This information was acquired through the primary data collection methods set out in Section 19.7.2.

19.7.2 Primary Data / Baseline Surveys

In light of the data gaps that emerged from the review of secondary data, a data collection exercise was undertaken which sought to supplement the secondary data gaps as well as to verify and ground-truth the secondary data available. Primary data on ecosystem services was collected during field visits in 2016. These visits included: stakeholder meetings; focus group discussions; observations of conditions; and meetings and interviews with local government authorities.

Primary data was collected in November and December 2016 by the ecosystem services field work team. Other technical specialists from the social and health assessment team, the landscape character team, the cultural heritage team, the aquatic ecology team, and the biodiversity team also collected data relating to ecosystem services from 2016-2017. A series of questions covering each of the priority ecosystem services was developed in advance of the start of field surveys. These questions were used as a framework during:

- Community mapping;
- Focus group discussions (FGDs); and
- Semi-structured interviews.

Detailed notes were taken at each of these events; these qualitative data provided the primary material used in assessing baseline ecosystem services in the Project area.

In addition, ecosystem services surveys were conducted during inspections of proposed and actual Project infrastructure. This encompassed, amongst others, crop types and other vegetation; the presence or absence of grazing, water courses, and wildlife populations; and the presence or absence of biological raw materials. These observations were recorded on a data collection sheet, with the data providing primary material for the baseline assessment.

Further technical studies by specialists in other disciplines are ongoing and will inform the ecosystem service assessment where appropriate.

Since ecosystem services represent the intersection of the natural and human environment, this chapter also draws upon the baseline information and analysis conducted in other relevant chapters of the ESIA, including information made available in the form of minutes of meetings. A key source of information was the baseline information collected through the social impact assessment process. Any gaps in the baseline data relating to ecosystem services were discussed with the relevant technical chapter specialists in case the information was readily available and / or could be obtained through ongoing data collection and stakeholder engagement.

19.7.3 Data Assumptions and Limitations

Accurate, quantifiable data on the use of ecosystem services is used where possible, however, for many ecosystem services the data were not available to establish a detailed and quantifiable metric in terms of baseline provision or use for each ecosystem service.

While this is a potential limitation, it does not significantly undermine the results of the assessment since the ecosystem services assessment refers to and builds upon the assessments undertaken in each chapter of the ESIA which use measurable metrics for assessing changes in the natural environment. The emphasis of this assessment is placed on drawing together the other chapters in the ESIA to assess the potential impacts on the well-being of beneficiaries resulting from changes in the natural environment. As such, the ecosystem services assessment aims to quantify changes in well-being as a result of changes in the provision of ecosystem services.

Due to the fact that there is a high degree of variance between the values which beneficiaries attach to services, measuring well-being impacts using a single metric across all services and beneficiaries is a difficult task. One approach is to use economic valuation techniques to estimate the value of changes in well-being resulting from changes in ecosystem service provision in monetary terms.

However, due to the need for detailed, high quality primary data to establish reliable economic valuation estimates, and the time consuming nature of undertaking such primary data collection exercises, it is considered beyond the scope of an ESIA to carry out an economic valuation of ecosystem service use.

In light of this, the value of services provided by Affected Ecosystems has been assessed in a qualitative manner through stakeholder engagement exercises, expert discussion, and literature review. Where residual impacts are identified on priority ecosystem services which require compensation, economic valuation may be considered to evaluate the effectiveness of proposed mitigation and/or the value of economic displacement and the appropriate level of compensation.

The baseline presented below is a summary of the existing ecosystem service conditions for each Study Area.

19.7.4 Overall Assessment

Fieldwork undertaken during November and December 2016, as well as secondary data, suggest that local people rely heavily on natural resources and ecosystem services in the Study Area. In particular, there is an almost complete dependence on provisioning services for income and other livelihood benefits. For example, local people in the Study Areas engage in, amongst others, farming, fishing, cattle herding, shell collection, charcoal manufacture, papyrus collection, bee keeping, and traditional medicine or shamanism.

Any potential impact on provisioning services is likely to impair the ability of communities to pursue these activities and to earn an income from them. The potential impact of climate change on provisioning services is particularly important in this respect. For example, heatwaves or prolonged droughts may affect fisheries production in the Murchison Falls-Albert Delta Ramsar site. Furthermore, many communities depend to a large extent on a single activity or a limited number of activities for a significant proportion of their income. The ease with which people can switch between different livelihoods is limited by the level of investment required to engage in these activities (i.e. people who wish to engage in fishing require significant capital to purchase fishing equipment). Observations made during fieldwork indicate an east to west change in the level of ecosystem

degradation south of the Nile, with the most highly degraded areas closest to Lake Albert. Relatively undisturbed ecosystems with dense vegetation, mature trees and high species diversity were observed along the border of Murchison Falls National Park south of Victoria Nile. Approaching Lake Albert, the vegetation becomes sparser and was dominated by cacti. This east to west change in ecosystem degradation is attributable to cattle grazing and possibly to fuel wood collection. Cattle herders use Lake Albert to water their cattle, and the approaches to the Lake are therefore heavily grazed. North of the Nile, however, there is no or limited east to west degradation as Murchison Falls National Parks stretches all the way to Lake Albert and the Albert Nile.

The potential impact on provisioning services of this east to west degradation south of the Nile is uncertain. However, it may have changed the distribution of livelihoods and their underpinning provisioning services across the Study Area. Activities like charcoal burning that rely on the ecosystem services provided by more undisturbed ecosystems (i.e. the supply of large and/or mature trees) take place further to the east. Similarly, small scale agriculture is predominant in the east of the Study Area, where soils are less eroded as a result of lower grazing pressure.

Figure 19-5 and Figure 19-6 below shows vegetation cover in the Study Area. The east to west shift from woodland and subsistence farmland to grassland is notable.

In addition to provisioning services, the Study Area provides cultural services. Communities place great importance on areas with cultural and/or spiritual significance. These areas usually comprise groves or stands of trees, although the location of these areas can change. Local people believed that removing trees and firewood from these sites, or other forms of 'inappropriate' behaviour, could lead to natural disasters like floods or plagues of mosquitoes. This finding is valuable in the context of the footprint of developing Project infrastructure. **Chapter 17: Archaeological and Cultural Heritage** contains additional information on cultural and sacred sites.

19.7.5 Crop Products

19.7.5.1 Key ecosystems providing the service and their location relative to the project's Study Area

Whilst crop production does not rely solely on specific ecosystems, the healthy functioning of ecosystems contributes to the productivity and resilience of agriculture. Healthy ecosystems therefore sustain agricultural productivity through mechanisms such as nutrient cycling, carbon sequestration, pest regulation and pollination.

19.7.5.2 Ecosystem service and extent

The ecosystems service comprises cultivated plants or agricultural products harvested by people for human consumption. Crop products are a category of provisioning ecosystem service, although regulating services like pollination and water quality regulation play an important role in the continued provision of crop products.

Agricultural activity in Buliisa District is primarily located within Ngwedo sub county, away from the main livestock grazing zones. Land is particularly fertile in eastern Ngwedo sub county, and the area is known as the "food basket" of Buliisa District. People living in other parts of Buliisa District whose primary livelihoods are fishing or cattle keeping commonly migrate to Ngwedo to undertake crop farming on a seasonal basis⁷ on plots that they rent or own. Very small scale cultivation is also undertaken within fenced gardens around homesteads in the rangeland area of Buliisa District.

The agricultural calendar is made of two cultivation seasons (March to June and July to November) following the bi-modal rainfall pattern and the short maturity cycles (around 4 months) of most of the crops grown (maize, sweet potatoes, peas, etc.).⁸ Land preparation starts in February and planting begins in March (after the first rainfalls). First harvest for short maturity crops is in June/July. Harvest is followed by a new planting process. Second harvest for short-maturity and perennial crops (cassava) is in November/December.

⁷ According to the 2015 SHBS household survey, 85% of Bugungu households living in cattle keeping areas of central Buliisa District practice crop farming and fishing as complimentary activities.

⁸ Some crops such as cassava or cotton are perennial and require longer maturity. They are planted only once a year.

Figure 19-5 and Figure 19-6 highlight the location of small scale farming in Buliisa District and Nwoya District.

19.7.5.3 Environmental goods produced by this service

The 2015 SHBS and RAP1 Social Baseline Report highlights that a diversity of crops is grown in the Primary Study Area, including staples, vegetables and fruits:

- Tubers: cassava, sweet potatoes, Irish potatoes;
- Cereals: maize, millet, sorghum, sesame (known locally as simsim), rice;
- Vegetables: beans (including soya), peas, groundnuts, pumpkins, eggplants, tomatoes, red pepper, onion, okra;
- Fruits: lemon, orange, papaya, banana, matooke mango, jackfruit, pineapple, watermelon, passion fruit, avocado, pineapple;
- Cash crop : cotton ; tobacco ; and
- Other plants: cashew nuts, sugar cane, palm tree; aloe vera.

19.7.5.4 Beneficiaries

The primary beneficiaries of crop products are farmers and their families. Consumers also benefit when they are able to purchase agricultural goods in local markets at local prices.

According to the Buliisa District Development Plan, over 45% of the population depends on subsistence farming as their main source of livelihood. The major economic activity in Nwoya District is cultivation with mechanised and commercial farming activities being most prominent and employing over 90% of the total active population. Although 90% of the land in Nwoya District is regarded as fertile, only 10% is cultivated. This is due to several factors such as limited access to markets, lack of mechanized equipment, storage and transportation facilities, or irrigation systems (**Chapter 16: Social**).

The average size of cultivated land per household ranges from one to five acres, while a few individuals (generally businessmen or politicians) own larger plots of land that range between 20 to 100 acres. It is common for households to own more than one plot across different villages. Prices of produce differ on a seasonal basis as a result of crop seasonality, and also differ based on quality and size (Ref. 16-6). Prices recorded during the 2015 SHBS, the 2016 Market Asset Valuation Assessment and the 2017 draft valuation report for RAP 1 for local produce and their processed counterparts are presented in Table 16-29 in Chapter 16: Social.

Traditionally women are responsible for producing food crops for the family and undertake the majority of farming work in the Study Area. Women and children generally labour in the plots all year round. Men support the family with ploughing during the months of March and July. Men are also generally responsible for the cultivation and selling of cash crops (cotton, sesame seeds, citrus, other fruit trees, ground nuts).

Approximately 50% of respondents from the SHBS indicated that they employ casual labourers to help with the cultivation and harvesting of crops. Children also provide support to parents during weekends and holidays. The 2015 SHBS indicated that casual labourers generally come from the poorest households in the Primary Study Area. Casual labour on other peoples' farms is also an important source of labour for unmarried youth who do not own their own land (Various focus group discussions (FGDs), Tilenga ESIA SHBS). Land owners pay the labourers in cash or in-kind. Prices vary according to the type of crop, size of the land, and the type of task being performed (Ref. 16-3).

During the rainy season migrants from other districts (Nebbi, Hoima etc.) and DRC come temporarily to the Primary Study Area to offer their services to crop farmers.

In terms of alternative sources of incomes, crop selection is used as a coping mechanism to address potential food insecurity. Vulnerable households are known to plant more cassava, as the crop has long growing cycles, does not need as much nutrients (hence can be grown in less fertile soil), and

can be harvested up to two years after maturity is reached. Diversifying crops is also used to ensure access to different types of food products and minimise crop failure.

Coping mechanisms in case of poor harvests are to sell small livestock and rely more on purchased foods. Households can also respond by providing casual labour to better-off families, drawing down on stored foods and increasing collection/ consumption (e.g. wild fruits) and sale of natural products (e.g. firewood).

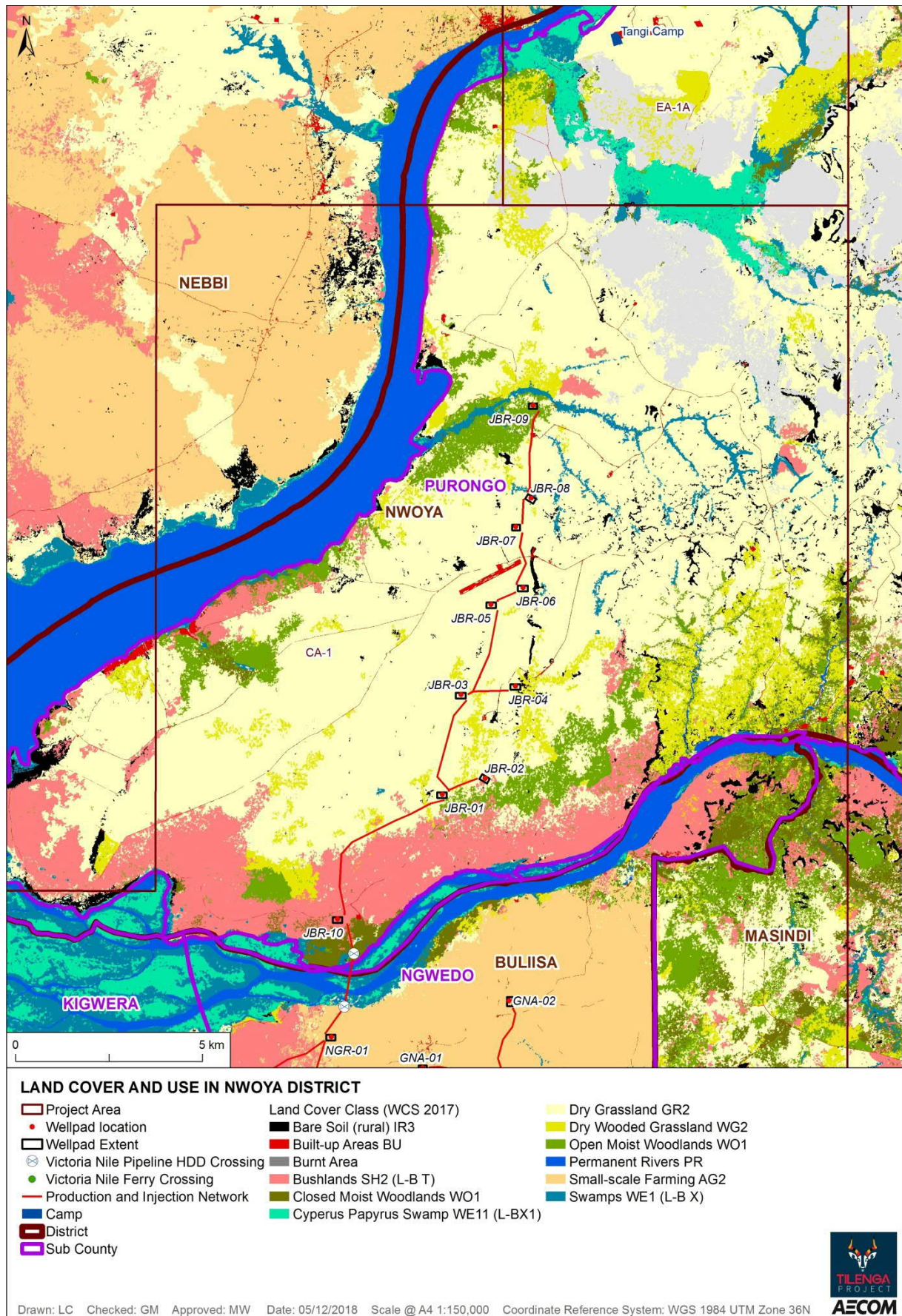


Figure 19-5: Land Cover and Use in Nwoya District

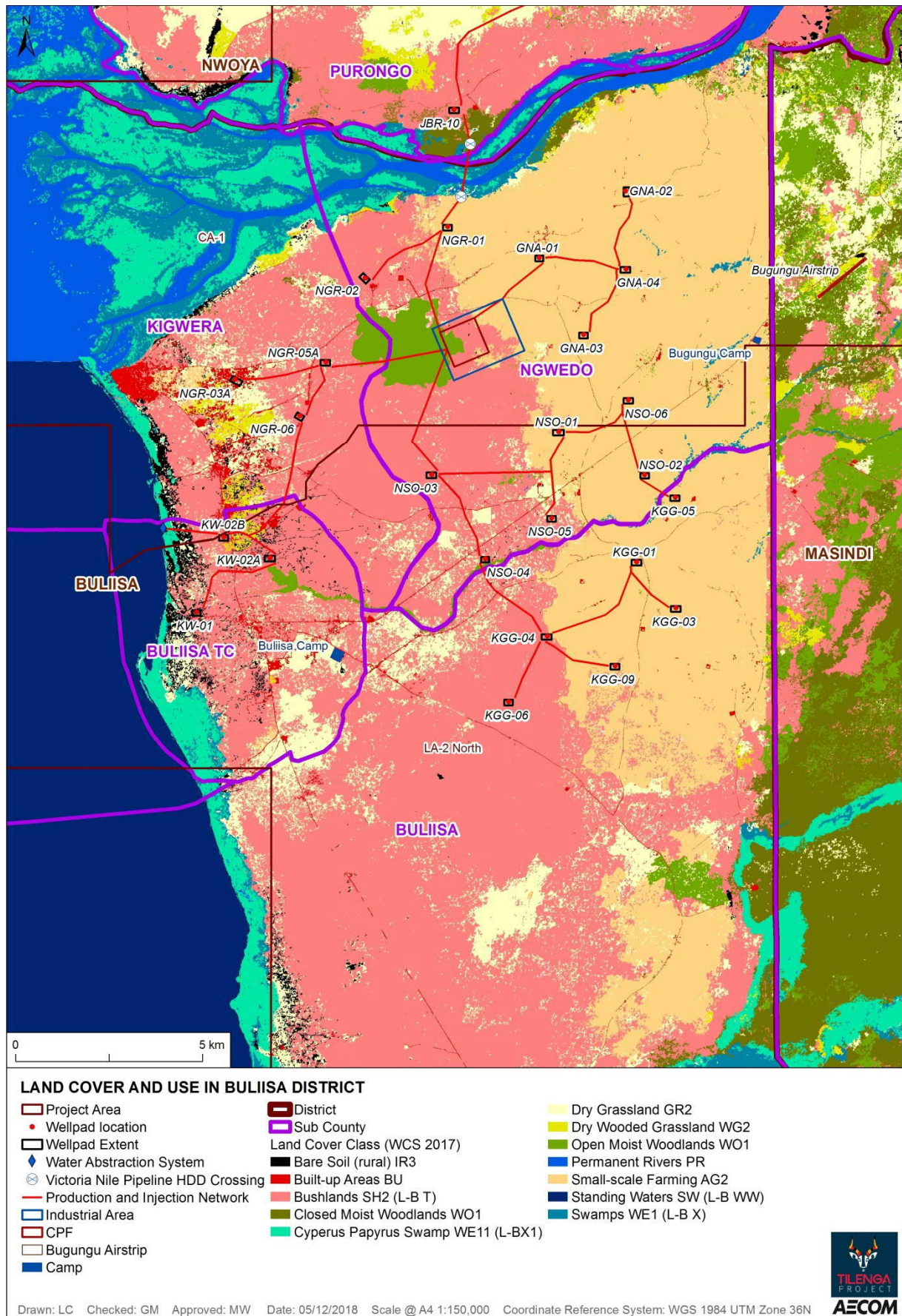


Figure 19-6: Land Cover and Use in Buliisa District

19.7.6 Livestock and Fodder/pastoralism

19.7.6.1 Key ecosystem providing the service and their location relative to the project's Study Area

Key ecosystems include grassland, wooded grassland, scrub/thicket, wetland/swamp and open water (including Lake Albert).

19.7.6.2 Ecosystem service and extent

Livestock are animals raised for domestic or commercial consumption or use. Livestock and fodder production is a category of provisioning ecosystem service, although regulating services like disease and pest control and local climate regulation play a role in sustaining livestock and making livestock production and a pastoral way of life possible.

Animal husbandry in Buliisa District is practiced at the household level with limited commercial purposes. There are two main types of livestock production systems in Buliisa:

- A free range system where animals, under the supervision of a herdsman, roam freely. This system is practiced in communal grazing areas (Kigwera, Buliisa and parts of Ngwedo Sub-Counties) where the major type of livestock raised is cattle and livestock rearing is practiced mainly by the agro-pastoralist Bagungu ethnic group. Other smaller animals are also reared freely without supervision; and
- A tethering system where animals are tied to a tree or stake close to homesteads. This system is mainly practiced in the crop farming eastern part of Buliisa District (Ngwedo and Buliisa Sub-Counties), where animals cannot roam freely as they would destroy crops.

Livestock production is closely tied to a pastoral way of life. The rangelands used for cattle grazing by pastoralists are changing as a result of agricultural expansion, the individualisation of land ownership, and growing population pressure, especially along the Lake Albert shoreline).The pastoralism practised in the Study Area is seasonal in nature, with the availability of water and quality of pasture determining where pastoralists herd their cattle. During the main dry season (November to March), herders visit specific sites (i.e. Neyamitete, Kasenyi and Kigwera) that have sufficient pasture for their animals, although there is competition for grazing because the number of suitable sites is limited. Competition is exacerbated as some pastoralists have to wait for their employer's permission before they move to new grazing sites, potentially leaving them grazing their animals on pasture that becomes over-crowded. More generally, pastoralists are not able to travel too far for grazing because they need to remain relatively close to Lake Albert and other watering points.

Herds are mainly composed of East African short horn zebus (70% of the herds in Buliisa District), frequently mixed with Ankole (25%) and cross-breed species (5%). Within the Primary Study Area in Buliisa District, there are approximately 27,000 head of cattle, which represents approximately 74% of the total cattle herd within Buliisa District. According to the District Veterinary Officer (interviewed as part of the 2015 SHBS), recent trends show an increase in the number of cattle in Buliisa District, with subsequent overgrazing.

Cattle graze on Angolo grass during the wet season, but during the dry season the availability and quality of the grass reduces, such that herdsman may travel up to 12 km in search of suitable grazing land. Finding water for animals to drink can also involve long journeys up to 5 to 6 km and it can sometimes take up to three days to find water. An increase in cattle grazing has resulted in increased competition for grazing pasture. Irregular rains have also affected the quality of pasture (FGD with Balaalo, Tilenga ESIA SBS, November 2016). This competition has in turn led to over-grazing and grassland degradation, which as noted in Section 19.7.4 increases in severity east to west toward Lake Albert.

During the wet seasons (March to May and August to October), high-quality pasture is more abundant and so cattle are healthier and fetch higher prices. The incomes to cattle owners and pastoralists are therefore correspondingly higher in the wet season, and probably drive increased consumption and price inflation in other commodities (Artelia Eau and Environnement, Ref. 19-22).

Water availability was identified as a key factor shaping pastoral dynamics by pastoralists. In particular, the quantity of rainfall shapes the quality of grazing. During the 2016 baseline survey, pastoralists informed that there had not been enough rainfall over the previous year for good grazing, although the quality of pasture had been good over the previous five years. Conversely, the availability of drinking water does not appear to be as important in shaping pastoral dynamics as rainfall. Watering holes or troughs were observed on a number of occasions during fieldwork activities, and Lake Albert is used for watering cattle year-round.



Figure 19-7: Cattle Grazing on the Lake Albert Shoreline

Figure 19-8 below highlights the locations of grazing corridors and watering points located in the key grazing locations south of the Victoria Nile.

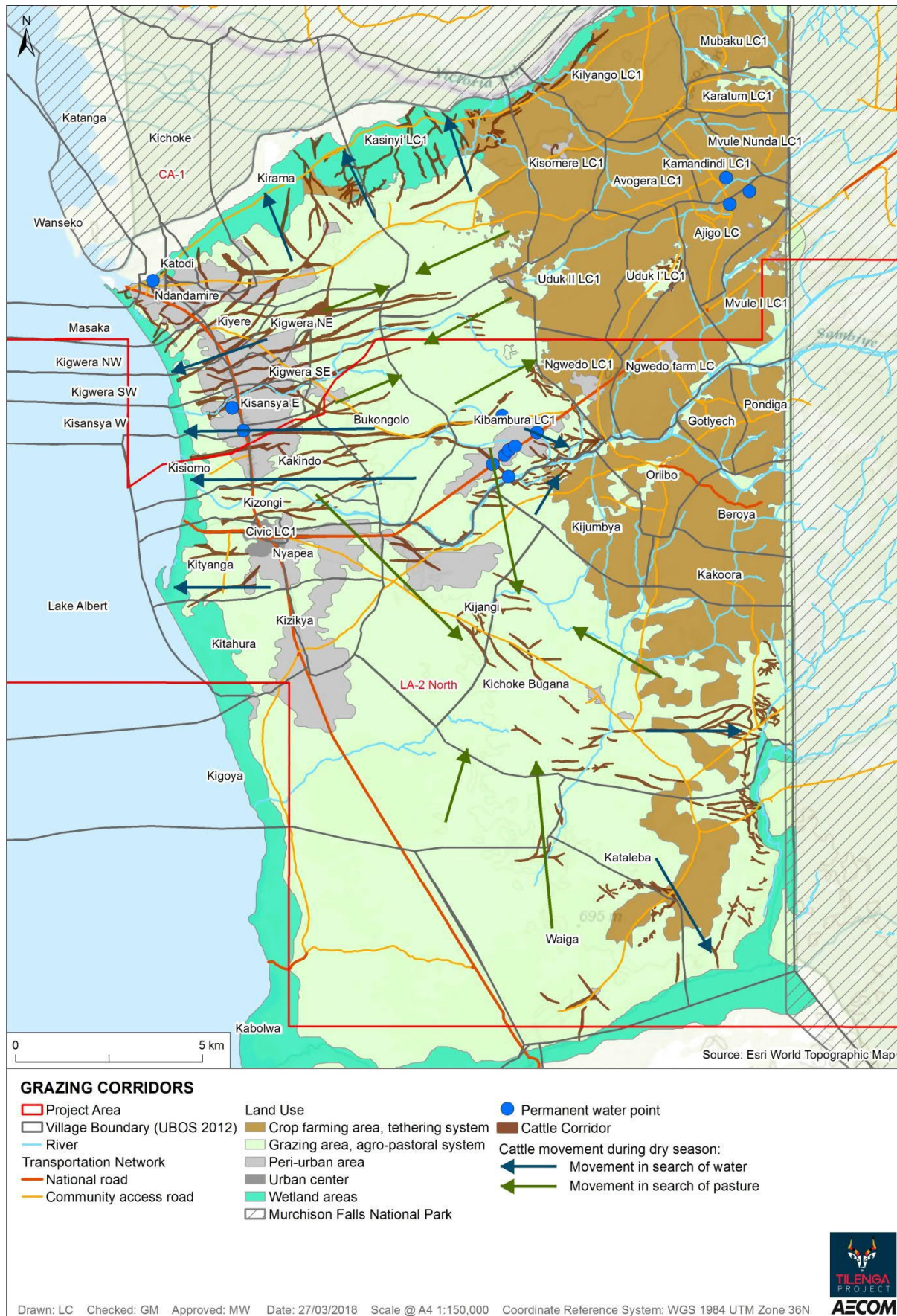


Figure 19-8 Grazing areas and corridors and water points for cattle

19.7.6.3 Environmental goods produced by this service

The local economy benefits from the sale of livestock and livestock products such as meat, milk, skins and hides. Milk is the main cattle product, but live animals and meat are also sold at local and national markets and as far as Sudan.

Owning cattle also has cultural value, and is important as a form of inheritance, gift, dowry and indicator of status/wealth.

19.7.6.4 Beneficiaries

In the Primary Study Area, 80% of respondents from the 2015 SHBS (Ref. 16-3) indicated that they own livestock, mostly chicken, goats and cattle. They use livestock for personal consumption (milk and eggs), as a means of security, and as a savings mechanism. Households sell their cattle to pay for important and exceptional expenditures (such as school fees, medical treatments, weddings or funerals) and sometimes as capital to invest in other economic activities (such as opening a shop or in farming).



Figure 19-9: Ankole Cattle

Bugungu as pastoralists and are usually paid in-kind in milk for their services. Alur (living mainly in eastern Buliisa District) are not traditionally involved in cattle keeping and crop farming is their main livelihood. The Alur and Acholi in Nwoya District are also now mainly involved in crop farming and there are reportedly only a few hundred cattle farmers left in Nwoya district.

19.7.7 Capture Fisheries

19.7.7.1 Key ecosystems providing the service and their location relative to the project's Study Area

The key ecosystems for capture fisheries are open water, including Lake Albert and the Victoria Nile. Wetlands, swamps and river mouths are also important for juvenile fish, acting as nursery areas for fish populations in Lake Albert.

Other ecosystems such as forests and woodlands regulate water supply, support water quality and protect river banks from erosion.

19.7.7.2 Ecosystem service and extent

Capture fisheries are a category of provisioning ecosystem service, although their productiveness depends on regulating services like water quality regulation and climate regulation (local and global). Capture fisheries primarily provide people with benefits from fish and fish products.

A variety of activities in the Study Area depend on production from fisheries including fishing, fishmongery, fish drying, and the leasing of fishing equipment. Some of these activities are restricted or illegal in parts of the Study Area (e.g. fishing in the Murchison Falls-Albert Delta Ramsar site). Fisheries production itself depends on successful spawning in the Ramsar site, and from feeder lagoons, streams and wetlands. Juvenile fish in these nursery areas will eventually move into the main Lake.

Fishing is practiced all year round, with two peak seasons between March to June and August to November. Catches are reported to be more abundant during the rainy season between March and June. Fishing is generally done once a day, except when the catch is very low, in which case fishermen might fish a second time. Fishermen usually leave in the evening (night fishing) or early morning to cast their nets and wait for the morning after to collect their catch. They usually sleep on their boat.

Landing sites concentrate fishing activities along the lake shore⁹. The 2015 SHBS identified five landing sites in Buliisa District within the Primary Study Area, and another five in direct proximity, which are regularly used by fishermen living in the Primary Study Area. Wanseko, Masaka and Kalolo are the main landing sites within the Primary Study Area; two smaller landing sites are located in Kigwera South West and Kisansya West. Karakaba (also named Songalendu) and Kabolwa are located very close to the Primary Study Area (just outside EA-2). Bugoigo, Walukuba and Butiaba are located south of the Primary Study Area but local fishermen from the Primary Study Area mentioned that they use them. In Got Apwoyo people usually depart from the landing site located in Pakwach where a Beach Management Unit¹⁰ (BMU) is also settled. BMUs are registered with the Department of Fisheries Resources (DFR). BMUs are community fisheries management organisations that manage fisheries resources in partnership with local government (D'Udine et al., Ref. 19-25). Every official landing site has an associated BMU, and all fishermen on Lake Albert must register with their local BMU in order to fish. Figure 19-10 illustrates the main landing sites within the Primary Study Area.

⁹ Facilities available for each landing site within the Primary Study Area are provided in Appendix 11 to the Artelia SHBS Report (Appendix Q).

¹⁰ Beach Management Units (BMU) were established in 2003 to improve on-the-ground daily control and monitoring of fishing. Several BMUs in the Primary Study Area have been established at major landing sites. BMUs are responsible for the fishery resource management at each landing site, in collaboration with the local and central governments, especially the MAAIF. They are composed of elected community members, usually representatives of several fishery sectors (fishing, fish processing, marketing, boat building, etc.). These members form a committee, presided by a chairperson assisted by a secretary and a treasurer. More information about the role of BMU is provided in Appendix Q – SHBS Report, Workstream B “Community Profile”.

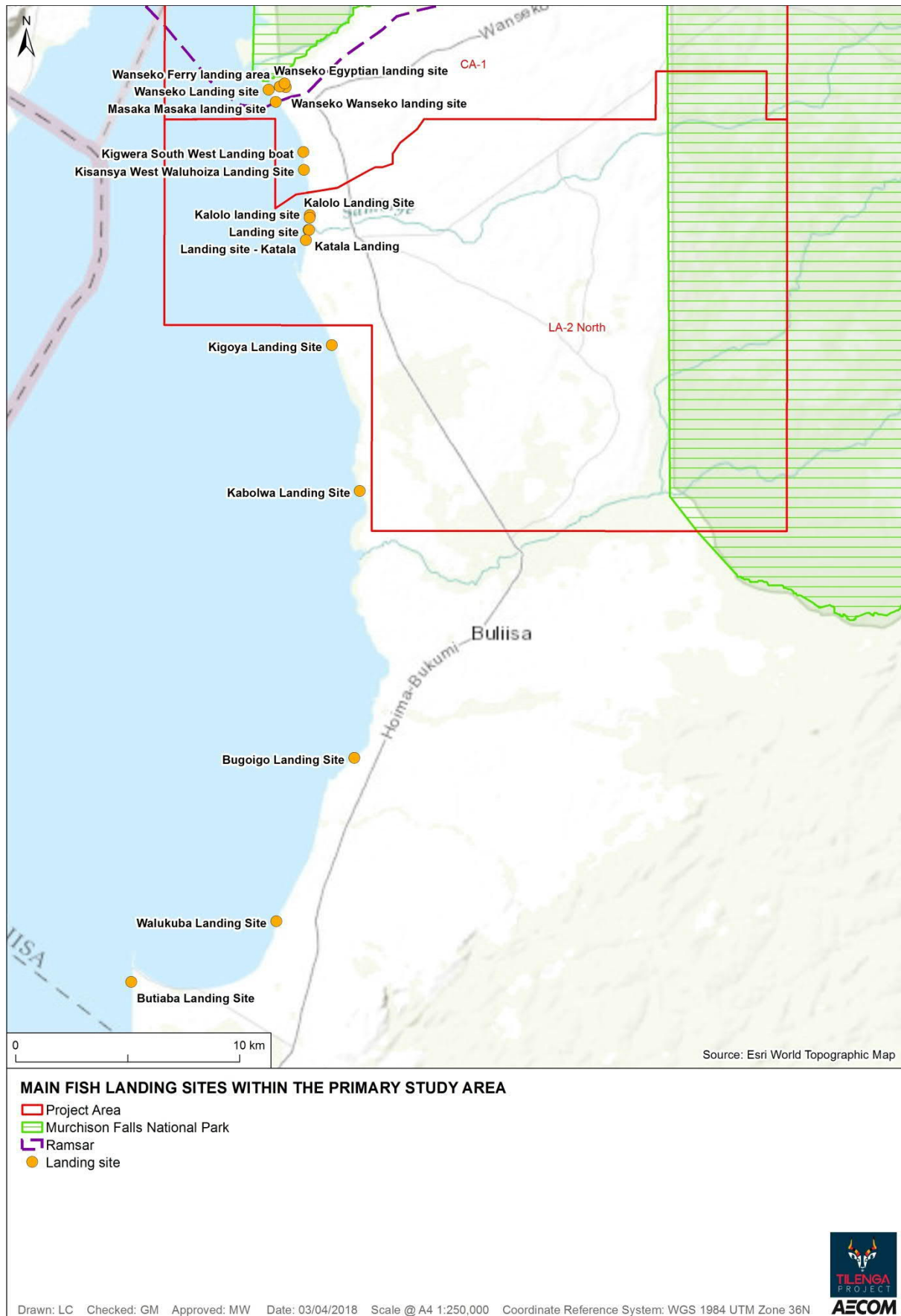


Figure 19-10: Main fish landing sites within the Primary Study Area

The NaFIRRI report (Ref. 19-24) and D'Udine et al. (Ref. 19-25) suggest that Lake Albert is over-fished. Over-fishing is indicated by changes in species composition, reduced species diversity in the Lake, reduced sizes and increases in the effort needed to catch the same number or biomass of fish. Nakiyende et al. (Ref. 19-13) report that there has been a shift in the species composition of commercial fisheries over last four decades; where in 1970, large, high-value species like *Citharinus citharus*, *Alestes baremose*, *Lates niloticus*, *Hydrocynus forskhalii* and *Disticodus niloticus* dominated commercial catches, catches today comprise smaller, lower-value species like *Brycinus nurse* and *Neobola bredoi*. Nakiyende et al. (Ref. 19-26) also estimate that there has been a twofold decline in *Alestes baremose* and *Hydrocynus forskhalii* since 1971, with the contribution of *A. baremose* and *H. forskhalii* to lake-wide annual catches falling from 42% to 1.3% and from 30.4% to 1%, respectively, between 1971 and 2007.

Further evidence for over-fishing is presented in a report published by the National Fisheries Resources Research Institute (NaFIRRI) (Ref. 19-24). Data from the report show that there has been a decrease in the size at which fish mature; in *Alestes baremose*, for example, size at maturity has fallen from 27cm to 16-18cm. In addition, there has been a change in the species most targeted by fishermen on the Lake. Catch statistics between the 1950s and 2008 suggest that fishermen now focus on small, pelagic species like *Brycinus nurse* and *Neobola bredoi*, whereas larger species like *Citharinus citharus* and *Lates niloticus* were the primary target species in the 1950s and earlier. This is consistent with over-fishing causing declines in large predatory species and necessitating a switch to species further down the food chain. The NaFIRRI report estimates that 43.9% of the commercial fish catch on Lake Albert in 2008 comprised *Brycinus nurse* (a small pelagic species), compared to less than 1% as recently as the 1990s.

Fishermen provided less detail on over-fishing during field studies, but commented that the fishing trade was not booming in Buliisa due to a reduction in catches. The abundance of particular species had declined with time, and it was noted that fishermen were fishing for significant lengths of time (sometimes spending as long as a month on the Lake without pause). In addition, juvenile fish were being disturbed in nursery areas by activities like papyrus harvesting.

Fishermen blamed over-fishing on an increase in competition for fisheries resources. They suggested this competition was caused by an influx of immigrants into the fishery from the Democratic Republic of Congo. The arrival of Congolese fishermen was attributed to bans on fishing in the Congolese half of the Lake which started as early as 2010 (Bassily, Ref. 19-27). Similar bans had not been implemented on the Ugandan side of the Lake. Fishermen claimed that the arrival of Congolese fishermen had caused a breakdown in the fisheries management rules that local people (Bugungu) had crafted.

Fishing is generally practiced in Lake Albert, the Albert Delta and Victoria Nile River. Fishing within the boundary of the Park is illegal; however, some households reportedly fish in the area (Ref. 16-3). In Nwoya District fishing is practiced along the Albert Nile River. Fishing is not currently an important livelihood activity for communities in Got Apwoyo and Purongo Sub-Counties, however, the District Production Officer reported that the District Government has plans to establish a fish landing site in Obiya and Arana, located along the Nile and they are also promoting fish farming in ponds in Olero and Anaka Sub-Counties though to date there have not been significant results. (KII, Nwoya District Production Officer, Tilenga ESIA SBS).

19.7.7.3 Environmental goods produced by this service

Lake Albert capture fisheries target a range of species, of which locals identified the following:

- *Hydrocynus spp.* (tigerfish);
- *Lates niloticus* (Nile perch);
- *Oreochromis niloticus* (Nile tilapia);
- *Bagrus docmak* (Sudan or silver catfish);
- *Alestes baremoze* (silverside, or 'ngara' locally);
- *Malapterurus electricus* (African electric catfish);

- *Barbus bynni* (called 'kisinja' locally); and
- *Auchenoglanis occidentalis* (giraffe catfish, or 'bubu' locally).

The natural history of these species varies significantly. *Lates niloticus* in particular can grow to large sizes, with fishermen interviewed during FGDs saying they could reach 50kg and peer-reviewed literature suggesting a maximum size of 200kg (Ribbink, Ref. 19-10). *Lates niloticus* is native to Lake Albert, and has therefore not caused ecological damage similar to that in Lake Victoria, where it is an introduced species.

19.7.7.4 Beneficiaries

Capture fisheries in the Study Area sustain a number of activities and livelihoods. Fishing is the most obvious of these, but other activities like fish drying, fishmongery, equipment leasing, and boat building depend, to varying degrees, on continued fisheries production from the Lake. Fish drying in particular appears to support a number of jobs, with several people observed working at drying facilities in Wanseko. Dried fish is also a source of earnings from outside the Study Area, because it is sold as an ingredient for poultry feed to chicken farmers.



Figure 19-11: Fish Drying at Wanseko

Fishermen are therefore important but not sole beneficiaries of capture fisheries in the Study Area. The economy that is sustained by fisheries production is sizeable and employs large numbers of people in a variety of jobs. It also provides income from outside the Study Area. Capture fisheries are therefore arguably a 'keystone' ecosystem service, because many activities and livelihoods in the Study Area could not continue without its supply.

In addition, fisheries and the trades linked to them benefit both men and women in the Study Area. There appeared to be important gender-based differences across fisheries trades. For example, while most people engaged in fishing appeared to be men, fishmongery was the sole domain of women. During field surveys at Ngwedo Farm market, only women were observed selling fish at market stalls.

Fisheries-related activities also depend on ecosystem services elsewhere in the Study Area. For example, boat building depends on a continued supply of woody biomass; mainly sourced from Budongo Forest Reserve and other forested areas. The viability of fisheries production itself depends

on ecosystem services like water quality regulation and local and global climate regulation, from which local people also benefit. Capture fisheries might therefore serve as a useful proxy for the supply of other ecosystem services.



Figure 19-12: Local Fishing Boats at Wanseko Pier

In 2011, 20% of households in Buliisa District undertook fishing for subsistence and income generation (Ref. 16-29). Fishing in Nwoya District is more restricted due to the MFNP. Fishing is an important aspect of food security¹¹ and is a primary source of income for communities living near or on the Lake Albert shoreline (Katanga, Katodio, Wanseko, Masaka and Kisansya West) and as a secondary income source for communities living inland.

The incomes fishermen earn from capture fisheries vary from season to season. Members of the Butiaba BMU said that weekly incomes ranged between UGX50,000 and UGX200,000 depending on the quality of the fishing. In the last five years, weekly incomes had been as high as UGX700,000, on account of the large numbers of fish caught rather than high prices. The fishermen interviewed relied on fisheries for an important proportion of their income, with as much as 70% to 80% of their income derived from fishing.

The amount of time people had been involved in capture fisheries was significant. One fisherman at the Wanseko FGD had been fishing since he was a child, with other members of the focus group involved for eight years, 16 years and 25 years, respectively¹². Newer entrants to the fishery appear to use capital built up in other activities to purchase the equipment required for fishing. For example, one focus group participant had initially been involved in the brewing trade and had used her earnings from brewing to move into fishing-related activities.

The equipment that fishermen use is managed by BMUs.

¹¹ 30% of the respondents to the 2015 SHBS Household Survey report they eat fish on a daily basis, 11% three times a week and 17% twice a week (Artelia, 2015).

¹² It is possible that the members of the focus group discussion were selected on the basis of their experience in the fishery, and therefore that people with many years' involvement in capture fisheries were over-represented.

Fishermen employ a range of methods to capture species. Fishermen at a FGD in Wanseko mentioned using gillnets, seine nets (which are used from the shore), fish traps and drift nets. Fishermen also use longlines, with the number of baited hooks varying depending on the species being targeted. A longline with between four and 50 hooks is used for large species like *Lates niloticus*, while longlines with 800 to 1000 hooks are used for smaller species. These longlines are set either at the surface or on the bottom of the Lake, again depending on the species targeted. In addition, fishermen mentioned the use of mosquito bed nets as fishing nets, although they noted that these 'collect almost everything'.

The number of boats involved in capture fisheries was unclear. The BMU in Butiaba suggested that 658 boats were present within the BMU's management area, with a five-year average of 120 boats. (The significant change in current boat numbers versus the mean was not discussed, but may indicate that the number of fishing boats on Lake Albert is increasing.) Boats are usually four to five metres in length. Observations made along the Lake Albert shoreline suggest that the majority of these boats do not have outboard or other engines (Figure 19-5).

In practice, BMUs are 'largely ineffective in fulfilling their co-management mandate' and fisheries regulations, including regulations applying to fishing equipment, are rarely enforced (D'Udine et al., Ref. 19-25). It is therefore likely that the most damaging kinds of fishing equipment – gears like drift nets, gillnets and seine nets that are unselective and on which mesh sizes can be reduced so that they catch juvenile as well as adult fish – are used without penalty by local fishermen.

Other beneficiaries of capture fisheries in the Study Area include tourism operators who run fishing trips for tourists along the Victoria Nile.



Figure 19-13: Nets on the Shore at Butiaba

19.7.8 Timber and Woody Biomass (including Energy)

19.7.8.1 Key ecosystems providing the service and their location relative to the project's Study Area

Key ecosystems for timber include natural forest, plantation forest and woodland. In terms of woody biomass for fuel, key ecosystems include natural, riverine and plantation forest, woodland and wooded grassland.

19.7.8.2 Ecosystem service and extent

Timber and woody biomass is a provisioning ecosystem service. Timber and woody biomass yields will vary depending on a range of regulating ecosystem services, such as climate regulation (local and global), soil quality regulation and disease and pest control.

The extent of different types of forest and woodland in the wider Study Area are presented in Figure 19-14.

19.7.8.3 Environmental goods produced by this service

Woody biomass is important both as a fuel and a building material throughout the Study Area. It is also used to produce charcoal.

Different species of trees are used for a range of purposes in the Study Area. For example Acacia and lira trees are cultivated by households for various purposes including poles for construction and firewood, especially in villages close to the Lake Albert. The acacia trees used to grow wild but as the available stocks reduced, communities began to incorporate the planting of the trees within their farming. Stems from other tree species are used for building housing furniture such as shower cabins, drying racks for fish, kitchen utensils or chicken cages. Wood stems are also used to build fences for kraals, boreholes or other properties. This wood is more available in the rangeland and forest areas. **Chapter 17: Archaeology and Cultural Heritage** (section 17.6.4.8.3) sets out the uses of a range of trees in the Study Area.

Local people were observed collecting firewood at a number of villages, and also discussed areas in which firewood collection was especially common. Firewood is used as a fuel in cooking stoves and in larger fish-smoking stoves. The abundance of firewood decreases close to the shoreline of Lake Albert, and in some cases means local people buy firewood from local retailers. Firewood is usually made from stems of dead and dry wood, sometimes from fresh trees (acacia and lira trees for instance) or cassava stems.

A further major use of woody biomass in the Study Area is as a raw material in charcoal production. An additional discussion of charcoal production is provided in **Chapter 16: Social**.

People engaged in charcoal production suggested that any species of tree could be used to make charcoal, although mango and 'mutete' trees were preferred. Cacti and 'musongi' trees were not typically used. Similarly, any species of grass could be used to form the layer of tinder above the wood pile. FGD participants said that it was easy to find trees suitable for making charcoal, although they now had to travel further to find them than they had in the past as a result of their decreasing abundance. Declines in abundance were attributed to cutting down too many trees. Some participants also blamed migrants and oil companies for cutting down trees, the latter during seismic acquisition in particular.

19.7.8.4 Beneficiaries

The primary beneficiaries of woody biomass in the Study Area are local people and their families. Participants in local markets also benefit from the sale of charcoal and firewood. In some parts of the Study Area like Bugana-Kataleba, firewood retailers are relatively common.

Most households in Uganda (71%) use firewood as the main source for cooking with 85% in rural and 31% in urban areas. This has declined from 82% registered in 2002 (Ref. 16-29). Firewood collection is undertaken by women in most villages, surplus is sold for extra income (though this is banned in Buliisa District).

A bag of charcoal (approximately 50 kg) sells for approximately UGX 22,000. UGX 1,000 is paid to loaders and the bag costs UGX 1,500 meaning one remains with approximately UGX 18,000 or UGX 19,500. Sale of six to seven bags provides enough income for one month. Men say they can make ten bags of charcoal from one heap of trees but women say they can only make two to three bags (FGDs, Charcoal Manufacturers in Buliisa and Nwoya Districts, Tilenga ESIA SBS). Within Buliisa District, charcoal manufacture is a 'last resort' and it is reported that 'poverty drives people to sell charcoal.' In Got Apwoyo sub county people said they make charcoal for 'quick money'. The charcoal they produce is sold in local markets or used domestically for cooking, ironing and painting. It can also serve an important role in generating cash quickly to pay for school fees when no other sums are available to do so, according to FGD participants.

Despite the challenges associated with charcoal production, people were willing to invest in it. In particular, FGD participants noted that charcoal producers will pay up to UGX 40,000 for other people to cut down trees for them.

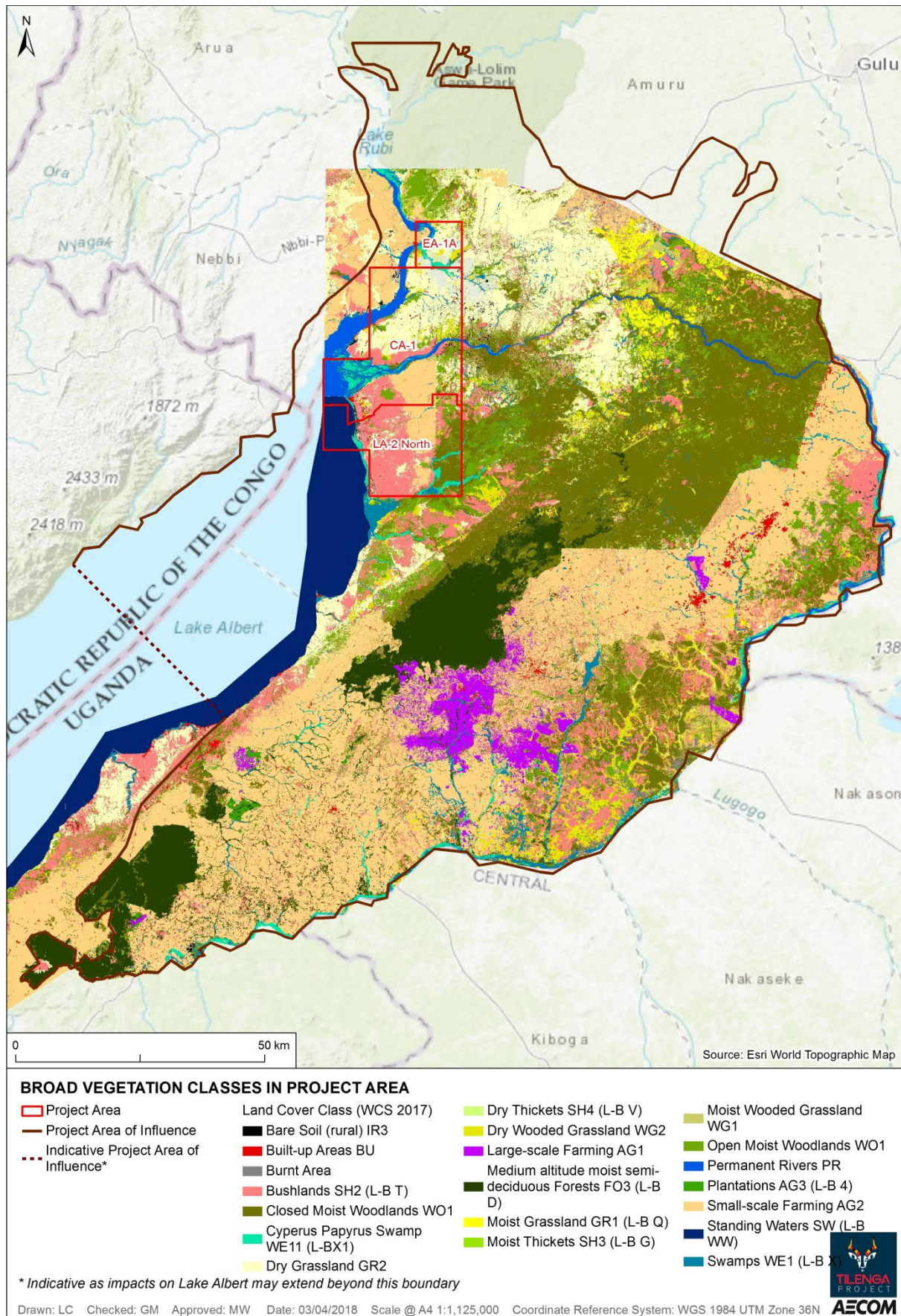


Figure 19-14: Landcover Types in Study Area

19.7.9 Water (for drinking, supply and regulation)

19.7.9.1 Key ecosystem providing the service and their location relative to the project's Study Area

Water is obtained from open water, including Lake Albert and rivers, and groundwater. A range of ecosystems support the quality and quantity of water, including woodlands, forests and wetlands. These are important for maintaining water quality and the flow of the Study Area's rivers and streams and Lake Albert.

19.7.9.2 Ecosystem service and extent

Freshwater (including groundwater and surface water) for drinking and other purposes is categorised as a provisioning ecosystem service. However, it can also be considered a regulating service for the important role it plays in sustaining other ecosystem services. For example, a lack of freshwater can cause crop losses or affect the fodder on which cattle feed. A range of ecosystem services therefore depend on the continued supply of water in the environment. Water quality regulation is both a Type 1 and Type 2 Ecosystem Service, meaning both communities and Project depend directly on supply from this ecosystem service.

Water sources used by communities include swamps, streams/ rivers, springs, and Lake Albert, hand-dug wells, hand pumped community boreholes, and public water taps. Most freshwater in the Study Area was groundwater, which could be accessed using boreholes. Based on the results of the groundwater samples taken between 2014 and 2017 and data from the secondary sources, it is considered that the groundwater in the unconsolidated sand aquifer from which groundwater is drawn generally is of good quality (**Chapter 9: Hydrogeology**). Boreholes are present throughout the Study Area. Local people were seen waiting at hand pumps with plastic containers to fill. Lake Albert is also occasionally used as a source of drinking water, although it requires treatment as sanitary conditions along the Lake are poor. The extent to which freshwater in the Lake is polluted is also unclear. *Schistosoma* trematodes, the parasite that causes bilharzia, are present in the Lake. A more in depth discussion on access to drinking water is provided in **Chapter 16: Social**, and a discussion on bilharzia is provided in **Chapter 18: Community Health and Safety**. Detailed analysis of water quality in Lake Albert is presented in **Chapter 10: Surface Water**.



Figure 19-15: A hand pump near Well pad NGR-01

There appears to be sufficient water for purposes other than consumption in the Study Area, from Lake Albert, rivers and streams, and groundwater. For example, Lake Albert is a key source of water for cattle. Spillover from hand pumps is collected in scrapes from which livestock can drink. However, access to water is a challenge. Balaalo at a FGD reported spending up to three days to find water for their cattle, for instance. Accessing water is difficult because some rivers and streams (e.g. Sambiye, Waiga, Zolye) are seasonal and only flow during the rainy season. In other cases, the infrastructure for accessing water (e.g. for irrigation) is poorly developed. **Chapter 16: Social** contains further details on water supply in the Study Area.

Figure 19-16 shows a map of the different water sources identified in the Study Area during the 2015 SHBS. The location of water sources used for drinking water for cattle is presented in Figure 19-8 above.

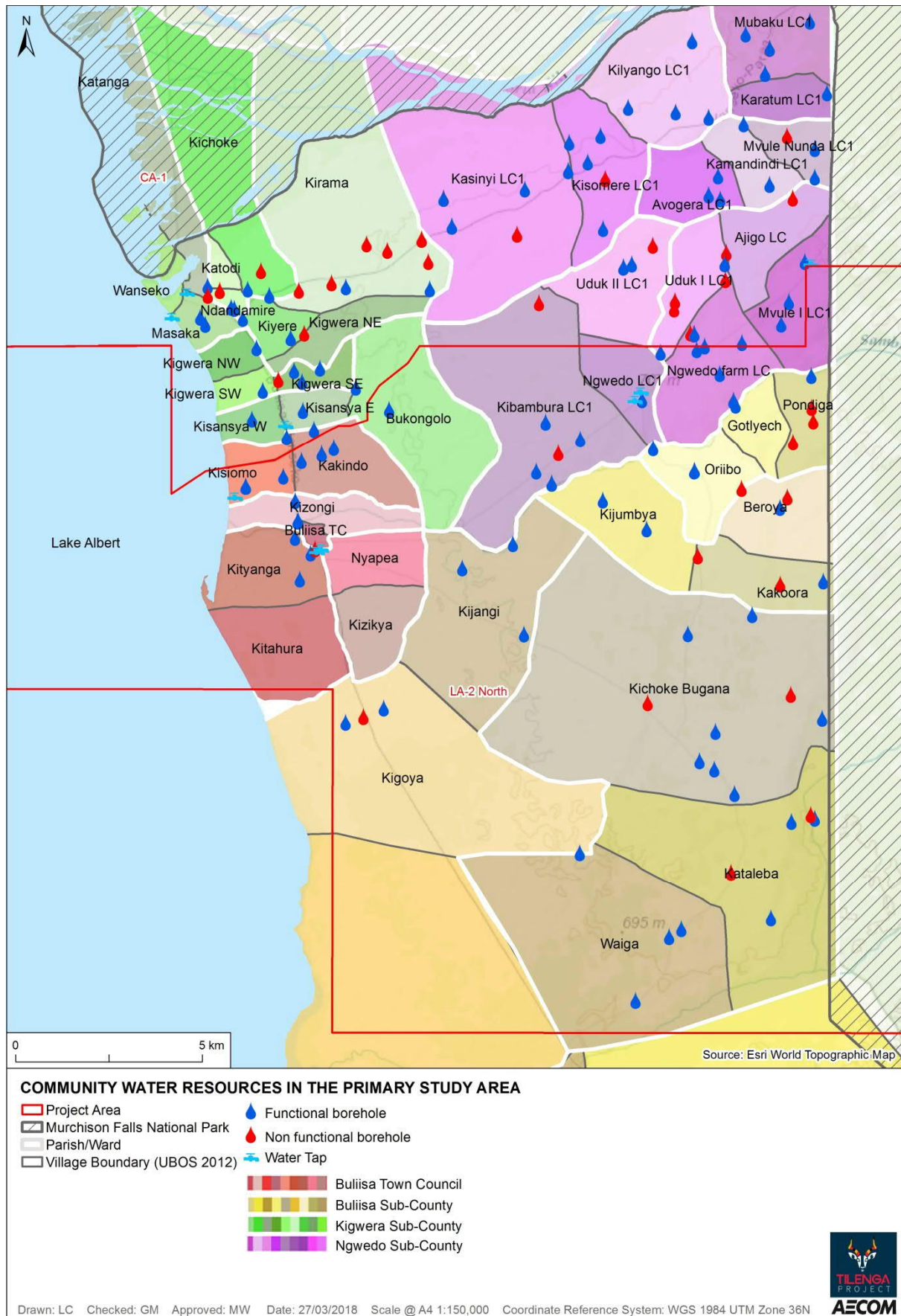


Figure 19-16: Community Water Sources

19.7.9.3 Environmental goods produced by this service

Surface water and groundwater are the environmental goods provided by this service.

19.7.9.4 Beneficiaries

Most people in the Study Area benefit from groundwater and surface water from Lake Albert and other water bodies.

The average water use within the Study Area was reported to be 13 litres a day, a figure significantly lower than the recommended amount set by the WHO at 50 to 100 litres per day.

The 2015 SHBS found that access to water and sanitation is unequally distributed throughout the Primary Study Area, which is attributed to a lack of coordination between different actors responsible for building this infrastructure. The 2015/16 – 2019/20 Buliisa District Five Year Development Plan reports the district average safe water coverage¹³ at 62%. Buliisa and Kigwera sub-counties had very low coverage of less than 50%, while Buliisa TC had above average at 73%. Ngwedo sub county was close to the average at 60% (Ref. 16-35).

Chapter 16: Social (Sections 16.6.4.2.1 and 16.6.4.2.2) discuss in detail access to water in the Primary and Secondary Study Area.

19.7.10 Wildfoods and Bushmeat

19.7.10.1 Key ecosystem providing the service and their location relative to the Project's Study Area

Hunting is undertaken in a range of habitats across the Study Area. However, habitat type and location are crucial factors determining potential impact of hunting on animal populations (Ref. 19-37). In this context savannah and woodland ecosystems are more productive for many types of hunting than forests and xeric landscapes and moderately disturbed habitat more than undisturbed (Ref. 19-18). However undisturbed forest habitats are key habitats for certain species hunted, such as chimpanzees.

In terms of the collection of other wildfoods in the Study Area, honey production is a key activity. In this context wooded areas and forested areas provide adequate bee-forage in terms of both quality and quantity of nectar and pollen grains. Yields of honey are highest when flowers and blossom are abundant. This typically follows periods of high rainfall. Although bees will pollinate a range of plants, flowers in the genus *Calliandra* are particularly attractive to them.

19.7.10.2 Ecosystem service and extent

Wildfoods and bushmeat are categorised as a provisioning service, although their abundance depends on regulating services like climate regulation (local and global) and disease and pest control.

Hunting takes different forms in the Project AOI, including for basic needs (subsistence), generating income above and beyond basic needs (commercial), illegal hunting and trade of high value species, responses to perceived injustice (such as human-wildlife conflict) and cultural traditions.

As far as illegal hunting is concerned; Harrison et al. (Ref. 19-38) identified a number of drivers of wildlife crime in the vicinity of the MFPA, identified as follows:

¹³ The MWE categorises water sources into two i.e. the safe water sources and the non-safe water sources. The safe water sources are ideal for human consumption. According to the MWE, the safe water sources include: Boreholes, protected springs, shallow wells fitted with hand pumps, rainwater harvesting (RWH) facilities (storage >6m³) and piped water supplies. The MWE also stipulates the number of users per source: Protected springs – 200; shallow well with hand pump – 300; deep borehole with hand pump – 300; gravity flow scheme communal tap or other piped water communal tap – 150. The Coverage for RWH depends on the volume of the tank. (Ref. 16-34).

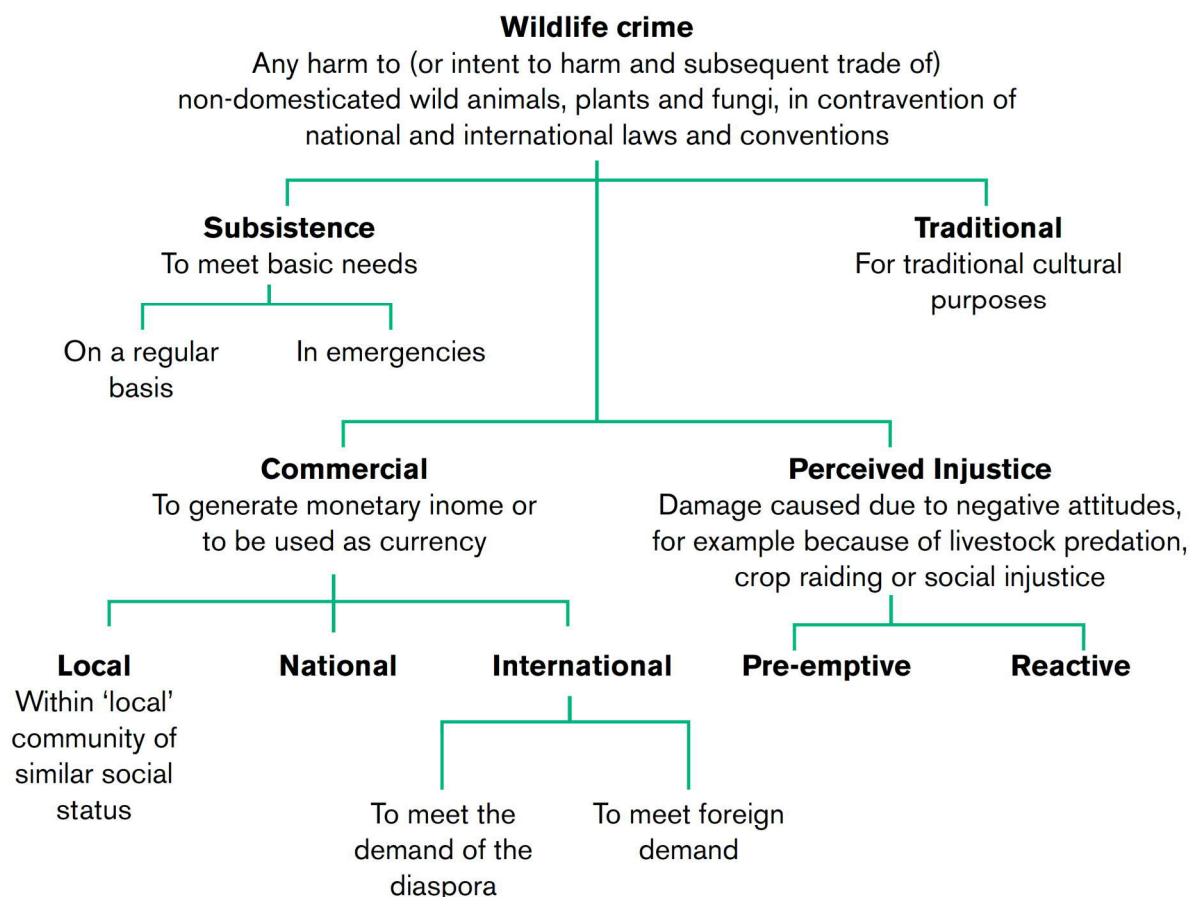


Figure 19-17: Types of wildlife crime (Ref. 19-38)

Hunting in protected areas is illegal in Uganda, and hunting of protected species is illegal with the exception of some sport hunting and the supervised control of some species declared as vermin. In this context some hunting in the Study Area is legal.

Hunting effort is strongly seasonal, with the dry season a key hunting period. This is given there are fewer other income generating opportunities, and hunting is easier to undertake in the dry season due to the congregation of animals in certain locations, and the ability to see rangers and cover tracks. Hunting increases also take place close to holiday periods, such as Christmas and Easter.

Subsistence and commercial hunters use various strategies including dogs, nets and traps. The most common approach in the Study Area is wire snares and, in areas populated by the Acholi, wheel traps. These are placed in feeding areas, near watering points or along game trails. Such traps are cheap and easy to produce (particularly wire snares) and difficult for rangers to detect, making them appealing to hunters. However, although effective at killing large numbers of animals, traps are highly inefficient because they ‘waste’ animals when they are not checked regularly and wounded animals may also escape. Traps are often combined with fire setting as this promotes regrowth that lures animals (Ref. 19-29).

FGDs in the immediate Study Area suggested that hunting usually takes place along the River Waiga, extending as far as Murchison Falls National Park. Relating to the wider Study Area, in relation to the availability of animals, hunting is commonly undertaken within and in the vicinity of protected areas, there are also a number of wildlife habitats used for hunting situated on private or communal land, particularly in Masindi and Hoima Districts. These areas, which are commonly known as ‘forest patches’, are not accorded the same status as protected areas (including nearby Central Forest Reserves). Given the densely populated nature of the locations in the vicinities of these areas, wildlife/human conflict is a key issue. This has resulted in significant hunting pressures in these areas. In terms of human-wildlife conflict north of the Victoria Nile, this was mentioned as a key issue in Got Apwoyo, where it was suggested that people have stopped growing crops because they are frequently destroyed by elephants.

In terms of the illegal hunting and trade of high value species, the Uganda Wildlife Authority's (UWA) General Management Plan suggests that poaching is concentrated around MFPA, especially along the Murchison Falls-Albert Delta Ramsar site and the banks of the Albert Nile. Poachers use guns and traps.

Given ecological conditions and floral diversity, honey production is an important ecosystems service in parts of the Study Area, particularly in areas close to the MFPA. Bees also provide a role for pollination. Honey is usually harvested twice a year between March - June and the secondary season in August - October.

19.7.10.3 Environmental goods produced by this service

Subsistence and commercial hunters hunt a range of species of varying sizes. Key species include as follows:

- Cane rat;
- Bush pig;
- Bushbuck;
- Buffalo;
- Duiker*;
- Guinea fowl;
- Hippopotamus*;
- Oribi;
- Porcupine;
- Reedbuck*;
- Sitatunga*;
- Squirrel;
- Uganda kob;
- Warthog; and
- Waterbuck.

*Species which have a 'threatened IUCN Global Status

Most meat is reportedly sold locally to satisfy demand in villages near the protected areas. Prices vary throughout the year depending on supply, but bushmeat is often cheaper and better quality than domestically produced meat.

In terms of illegal hunting and trade of high value species, poachers target higher value species including: buffalo, crocodile, hippopotami, hartebeest, kob, and other antelope. Elephants are also killed for their ivory, with the UWA estimating that 20 elephant have been killed in the last two years in the MFPA. Poaching may threaten the ongoing recovery of these game animals, whose numbers have steadily increased since dramatic declines in the 1970s.

In relation to the production of honey, families sell honey and other products such as beeswax (to make candles), and use the honey in baking, bathing, and for making mead (a mildly alcoholic drink).

19.7.10.4 Beneficiaries

As highlighted in Figure 19-17 above, hunting takes different forms in the Project AOI, including for basic needs (subsistence), generating income above and beyond basic needs (commercial), responses to perceived injustice (such as human-wildlife conflict) and cultural traditions. In addition, a very small sub-set of the population is engaged in illegal hunting and trade of high value species.

Whilst there is significant overlap between subsistence and commercial hunting, and in practice, many of the households that hunt to eat will also hunt to sell, hunting is now increasingly described as a commercial activity rather than a purely subsistence one. The UWA's Community-Based Wildlife Crime Prevention Action Plan highlights that 40% of households are estimated to have hunted for commercial purposes at least once in 2015, increasing to over 50% in Purongo sub-county and parts of Kiryandongo district. This proportion reflects other studies undertaken in the area which have suggested that 35 per cent of households had been involved in subsistence hunting and 42 per cent in commercial hunting (Ref. 19-39)

The hunters who participated at the FGD were all men, ranging in age from ~20-55. It is a year-round activity and has the potential to be lucrative, with the result that it is taken seriously by those involved in it. Hunters will spend up to a month in Buliisa, and can harvest several tonnes of meat on occasion.

A hand-sized piece of meat (with size judged by eye) is usually sold for UGX10,000. The most expensive meat, hippopotamus, fetches very high prices, with a small hippopotamus worth up to UGX1 million. The high price of hippopotamus meat seems to be a result of its scarcity – it is ‘hard to get and very popular’, according to FGD participants. FGD participants also estimated that 80% of the meat harvested is sold. Other animal parts are used in agriculture and medicine – for example, hooves are planted in fields to improve crop yields. Healers also provided estimates of the cost of medicinal animal parts. For example, a small piece of gorilla bone or rhino horn would cost some UGX200,000-300,000, although the latter could also be bought in exchange for a cow. It was noted that the trade in rhino horn was conducted under strict secrecy. Nevertheless, demand for rhino horn is strong and, given its cost, tends to be used to treat serious ailments.

Meat is sold in trading centres (small market towns) to small ‘chop shops’, which serve local and visiting customers and are largely run by women. Many communities strongly prefer bushmeat over domestic livestock, to the extent that UWA staff say people are known to try to disguise domestic meat as bushmeat. Bushmeat is also sold fresh or smoked to traders from urban centres, where it yields a higher price. Evidence from elsewhere suggests that demand in urban areas is driven by a complex mix of price, availability, culture, ethnicity and status (Ref:19-30). Even if efforts to make alternative sources of animal protein more available successfully reduce local demand, they may do little to affect demand from urban centres.

However, as reported by UWA during stakeholder engagements, poaching for both bushmeat and ivory in the National Park has increased recently, and is anticipated to continue rising as demand for bushmeat and ivory grow. In addition, poaching has transformed from subsistence to a professional, commercially-focused activity, which increases the threat it poses to wild animal populations. As such hunting is seen as one of the key threats affecting the integrity of MFNP, reflected by a recent increase in anti-poaching activities by UWA.

The cultural importance of hunting was also recognized. FGD participants said that it was a tradition with which they had grown up.

Mixed views were provided about the future of hunting and its importance to local communities. Most FGD participants believed that it was easier to find and kill animals five years ago than it was today, and that the situation would continue to worsen. There was also a general sense that oil and gas activities would affect the animals targeted by hunters.

The primary beneficiaries of wildfoods like honey are the beekeepers who sell the honey and other products, their clients, and indirectly the suppliers of goods like jars and buckets. Two beekeeping families who owned 68 hives between them were interviewed during field surveys. Participants in the interviews had become involved in beekeeping in 2008 through a Ugandan government scheme that aimed to encourage apiculture, and had acquired their hives from the Masindi District Farmers Association.

Honey produced by the families is marketed as ‘Buliisa Albertine Honey’ and is sold in individual jars or 20kg buckets, the latter to a collective that offers a guaranteed price of UGX4,000. Individual jars sell for UGX8,000. The families buy jars from Kampala for UGX350. The families sell about 200 litres of honey in a typical year, worth between a quarter and half of their total annual income. There is significant demand for honey, and the families have not experienced any difficulties in selling it. Their clients include oil and gas companies workers.

Honey producers noted challenges from the shortage of jars, lack of protective equipment when harvesting the honey. Transporting the honey is another key challenge. In addition, interviewees were concerned by the Project and believed that fumes and noises from vehicles would adversely affect their bees.

19.7.11 Fibres and Ornamental Resources

19.7.11.1 Key ecosystems providing the service and their location relative to the project's Study Area

The key ecosystems providing this category of Ecosystems Service are as follows:

- The Murchison Falls-Albert Delta wetlands system: *Cyperus papyrus L* (papyrus);

- Lake Albert shoreline: shells and papyrus; and
- Open and wooded grasslands, including Hyparrhenia grassland and bushed grassland: grass.

19.7.11.2 Ecosystem service and extent

Field studies suggest that people in the Study Area use fibres and ornamental resources in a range of tasks. These include papyrus, shells and grass. Fibres and ornamental resources are categorised as provisioning ecosystem services.

The Murchison Falls-Albert Delta wetlands system is the key location where *Cyperus papyrus L* is present. Papyrus collection is particularly undertaken in the Wanseko-Kibambara area. In addition papyrus collection takes place in some locations on the Lake Albert shoreline. Papyrus is sold as material on its own, or made into mats for domestic purposes.

Papyrus reeds are harvested from the wild when they are eight months old by groups of up to 15 people. Harvesting typically takes place in 10 acre plots, with up to 200 people harvesting at any given time. Once the papyrus is harvested, it is left to dry in the sun and then transported to market. FGD participants said that working in groups increases the efficiency with which papyrus can be collected.

Harvesting ideally takes place during the dry season, when up to 400 mats can be produced in a week. In comparison, production in the wet season amounts to about 250 mats a week. Wet season production is significantly lower because areas usually open for harvesting in the dry season are flooded and are accessible only by boat, which entails additional investment by papyrus harvesters. Furthermore, water levels in the wet season lap the harvesting area and therefore increase the danger from crocodiles (*Crocodylinae*), snakes and waterbuck (*Kobus ellipsiprymnus*).

FGD participants with 10 years' experience of papyrus harvesting or more had noticed environmental changes in the Delta in that time. In particular, there had been a decrease in flooded area compared to five to 10 years' ago. In addition, there had been a decrease in the abundance of papyrus attributable to an increase in the number of people harvesting it.

Shells are collected from Lake Albert and the shores of the lake - the area of highest concentration of this activity is the lake banks near Kizongi. Shells are sold as an ingredient in chicken feed, or used in jewellery and other ornaments such as spoons. Shells are collected year-round, with no apparent change in abundance between the dry and rainy seasons. However, their overall abundance has declined in the last five years. Local people will spend the whole day harvesting shells, with the best time for harvesting coinciding with onshore winds that blow shells toward the Lake Albert shoreline.

Grass harvesting is an important activity across the AOI and is used for house building (including in the construction of roofs) and bundles are used for sweeping floors. There are two seasons for grass harvesting: In July 'spear' grass is cut and in November/ December 'abi' grass is cut. It grows widely in the rangeland where local communities usually collect it.

19.7.11.3 Environmental goods produced by this service

A range of environment goods are produced by this category of Ecosystem Services, including:

- Papyrus: mats;
- Shells: chicken feed, jewellery and other ornaments;
- Grasses: thatch for roofs and housebuilding, animal fodder, bundles for sweeping;
- Bullrushes: for mattresses;
- Plant fibres: for baskets; and
- Bark: Barkcloth used for cultural and spiritual functions.

A list of plants and trees identified as having uses for local communities is provided in **Chapter 17: Archaeology and Cultural Heritage** (section 17.6.4.8.3).

19.7.11.4 Beneficiaries

FGDs with papyrus harvesters provided extensive information on the uses of papyrus and the manner of its collection. Most of the participants at the FGD were women, suggesting that papyrus harvesting is a predominantly female activity. Comments from FGD participants indicated that papyrus harvesting is especially common in the Wanseko-Kibambara area, both of which are located near the Murchison Falls-Albert Delta wetlands system.

Participants at the FGD indicated that papyrus harvesting is their sole livelihood, save for subsistence agriculture. They are prevented from pursuing alternative livelihoods like fishing because they cannot afford basic equipment. In general, papyrus harvesting was seen as a precarious occupation and insufficient to support a family.

Papyrus is sold as material on its own, or made into mats for domestic purposes. The raw material is sold in bundles of 120 reeds, which typically cost UGX1,000 per bundle. Mats, which usually require 150 reeds, are sold for UGX1,500 south of the Nile and UGX2,500 at Panyimur market north of the Nile. The higher prices offered north of the river have incentivised cross-river trade, with the local ferry used to transport mats to Panyimur. However, the ferry charges papyrus sellers UGX5,000 per person and a further UGX200 per mat taken across the river, while the market at Panyimur requires UGX300 in duty. Despite these charges, trade appears to be good.



Figure 19-18: Papyrus sellers at Wanseko

Shell collecting is an important income generating activity with shells sold to the animal food industry (e.g. chicken feed), or used to make crafts, jewellery and spoons. The shells are sold to customers from Kampala, Congo, and other districts in Uganda, who come in weekly to buy shells. Shells are collected using basins – a large basin of shells sells for UGX 3,000, and a smaller sells for UGX 1,000. On a good day, one can collect on average three big basins of shells earning a total of UGX 9,000. Income generated from shell collection is used to pay for health services and for basic necessities.

Grass collection is a key activity for some groups. For example in Got Apwoyo grass collection has supplanted crop farming activities and is a major source of income for households in the village. In Tegot Village grass cutters reported that they earn UGX 3,000 – 4,000 per bundle (verified by a buyer passed along the road) and they sell an average of 50 bundles per season. The price of a bundle is not fixed, however, and sometime they sell it cheaper if they need money urgently. In two seasons it was estimated that one household earns an average of UGX 150,000 from grass cutting. Grass cutting is increasing due to increased demand.

19.7.12 Biochemicals/Natural Medicines

19.7.12.1 Key ecosystems providing the service and their location relative to the project's Study Area

A range of plant species, including wild plants, semi-wild plants and traditional vegetables, are used by the local population for medicinal purposes. These are present in a range of ecosystems, however FGDs suggested the medicines used by healers are typically sourced from the local area or grown in the home, although some were collected from Murchison Falls National Park or, further afield, the Albertine escarpment. These latter two areas contained certain plant species which could be found nowhere else, including 'kanja', 'sengi' and 'palaala'.

19.7.12.2 Ecosystems Service and extent

Biochemicals and natural medicines are categorised as provisioning ecosystem services, although their continued provision depends on regulatory services such as climate regulation (local and global), pollination and disease and pest control. Natural medicines may also be linked to cultural ecosystem services such as cultural and spiritual values. During baseline surveys in 2016, respondents in Hoima and Buliisa reported that use of traditional medicine is still widespread. Slightly over a tenth (12%) of respondents in the 2014 HBA reported that they or any other household member saw a traditional healer due to symptoms related to diseases. Almost the same proportion of respondents (12%) noted that they were taking some form of herbal or traditional remedy for the symptoms.

A range of plant species, including wild plants, semi-wild plants and traditional vegetables, are used by the local population for medicinal purposes. Traditional plant uses are described in a number of sources (Prelude Medicinal Plants Database; Kew Herbarium Catalogue; Burkil, 1985-2004; Useful Tropical Plants Database). There are a number of studies on the use of medicinal plants in Uganda (Agea, 2011; Bukuluki et al., 2014; Wanakwakwa et al., 2013; Namukobe et al., 2011; Mubiru et al., 2011; Kakooko & Kerwagi, 1996; Sofowora, 1993; Kokwaro, 1993). Indigenous technical knowledge of medicinal plants is also used to treat livestock (e.g. Nabukenya et al., 2014). According to the Bunyoro Cultural Leaders consulted in December 2016, over 300 medicinal plants are known within the Bunyoro Kitara Kingdom.

A list of plants and trees identified as having medicinal properties is provided in **Chapter 17: Archaeology and Cultural Heritage** (section 17.6.4.8.2).

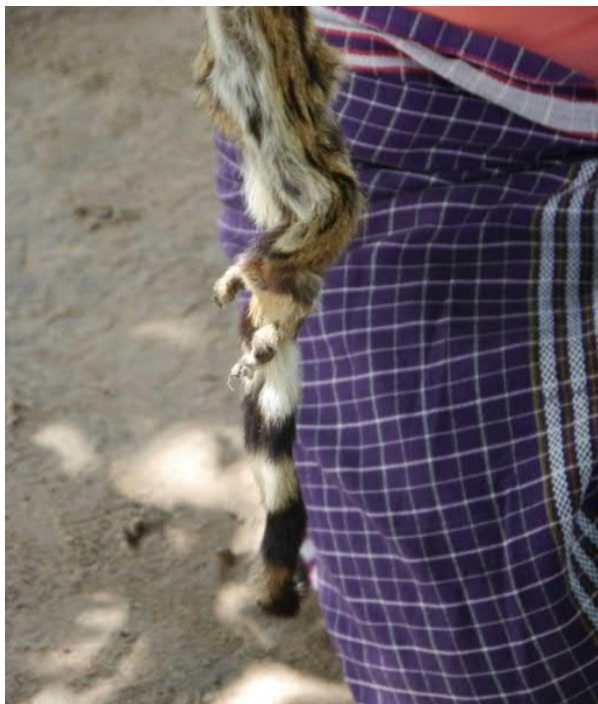


Figure 19-19: Healer with a Cat Skin Headdress

FGDs suggested the range of animal parts used in traditional medicine was extensive. Healers mentioned using gorilla and elephant bone, rhino horn, hyena parts, and rabbit skins. Members of one group showed field staff the skin of a wild cat (probably an African civet cat, *Civettictis civetta*, or serval, *Leptailurus serval*) which could be worn as a head dress and which had important medicinal properties (see Figure 19-19).

The healers who participated in the two FGDs noted that their traditional medicine practice had an important mystical/shamanistic dimension. Many had become healers through the action of spirits that mark people out as herbalists or shamans. These spirits were also important in helping healers choose which natural products they should use as medicines. As a result of the spirits' actions, it was possible that certain animals, fungi or plants that had never previously been used as medicines would be in future. In this sense, a wide range of the Study Area's flora and fauna has important potential in traditional medicine.

19.7.12.3 Environmental goods produced by this service

Patients are treated with a range of natural products, including grasses, leaves, tree bark, mushrooms and animal parts. Healers specifically identified products from the neem tree, which are used in the treatment of malaria and stomach aches; the bark of mango trees, to treat coughs and poisoning; and other plants like 'amogi' (used for headaches).

19.7.12.4 Beneficiaries

The use of the services of traditional medicine practitioners in the Study Area is widespread. Traditional medicine is used as a supplement and as an alternative to conventional medicine in the Study Area, and is often the first avenue pursued when people are unwell. Nevertheless, it is not known whether the people who are treated by traditional medicine practitioners benefit clinically. Nevertheless, it is evident that local people approach traditional medicine practitioners for help and may benefit at some level from their services. The traditional medicine practitioners themselves will benefit from the income they gain from their services.

Information on traditional medicine from FGDs suggested that whilst the patients of the healers came from locally, patients can come from across Uganda. Patients – both men and women - range from children to elderly people, and come from any tribe. Some healers mentioned that they could also treat infants and even children still in the womb.

The healers said that they were capable of treating minor ailments and serious illnesses, including coughs, malaria, and snake bites.

19.7.13 Local Climate Regulation and Global Climate Regulation

19.7.13.1 Key ecosystems providing the service and their location relative to the project's Study Area

Ecosystems play an important role in global climate regulation through sequestering, storing, and emitting greenhouse gases as well as contributing to the albedo effect.

Natural forest, plantation forest, riverine forest, woodland and wooded grassland are important ecosystems for global climate change regulation. Natural forest, riverine forest, woodland, wetland/swamp and open water (e.g. Lake Albert, River Nile) are important for local climate change regulation.

19.7.13.2 Ecosystem service and extent

Climate regulation at both a local and global level is categorised as a regulating service.

Ecosystems can influence the local climate through the level of evapotranspiration, surface albedo, temperature regulation etc. Particular groups of trees or other vegetation can also provide localised shading and temperature regulation.

Ecosystems also play an important role in global climate regulation through sequestering, storing, and emitting greenhouse gases as well as contributing to the albedo effect.

19.7.13.3 Environmental goods produced by this service

A study of the availability of carbon in the vicinity of the Bugoma CFR highlighted that the relative abundance of carbon is significantly higher within forest reserves than those locations outside. Around the edges of these forests and in the private forests plots contained far lower amounts of carbon. On average plots across this landscape contained about 500 tonnes CO₂ per hectare, with over 1,500-2,000 tonnes CO₂ per hectare found in parts of the forest reserves (Ref:19-31).

19.7.13.4 Beneficiaries

The beneficiaries of climate regulation include local people, who gain from the moderating effect of ecosystems on local climate, as well people globally who benefit from the carbon sequestration provided by ecosystems in the Study Area and wider landscape.

19.7.14 Hazard Regulation

19.7.14.1 Key ecosystem providing the service and their location relative to the project's Study Area.

Natural forest, riverine forest, woodland, wetland / swamp and open water (e.g. Lake Albert and the River Nile) are key ecosystems for hazard regulation.

19.7.14.2 Ecosystem service and extent

Ecosystems play a role in maintaining the integrity of land surfaces; maintaining soil cover and low suspended sediment loads in fluvial systems; and retaining and storing water. This provides support for flood regulation, resilience to drought and resilience to floods and landslides.

19.7.14.3 Environmental goods produced by this service

Different ecosystems provide resilience to natural hazards, including those made worse through human interactions with the environment. For example a decline in changes in land ownership, land uses and increased human population have changed local ecosystems, which has compromised pastoral mobility as a coping strategy to drought induced water and pasture scarcity. In this context pasture scarcity, reduced water and resource degradation are on the increase due to deforestation, and inappropriate land use practices (Ref:19-32).

Reduced ranges and alteration of ecosystems and species diversities increased incidence of crop and livestock loss.

19.7.14.4 Beneficiaries

The beneficiaries of hazard regulation in the Study Area are likely to include local people whose dwellings or livelihoods leave them vulnerable to damaging weather events such as floods or climatic changes such as extended drought periods. Hazard regulation can mitigate the potential impact of these weather events. For example, the presence of Lake Albert and wetlands around the Murchison Falls-Albert Delta Ramsar site means that people may have access to water even during droughts.

Further baseline information on flood hazards is included in **Chapter 10: Surface Water**.

19.7.15 Cultural and Spiritual Values

19.7.15.1 Key ecosystems providing the service and their location relative to the project's Study Area.

The ecosystems of the Study Area are key components of the cultural and spiritual context for local people. For example:

- The Acholi consider that land, water, rivers, animals, forests, mountains, rocks and trees have much significance to their lives and create a divine bond between people;
- The Banyoro consider that rivers including the Albert and Victoria Nile, the Sambiye River, the Waiga River and the Wysoke River have many spirits attached to them; and
- The Bagungu have traditionally regarded Lake Albert (*mwitazinge*, meaning 'locust killer') as both economically and spiritually important.

19.7.15.2 Ecosystem service and extent

The cultural and spiritual value of nature is a form of cultural ecosystem service. It refers to the cultural and/or spiritual significance with which nature is imbued, and to the role that ecosystems play in cultural and/or spiritual rituals.

The diversity of ecosystems is one factor influencing the diversity of cultures in the AOI and these attach spiritual and religious values to ecosystems or their components. Groups also place a high value on the maintenance of historically important landscapes and value the "sense of place" that is associated with recognised features of their environment.

19.7.15.3 Environmental goods produced by this service

The cultural and spiritual importance of the Study Area's landscape, flora and fauna was evident in conversations with a range of stakeholders, including local villagers and traditional leaders. It is also discussed in **Chapter 16: Social**, which notes that land has an important 'historical and cultural meaning' to people in the Study Area. Access to and control over land is an especially important issue. Cultural and spiritual values are provided at specific sites within village boundaries, but are also important at the landscape level. Specific sites are discussed in more detail in **Chapter 17: Archaeology and Cultural Heritage**. They comprise sacred trees or groves of trees, rocks, lakes, swamps and waterfalls. These sites can have special properties – villagers said that they could bring rain or stop mosquitoes, or lead to misfortunes (i.e. plagues of mosquitoes) if certain activities like collecting firewood took place around the site. Access to some sites is barred at certain times of day.

Local people did not mention a sense of pride in Uganda's wildlife. However, wildlife does play an important but intangible cultural role in the Study Area. For example, various clans have totems – including wild animals – which they are not allowed to eat or to use. Further details are provided in **Chapter 17: Archaeology and Cultural Heritage**.

19.7.15.4 Beneficiaries

The primary beneficiaries of the cultural and spiritual values provided by the Study Area's landscape, flora and fauna are those people who make use of sites of cultural and/or spiritual importance. Cultural sites belong to and can be used by specific families or clans; indeed, each clan amongst the Bagungu and Banyoro has a cultural site where rituals can be performed by clan members. In addition, each village in the Study Area has an associated sacred site. These sites are therefore widespread in the Study Area.

Further details are provided in **Chapter 17: Archaeology and Cultural Heritage**.

19.7.16 Tourism and Recreation Values and Wild Species Diversity

19.7.16.1 Key ecosystems providing the service and their location relative to the project's Study Area.

The key ecosystems providing this service are found in the Murchison Falls Protected Area, the Budongo Forest Reserve, Lake Albert and the River Nile. They include natural forests, wooded grassland, grassland, wetland/swamp and open water.

19.7.16.2 Ecosystem service and extent

Both tourism and recreation values and wild species diversity are categorised as cultural ecosystem services. The two services are interconnected, because tourism and tourist-related recreation like games drives depend on the high biodiversity of the Study Area.

Key destinations for tourism are the Murchison Falls National Park and the Budongo Forest reserve.

19.7.16.3 Environmental goods produced by this service

Conversations about ecosystem services were held with a sample of nature-based tourism operators – two tourist lodges (Paraa Safari Lodge and Kabalega Lodge) and one river cruises operator (Wild Frontiers). Paraa Safari Lodge was chosen for interview as it is one of the longest-established lodges in the area, having been founded in 1954. Kabalega Lodge was selected as it is located on the southern bank of the Nile, and therefore provided coverage of lodges in this area. Wild Frontiers are the primary river cruise operator in Murchison Falls National Park.

Information from these FGDs – and from the well-developed tourism industry around Murchison Falls National Park – indicate that this industry is sustained by the continued abundance of game animals in the area. Tourists visiting the two lodges are drawn to the National Park and the surrounding area by its untouched and "virgin" nature and wild animals. Once in the Park, tourists engage in a range of activities including birdwatching, game drives, visits to the bottom of Murchison Falls, and fishing trips in the Nile Delta.

The animals which provide the greatest draw to the National Park are the so-called 'Big 5' – buffalo, elephant, leopard, lion and rhino, although rhino are absent within the National Park. In addition, one interviewee suggested that as many as 80-85% of guests are interested in seeing big cats (lions, leopards and hyena). Birds like the shoebill (*Balaeniceps rex*) and hornbill (various species) are also important attractions, the former described as a 'star attraction'. Other important bird species include bee eaters, kingfishers and herons. In general, the Delta's birdlife comprises an increasing proportion of boat operators' incomes. Nile perch (*Lates niloticus*) are the primary target species for fishermen. Other charismatic game which are likely to attract tourists include Uganda kob (*Kobus kob thomasi*), hartebeest (*Alcelaphus bucelaphus*), hippopotami, giraffe and other antelope like waterbuck. Comments from the tourist lodges interviewed suggest that populations of most of these animals are stable and in some cases abundant. The animals that are scarce – cheetahs, leopards and lions – had also been rare five years ago. One tourist lodge noted that there was luck involved in seeing game animals, and that tourists were not guaranteed to see them. Interviewees also believed that the distribution of animals had not changed, with the area north of the Nile richest in animals.

Within the stretch of the Nile below Murchison Falls (the Albert Nile), fish are still common due to the protection afforded by the National Park. A fishing competition held in February each year is evidence of the popularity of fishing in the area. Outside of the competition, tourists are required to purchase fishing permits before going fishing. These permits are issued by the Uganda Wildlife Authority (UWA), and are valid for a day or a year. The annual permit costs US\$200. Illegal fishing within the Albert Nile is also undertaken by local people, and was observed by boat operators on a semi-regular basis.

Tourism is also important for the Budongo Forest Reserve, which is a popular destination for chimpanzee trekking and bird watching.

19.7.16.4 Beneficiaries

The beneficiaries of wildlife populations important in nature-based tourism are primarily businesses involved in the tourism industry, and the people they employ. In addition beneficiaries include national and international visitors to MFNP and Central Forest Reserves. Also UWA and local and national government benefit from the taxes and fees paid for National Park entry and 20% of park fees are assigned to be redistributed to communities bordering the MFNP.

Tourist accommodation in MFNP includes lodges, budget camps, and transit hotels in Masindi town. There are 17 lodges in direct proximity to MFNP concentrated in the two tourism spots: close to Paraa on the south shore of the Delta, and close to Tangi Gate along the River Nile. There are five lodges in MFNP: Paraa Safari Lodge, Chobe Safari Lodge, Pakuba Safari Lodge, Sambiye River Lodge and Red Chilli Rest Camp. There are also 12 accommodation facilities located in close proximity to MFNP: 11 on privately owned land and Budongo Eco Lodge which has a concession from the National Forest Authority. These are all within the Study Area, and have the potential to be affected by Project-related activities. The supply of accommodation for tourists has doubled in the past five years (Ref. 16-3).

The cost per night for a standard room (with a double bed, or twin beds) varies from lodge to lodge. At Paraa Lodge, it is US\$366. At Kabalega Lodge, a comparable room is US\$299. A three-hour river cruise to Murchison Falls with Wild Frontiers costs US\$32 per head.

The tourism operators within and around Murchison Falls National Park work with, and rely on, one another. Lodges appear to meet regularly to discuss challenges (i.e. wildfires) and share their services (i.e. tourists staying at one lodge will book activities offered by another lodge or operator). Interviewees did not comment on the knock-on impacts that the failure of one lodge would have on others. Although the continued abundance of wildlife populations appears to be vital for the prosperity and viability of tourist operators in Murchison Falls National Park, interviewees noted that they were also vulnerable to macro-economic, political and other factors. For example, the global 2008-2009 financial crisis had affected visitor numbers to one lodge. In addition, visitor numbers in 2015 and early 2016 had been low due to a perception that Uganda would be politically unstable following presidential elections, and that it was at risk from the Ebola virus epidemic in West Africa.

It is reasonable to argue that the tourism industry would exist in a much reduced state if wildlife populations were absent or diminished and/or the visual integrity or a sense of place of the area was

diminished. Tourists also benefit from wildlife-based tourism. Interviewees suggested that most tourists come from the United States, Germany and the United Kingdom. Ugandan tourists also make up an important proportion of visitors to Murchison Falls National Park and the adjacent area.

The location of the main tourism sites and facilities in the immediate Study Area are presented below in Figure 19-20.

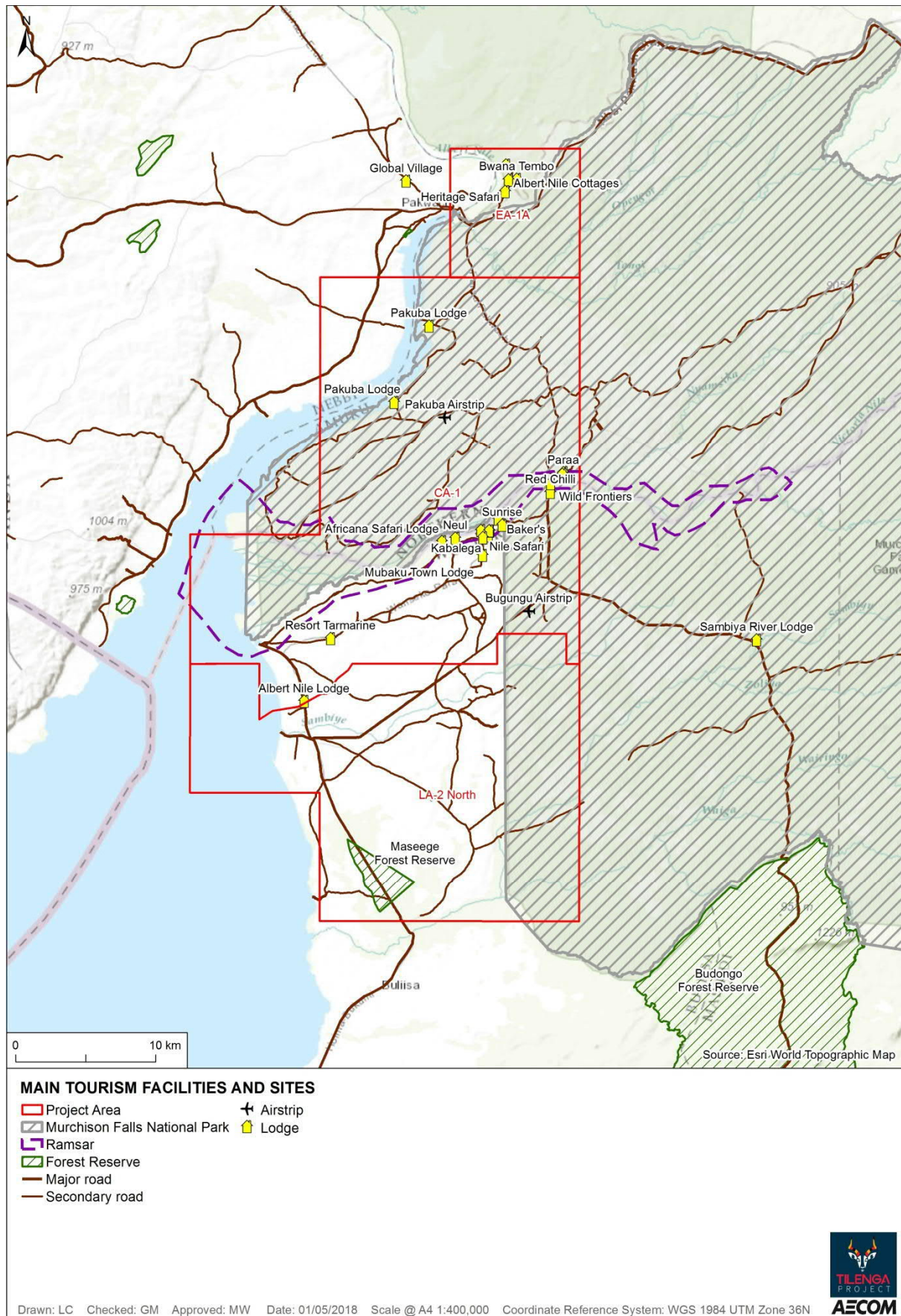


Figure 19-20: Main tourism facilities and sites

19.7.17 Scientific and Knowledge Values

19.7.17.1 Key ecosystems providing the service and their location relative to the project's Study Area.

The key ecosystems providing this service are found in the Murchison Falls Protected Area, the Budongo Forest Reserve, Lake Albert and the River Nile. They include natural forests, wooded grassland, grassland, wetland/swamp and open water.

19.7.17.2 Ecosystem service and extent

Scientific and knowledge values are categorised as cultural ecosystem services. They reflect the role that ecosystems and their components play in providing opportunities for formal and informal research and education.

19.7.17.3 Environmental goods produced by this service

The educational values provided by ecosystems in the Study Area were not discussed by the participants in FGDs or interviews. However, secondary data suggests that there is a significant amount of scientific research in the Study Area, including in the MFPA.

The Budongo Conservation Field Station was founded in 1990 and undertakes scientific research on primates and tropical forest ecology. It also undertakes research programmes to encompass other biological taxa, and utilises research to support policy development, conservation action and sustainable resource management.

A range of wider research activities are undertaken in the Study Area. For example there are researchers at Michigan State University who are engaged in giraffe and lion conservation research within Murchison Falls National Park, a lion monitoring project has been undertaken by the Wildlife Conservation Society since 2009 which focuses on the ranging and foraging habits of lions, and a number of giraffe population studies (examining the distribution, demography and resource ecology of populations) have been undertaken by the Giraffe Conservation Foundation since 2014.

19.7.17.4 Beneficiaries

The beneficiaries of the scientific and knowledge values provided by the Study Area are varied. They include the researchers themselves and the academic community to which they contribute; local people who are employed in research efforts and/or learn from the research themselves; and local people, tourists and conservation organisations who benefit from research findings that secure the biodiversity of the Study Area and of Murchison Falls National Park and Budongo Forest in particular.

19.8 Impact Assessment and Mitigation

19.8.1 Impact Assessment Methodology

Chapter 3: ESIA Methodology of this ESIA report sets out the standard impact assessment methodology.

The assessment of potential impacts on ecosystem services broadly follows the approach set out in **Chapter 3: ESIA Methodology**. It follows the same steps and uses the same assessment criteria but differs in one important respect: it assesses impacts from the point of view of the ecosystem service beneficiaries. The impact is therefore measured as the change in human well-being (relative to the baseline) as a result of a change in the level of provision of an ecosystem service.

The relationship between the Project Area, the Affected Ecosystems, and the Affected Beneficiaries is illustrated in Figure 19-4.

The nature and significance of potential and residual impacts are determined using a set of criteria that reflect the value of ecosystem services to beneficiaries, the resilience of ecosystems and their beneficiaries to change. It also considers the extent, duration, reversibility, and frequency of the impacts. These criteria are explained more fully in the sections that follow.

In this context the standard methodology includes the following elements, each of which has been adapted for the assessment of ecosystem services:

- A brief description of the main Project activities that may affect ecosystem services;
- Impact assessment criteria, including:
 - The description of the sensitivity of the main receptors;
 - The criteria to be used to define the magnitude of impacts; and
 - Assessment criteria to determine the significance of impacts.

19.8.2 Project Activities

The assessment of potential impacts has been undertaken by identifying and evaluating a range of activities and scenarios that are likely to occur throughout the phases of the Project. The key activities likely to cause changes in the supply of ecosystem services during each of the Project phases are included below in Table 19-10. In addition to the specific activities listed in Table 19-10, each phase of the Project will create employment and procurement opportunities (both direct and indirect), which will be a source of potential direct, indirect and induced impacts. Resettlement and influx triggered by the Project will also be key sources of further potential indirect and induced social impacts. Other ecosystem service impacts are likely to arise from the presence of the Project as a whole and the overall changes it will bring to the physical and social environment and therefore cannot be attributed to a single Project activity.

Influx in particular will be a source of many socio-economic and socio-environmental changes caused by the Project. Influx is considered in this impact assessment as a source of further potential induced impacts. Further details on influx are provided in **Chapter 16: Social**.

Table 19-10: Project Activities with Potential to Change the Supply of Ecosystem Services

Phase	Activity
Site Preparation and Enabling Works	<ul style="list-style-type: none"> • Land acquisition for all Project components • Mobilisation of plant and construction vehicles to the Project Site • Clearance of vegetation and soils (Industrial Area, well pads, Water Abstraction System, Masindi Vehicle Check Point, Bugungu Airstrip and Victoria Nile Ferry Crossing Facilities, Tangi Camp extension) • Refuelling of plant and machinery within Project Site • Storage of fuel and hazardous materials • Use of power generation sets (e.g. Diesel generators) • Waste generation, storage and disposal (hazardous and non-hazardous); • Drilling of boreholes for water abstraction (Buliisa camp, Bugungu camp, Tangi Camp, well pads and Industrial Area) • Abstraction of water from boreholes for potable, washing and dust suppression purposes • Discharge of treated waste water from Waste Water Treatment plant • Construction of new access roads/upgrade of existing roads including: preparation of drainage channels, soakaways, surfacing roadway • Construction activities at Tangi Camp • Excavation of construction material from quarries • Transportation of personnel, construction material (e.g. Materials; murrum, sand, stones etc., waste, other materials and supplies (including fuel and other hazardous substances) • General construction activities -use of construction materials (including building materials and murrum, sand etc. • Physical presence of Site Preparation and Enabling Works personnel • Procurement of goods and services
Construction and Pre-Commissioning	<ul style="list-style-type: none"> • Mobilisation of plant and construction vehicles to the Project Site • Transportation of personnel, construction material (e.g. Materials; murrum, sand, stones etc., waste, other materials and supplies (including fuel and

Phase	Activity
	<p>other hazardous substances)</p> <ul style="list-style-type: none"> • Physical presence of construction personnel • Abstraction of water (ground and surface) for use at well pads, camps and Masindi Vehicle Check Point for potable, washing and dust suppression purposes • Operation and discharge from temporary SuDS drainage system (including use of storm water facility) • Discharge of treated waste water from Waste Water Treatment plant • Waste generation, storage and disposal (hazardous and non-hazardous) • Refuelling of plant and machinery within Project Site • Storage of fuel and hazardous materials • Drilling of wells and Horizontal Directional Drilling (HDD) activities at the Victoria Nile Crossing Points (on a 24 hour basis); involving Nighttime working (24/7) at well pads and HDD Construction Area • Use of temporary power generation plant (e.g. diesel generators) • Construction activities at the Industrial Area and Water Abstraction System • Excavation of construction material from quarries Resource use (i.e. construction materials) • Containment and storage of drilling fluids and drill cuttings • Clearance of vegetation and soils for Production and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area • Painting and coating of pipeline at Tangi and Industrial Area Construction Support Base • Construction of Production and Injection Network (i.e. Pipelines and Flowlines) and Water Abstraction System pipeline RoW including trenching, welding, storage of material, backfilling etc. • Pre-commissioning activities including use and disposal of treated water and associated chemicals • Restoration of borrow pits and quarries , Projection and Injection Network RoW, Water Abstraction System pipeline RoW and HDD Construction Area • Procurement of goods and services
Commissioning and Operations	<ul style="list-style-type: none"> • Plant mobilisation to site • Operations at CPF, including power generation • Non-routing flaring (in case of unplanned events) • Operations of well pads including periodic work over and pigging operations • Transportation of personnel, waste, other materials and supplies (including fuel and other hazardous substances) • Refuelling of plant and machinery • Storage of fuel and hazardous materials (e.g. Storage tanks) • Waste generation, storage and disposal (hazardous and non-hazardous) • Hydrotesting - hydrotest water and associated chemicals • Filtering and storage of hydrotest water • Insertion of cleaning and gauging pig trains consisting of batches of water and nitrogen/air (transported by compressed air) • Water extraction from groundwater or surface water sources • Discharge of surface runoff • Discharge of treated waste water from Waste Water Treatment plant
Decommissioning	<ul style="list-style-type: none"> • Expected to be similar to the Construction and Pre-Commissioning Phase

19.8.3 Impact Assessment Criteria

19.8.3.1 Receptor Sensitivity

Receptor sensitivity is determined using information from the baseline and provides a detailed understanding of the importance of each ecosystem service to its respective beneficiaries, taking account of:

The **value** of ecosystem services to beneficiaries, i.e.:

- The extent to which beneficiaries are dependent on the ecosystem service (e.g. whether fishing is undertaken occasionally or regularly as an important part of livelihoods¹⁴); and
- The scarcity value of the ecosystem service (e.g. the availability of suitable alternatives or substitutes) and how readily replaceable it is considering accessibility and affordability.

And the **resilience** of ecosystems and beneficiaries to change, i.e.:

- The sensitivity of the ecosystem to change (e.g. as a result of climate change, population pressures, etc.). This will depend on, amongst other things, the existing condition of the ecosystem, its functions, and its thresholds. For example, some fish species are particularly sensitive to changes in water temperature (Ref. 19-36); and
- The sensitivity of beneficiaries to changes in ecosystem service provision. This will depend on, amongst other things, beneficiaries' existing endowments of, or access to, factors such as financial, human, physical, natural, and institutional capital. For example, poorer rural households who collect water directly from the environment through household wells are likely to be more sensitive to changes in the supply and quality of their water than wealthier households in urban centres who are connected to a public water supply system.

Sensitivity criteria relating to the ecosystem services study are presented in Table 19-11 Table 19-12.

Table 19-11: Ecosystem Service Sensitivity criteria

<i>Sensitivity</i>	<i>Description</i>
High	The livelihoods of receptors depend completely on the ecosystem service; The ecosystem service has no available substitutes; and Impacts will impair ecosystem service provision completely.
Moderate	The livelihoods of receptors are moderately dependent on the ecosystem service; The ecosystem service has up to three substitutes; and Impacts will impair ecosystem service provision moderately.
Low	The livelihoods of receptors are dependent only to a small extent on the ecosystem service; The ecosystem service has up to six substitutes; and Impacts will impair ecosystem service provision in a limited way.

¹⁴ 'Livelihoods' refer to the principal income-generating activities which people pursue (e.g. crop production, fishing, shell collecting). They are embedded within a broader structure of physical, social, human, economic and natural capital, which are required to support and sustain a means of living.

<i>Sensitivity</i>	<i>Description</i>
Negligible	The livelihoods of receptors depend only in a negligible way on the ecosystem service; The ecosystem service has seven or more substitutes; and Impacts will not impair ecosystem service provision.

Table 19-12 provides an overview of the key sensitivities relating to the receptors of each ecosystem service in conjunction with their source ecosystems and beneficiaries.

Table 19-12: Receptor sensitivity

ES	Beneficiaries	Source ecosystems	Sensitivity	Justification for sensitivity
Crop production	Local people engaged in crop production and their families	No specific source ecosystems	High	<ul style="list-style-type: none"> • People's livelihoods depend to an important extent on the continued viability of crop production, directly as a primary or secondary livelihood, or because the food they buy in local markets is grown locally. • Local people use crop selection and diversification to ensure access to different kinds of food and minimise the likelihood of crop failures and food insecurity including through exchange when necessary. • Alternative livelihoods in the area are unsustainable (fishing and pastoralism) and have barriers to entry. Those engaged in farming also tend to be low skilled so are less able to engage in other livelihoods.
Livestock and fodder/pastoralism	Livestock owners Balaalo and other herders	Grassland, wooded grassland, scrub/thicket, wetland/swamp and open water (including Lake Albert)	Moderate/High	<ul style="list-style-type: none"> • Livestock grazing is the primary or sole source of income for Balaalo herdsmen. As a result, Balaalo are highly dependent on the continued provision of this ecosystem service, and highly vulnerable to changes in its supply. • Pastoralism is also an important cultural service and is important for Balaalo and Bagungu identity. • Livestock owners are moderately dependent on continued supply and have other options for income generation and savings if livestock grazing and pastoralism becomes unviable. • The sensitivity of source ecosystems also increases the sensitivity of this ecosystem service; grasslands are already degraded in the Study Area and reducing in extent due to population pressure and the encroachment of farming areas.
Capture fisheries	Communities directly and indirectly engaged in fisheries activities	Open water, including Lake Albert and the Victoria Nile. Wetlands, swamps and river mouths.	High	<ul style="list-style-type: none"> • A variety of activities in the Study Area depend on production from fisheries including fishing, fishmongery, fish drying, and the leasing of fishing equipment. Fish are also an important source of protein to local people. • Dependence on capture fisheries is therefore moderate to high, because a number of livelihoods and the general health and wellbeing of local people rely on its continued provision. • There are other ecosystem services that can substitute for capture fisheries in providing people with an income, and fishing equipment (e.g. fish traps, nets and other items) can be liquidated to provide cash for other income-generating activities. As a result, the effects of a decline in fisheries productivity are most likely to be felt by individuals with limited capital and/or transferable.

ES	Beneficiaries	Source ecosystems	Sensitivity	Justification for sensitivity
Wild foods and bushmeat	Subsistence and commercial hunters; those engaged in hunting for cultural traditions; hunters of high value species	A range of ecosystems, however savannah and woodland ecosystems are the most productive	Moderate	<ul style="list-style-type: none"> Dependence on collecting and producing wild foods as well as hunting activities is varied depending on the type of hunting, and many beneficiaries are not especially vulnerable to changes in the provision of wild foods and bushmeat. In addition, the number of alternative sources of wild foods and bushmeat is high. Some beneficiaries therefore have several options for replacing wild foods (for example, they may be able to locate new sources from other parts of the Study Area, or switch to a different kind of wild food). However for people who integrate hunting into their subsistence activities and are less able to travel over larger distances, there may be far less scope for replacing bushmeat. The resilience of bushmeat as an ecosystem service is undermined by its lack of availability, and the sensitivities of the species hunted. In this context many species of animal are endangered and therefore very sensitive to any additional change in hunting.
Timber and woody biomass (including energy)	Local communities Charcoal producers	Timber: natural forest, plantation forest and woodland Woody biomass: natural, riverine and plantation forest, woodland and wooded grassland	Moderate / high	<ul style="list-style-type: none"> Firewood and charcoal are the primary energy source for cooking in most households in the Study Area. Charcoal production is considered a livelihood of 'last resort'. People engaged in charcoal production are therefore especially sensitive to changes that could affect the supply of trees needed for making charcoal. The sensitivity of local people to changes in supply is moderated by the availability of trees and to a lesser extent alternative fuel sources (e.g. paraffin tadoobas), although this is limited by the reduced ability of many people to afford alternatives. However the loss of woody biomass in recent years has been significant in some parts of the Study Area, and the resilience of the ecosystem service to over use is in this respect is limited.
Water (for drinking, supply and regulation)	Communities within Study Area Grazing animals	Open water (including watercourses and Lake Albert) and groundwater.	Moderate/ high	<ul style="list-style-type: none"> Dependence on groundwater from boreholes is high, with local people sensitive to impacts that will change groundwater availability and quality. Given the importance of water supply for drinking and other uses, and given the lack of suitable substitutes to boreholes for drinking water, localised impacts may have serious consequences for all nearby communities.

ES	Beneficiaries	Source ecosystems	Sensitivity	Justification for sensitivity
Fibres and Ornamental Resources	Local people engaged in the collection and preparation of materials	Wetland systems Open water Open and wooded grasslands Woodlands	Moderate	<ul style="list-style-type: none"> Harvesting of fibres and ornamental resources is an important income-generating activity, and is often carried out by economically vulnerable groups. Beneficiaries are therefore highly dependent on the continued provision of fibres and ornamental resources, and vulnerable to changes in their supply. There are also few substitutes for many of these resources (e.g. papyrus). However, the sensitivity of this ecosystem service to external impacts is low; supply is abundant (especially with regard to shells in Lake Albert), and impacts are unlikely to impair provision significantly.
Bio-chemicals and natural medicines	Local people who use natural medicines and the services of traditional healers	A range of ecosystems, including open and wooded grasslands, woodlands, natural forests, riverine forests	Low	<ul style="list-style-type: none"> The continued provision of plants and animal parts that can be used as medicines is essential to the livelihoods of traditional healers, and possibly important to the wellbeing of their patients Baseline surveys revealed that the number of plants and animal parts that have medicinal properties is extensive, and that several different plants can be used to treat the same condition. The sensitivity of the ecosystem service is therefore limited by the fact that medicinal plants are relatively abundant in the Study Area.
Local and Global Climate Regulation	Local people and climate	Global climate change regulation: Natural forest. plantation forest, riverine forest, woodland and wooded grassland. Local climate change regulation: Natural forest, riverine forest, woodland, wetland/ swamp and open water (e.g. Lake Albert, River Nile)	Low	<ul style="list-style-type: none"> The sensitivity of beneficiaries to changes in local climate will depend to a significant extent on the severity of the change. Small or moderate changes are unlikely to affect livelihoods significantly; large changes (e.g. sudden changes in rainfall patterns or in the intensity of rainfall) may have serious consequences for crop production, capture fisheries and other livelihoods. Large changes in local climate are unlikely, however, and so receptors are not considered especially vulnerable to impairments in local climate regulation. Local climate regulation cannot be substituted by other ecosystem services. In addition to local climate regulation benefits, the carbon sequestration and storage carried out by ecosystems in the Study Area also benefits people globally by regulating carbon emissions into the atmosphere. Overall receptor sensitivity to impacts on global climate regulation is considered negligible given that global beneficiaries would be less likely to be significantly affected by any reduction in carbon sequestration and storage in the Study Area.

ES	Beneficiaries	Source ecosystems	Sensitivity	Justification for sensitivity
Hazard Regulation	Local people whose dwellings or livelihoods leave them vulnerable to damaging weather events such as floods or climatic changes such as extended drought periods	Natural forest, riverine forest, woodland, wetland / swamp and open water (e.g. Lake Albert and the River Nile)	Low	<ul style="list-style-type: none"> Only substantial changes to the Study Area's vegetation and to the Murchison Falls-Albert Delta Ramsar site and Lake Albert are likely to impair the provision of hazard regulation. Local people would only be affected if provision was reduced completely. Hazard regulation cannot be substituted by other ecosystem services. The size of Lake Albert in particular precludes the likelihood of significant reductions in provision.
Cultural and Spiritual Values	Local people who make use of sites of cultural and/or spiritual importance	A range of ecosystems	Medium	<ul style="list-style-type: none"> Various parts of the Study Area have particular cultural and/or spiritual significance to local people. In addition, land across the Study Area has important cultural and historical meaning, especially with regard to traditional pastoralism. Given its inherent value, cultural heritage is not readily substitutable Changes in this ecosystem services may impact on traditional social codes. However it is not viewed that the population of the Study Area are particularly sensitive to impacts on cultural and spiritual values resulting from changes in source ecosystems.
Tourism and recreation values and wild species diversity	Local people employed in the tourist sector around MFPA and Central Forest Reserve. National and international visitors to MFPA and Central Forest Reserves and UWA and local/national government that benefit from the taxes and fees paid for park entry.	Natural forests, wooded grassland, grassland, wetland/swamp and open water	High	<ul style="list-style-type: none"> Beneficiaries are highly sensitive to changes in wild species diversity and changes in visual and landscape amenity. The wild species diversity and sense of place on which the tourism industry is based in the area is extremely sensitive to change. Its substitutability is also limited given areas of the MFNP outside of the oil blocks do not have the same abundance and diversity of species and a sense of place. Habitats for key species are not readily replicable, and are home to various critical trigger species. Whilst tourists and people employed from elsewhere in Uganda may have alternative options to the area (such as, for example Queen Elizabeth National Park), local people employed at tourist lodges and businesses offering wildlife-based tourism have limited alternative employment options, other than traditional livelihoods. UWA revenues also have the potential to be impacted by changes.

ES	Beneficiaries	Source ecosystems	Sensitivity	Justification for sensitivity
Scientific and Knowledge Values	Researchers, academic community, local people who are employed in research efforts and/or learn from the research themselves, and local people, tourists and conservation organisations who benefit from research findings	Natural forests, wooded grassland, wetland/swamp and open water	Negligible	<ul style="list-style-type: none"> • Dependence on the continued provision of scientific and knowledge values is limited: the livelihoods of very few local people rely on this service, and researchers carrying out field studies are not constrained by the presence or absence of Project activities. • There may also be value in understanding the impacts of Project activities on MFPA, the Central Forest Reserves and the wider area.

19.8.3.2 Impact Magnitude

Impact magnitude has been assessed with respect to the following criteria:

- **Extent** - The number of beneficiaries potentially affected by Project activities, and the degree (high, medium, low) to which they are affected (this considers the extent of the impact on the ecosystem service itself);
- **Duration** - The length of time over which impacts could affect the ecosystem service and therefore the beneficiaries;
- **Frequency** - The regularity with which beneficiaries are potentially affected by impacts on the ecosystem service; and
- **Reversibility** - The degree and speed with which the ecosystem service can recover from an impact.

Table 19-13: Impact Magnitude

<i>Sensitivity</i>	<i>Description</i>
High	<ul style="list-style-type: none"> • The number of people affected by impacts on the ecosystem service, and the degree to which they are affected, is high; • The ecosystem service cannot recover from the impact, or only in the long term with significant interventions; • Ecosystem service beneficiaries are continuously affected by impacts.
Moderate	<ul style="list-style-type: none"> • The number of people affected by impacts on the ecosystem service, and the degree to which they are affected, is moderate; • The ecosystem service can recover from the impact over the medium and long-term and with interventions; • Ecosystem service beneficiaries are affected by impacts that re-occur periodically.
Low	<ul style="list-style-type: none"> • The number of people affected by impacts on the ecosystem service, and the degree to which they are affected, is low; • The ecosystem service can recover from the impact quickly and without interventions; • Ecosystem service beneficiaries are affected by impacts that occur sporadically.
Negligible	<ul style="list-style-type: none"> • The impact has no tangible effect on the beneficiaries of ecosystem service provision and the number of people affected by impacts is negligible; • The ecosystem service can recover completely in a short space of time; and • The impact has a 'one-off' effect on ecosystem service beneficiaries.

19.8.3.3 Impact Significance

Once the receptor sensitivity and impact magnitude for each of the ecosystem services is estimated they are then combined to estimate the impact significance using the matrix set out in Table 19-14 which is consistent with the overall approach as set out in **Chapter 3: ESIA Methodology**. The matrix is used to assess adverse impacts. Where possible, the same criteria have been utilised to identify the significance of beneficial impacts.

Table 19-14: Impact Significance

		<i>Receptor Sensitivity (value and resilience)</i>			
		<i>Negligible</i>	<i>Low</i>	<i>Moderate</i>	<i>High</i>
<i>Impact Magnitude (extent, duration, frequency, reversibility)</i>	<i>Negligible</i>	Insignificant	Insignificant	Insignificant	Insignificant / Low
	<i>Low</i>	Insignificant	Low	Low / Moderate	Moderate
	<i>Moderate</i>	Insignificant	Low / Moderate	Moderate	High
	<i>High</i>	Insignificant / Low	Moderate	High	High

19.8.4 Embedded Mitigation

A list of relevant embedded mitigation measures already built into the design of the Project are outlined within **Chapter 4: Project Description and Alternatives**. These measures have been taken into account when predicting the significance of the potential impact.

19.8.5 Assessment of Impacts: Site Preparation and Enabling Works

19.8.5.1 Potential Impacts - Site Preparation and Enabling Works

Table 19-15 below provides an overview of the nature and significance of potential Project impacts on ecosystem services and their beneficiaries during the Site Preparation and Enabling Works phase. Incorporating a consideration of embedded mitigation measures already built into the design of the Project, these impacts are those anticipated prior to the implementation of any additional mitigation which could be proposed.

Given most potentially indirect impacts related to population influx are likely to take place during the next phase of the project (construction and pre-commissioning), these have subsequently been discussed in Table 19-17. Each of the ecosystem services assessed for this ESIA are analysed in turn.

Table 19-15: Assessment of Potential Impacts: Site Preparation and Enabling Works Phase (Pre-additional mitigation)

Ecosystem service	Potential impact during the Site Preparation and Enabling Works phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Crop production	<p>Project activities that could potentially impact the provision of crop production during this phase include land expropriation and earthworks involving the clearing of vegetation and soil. It is estimated that up to 1,194.4ha will be acquired, leased or secured by way of an easement as a result of the Project.</p> <p>The acquisition of land will cause temporary and permanent loss of farming land and crops, as well as perennial crops such as fruit trees. Land acquisition and earthworks preparing land for the 307ha Industrial Area and 24 well pads located outside of the MFPA will lead to the loss of farming land, particularly in those locations in the east of the Study Area, including in Ngwedo sub-county, where agricultural activities are more intensive. In this context the eastern part of the Industrial Area covers areas dominated by cultivated land, and the construction of well pads GNA-01 to -04; NSO-02, -06; KGG-01, -03, -05, -08 is most likely to lead to the loss of farming land due to their location within an area of intensive cultivation, followed by well pads NGR-01; NSO-01, -03, -04, -05; KGG-02, -04, -06, -07, which are located in areas of bushed grassland with thickets, used for a mix of cultivation, gardens and grazing.</p> <p>Land acquisition around certain Project Infrastructure will also cause some disruption to pathways used by local communities to travel on foot around farming areas.</p> <p>In addition the construction of roads N1 and N2, upgrades to roads A1, A2, A3, A4, B1, B2 and M1, and construction/upgrades to inter field access roads south of the Victoria Nile to the well pads will reduce the area of agricultural land within their direct and adjacent footprint.</p> <p>Land acquisition for the Project is also expected to cause changes to land tenure systems in the Study Area as it may drive a transition from communal to individual ownership. A more detailed discussion of impacts arising from changes in land tenure is provided in Chapter 16: Social. Impacts that are relevant to crop production include: decreased size of farm holdings due to break up of cultivated land into smaller plots for sale, impacting farming activities; loss of security of tenure (loss of customary tenure rights) and increasing risk of landlessness for some individuals and groups due to sale of clan land without their knowledge or consent; and inflation of land prices making land unaffordable to poorer households.</p> <p>Loss of security of tenure and land price inflation may have the effect of pushing households out of crop production and forcing them to pursue other livelihoods which may be less appropriate to their particular circumstances.</p> <p>Given the moderate number of beneficiaries directly affected, and the ability of ecosystems to recover over the longer term, the impact magnitude is moderate.</p>	Moderate	High	Moderate / high adverse
Livestock and fodder/pastoralism	<p>Project activities that could potentially impact livestock and fodder/pastoralism and its continued provision include plant mobilisation to site, earthworks clearing of vegetation and soil, physical movement of plants and vehicles on site and land acquisition.</p> <p>Impacts on movement of livestock and their herders across the Study Area may be affected by Project infrastructure. For example well pads NGR-02 to -07, KW-01 and -02 and the Water Abstraction Station are located on grazing land which are also parts of grazing corridors, and NGR-01; NSO-01, -03, -04, -05; KGG-02, -04, -06, -07 are within bushed grassland with thickets, which is used for a mix of cultivation, gardens and</p>	Low	Moderate/high	Moderate adverse

Ecosystem service	Potential impact during the Site Preparation and Enabling Works phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
	<p>grazing.</p> <p>Plant mobilisation to site will hinder the movement of livestock and their herders across the Study Area. In particular, there will be an increase in the volume of traffic using local roads with an addition of approximately 3,000 vehicle movements per month south of the Victoria Nile expected during the construction phase at peak. Traffic will include a mixture of heavy and light machinery, which will operate seven days a week during daylight hours, and may be dangerous to livestock and herders crossing or travelling along roads. The number of beneficiaries affected by this impact is likely to be low, however, because Balaalo and other herders use main roads only sporadically and will also be able to take alternative routes across the Study Area.</p> <p>Land acquisition is also expected to lead to changes in the land tenure system in the Study Area and may drive a transition from communal ownership to individual ownership. A more detailed discussion of impacts arising from changes in land tenure is provided in Chapter 16: Social. One impact that is relevant to livestock production and pastoralism is the fragmentation of open access grazing land, which may affect traditional forms of pastoralism in particular.</p> <p>In terms of direct effects, the impact magnitude is low. This is given the limited number of people affected by these impacts.</p>	Negligible	High	Low adverse
Capture fisheries	<p>Given their limited scale at Lake Albert, Project activities during the Site Preparation and Enabling Works phase (including the clearance of vegetation and soils) are considered unlikely to significantly impact capture fisheries and/or affect their continued provision. Influx has been discussed under the impact assessment for the subsequent phases of the Project.</p> <p>The magnitude of impacts is negligible given that there will be no tangible impact on beneficiaries.</p>	Negligible	Moderate	Low adverse
Timber and woody biomass (including energy)	<p>Reduction of woody ecosystems, savannah and scrub- and shrublands caused by the clearing of vegetation and soils is likely to reduce the supply of timber and woody biomass in adjacent areas. In particular, earthworks preparing the construction of roads C1, C3, N1, and N2 and, and upgrades to roads A1, A2, A3, A4, B1, B2 and M1, and earthworks in preparation for the Industrial Area, well pads, water abstraction station and Nile barge crossing, are likely to impact timber and woody biomass provision (although it should be noted that wooded areas were identified and listed as sensitive features and have been considered for avoidance as much as practicable in project design). Land acquisition may also impact the ability of local people to access timber and woody biomass. In terms of key ecosystems, as highlighted in Chapter 13: Terrestrial Vegetation there are unlikely to be direct significant potential impacts on forest species or protected areas associated with Landscape Contexts D (Tropical High Forest) and F (Nebbi), because no Project infrastructure is planned in these areas.</p> <p>The impact footprint arising from earthworks and from disruption to community pathways as a result of land acquisition is limited and the number of beneficiaries affected by Project activities is therefore likely to be low.</p> <p>In terms of direct effects, the impact magnitude is negligible.</p>	Negligible	Moderate	Low adverse
Wildfoods and bushmeat	<p>The acquisition of land will cause temporary and permanent loss of land previously used for collecting wildfoods. In this context site preparation for the Industrial Area and well pads GNA-01 to -04, NSO-01 to -08, NGR-01 and KGG-02, -04, -06 and -07 have most potential to lead to the loss of access to areas productive for wildfoods. This is given their location south the Victoria Nile within populated areas of cultivated land, or bushed grassland</p>	Negligible	Moderate	Low adverse

Ecosystem service	Potential impact during the Site Preparation and Enabling Works phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Water (for drinking, supply and regulation)	<p>with thickets.</p> <p>Whilst initial enhancements in accessibility during this phase will (including through preliminary road improvements) enable enhanced access for hunters, impacts are likely to be more limited than during subsequent phases of the Project given subsequent population influx. Limiting potential impacts further, the arrival of Project personnel not previously present during site preparation and enabling works has the potential to discourage hunters, facilitate the collection of snares and traps, and lead to a decrease in poaching activities. As such the magnitude of direct and induced/indirect impacts on beneficiaries is likely to be negligible.</p> <p>Project impacts on the hydrogeology and surface waters of this phase of the Project are assessed in Chapter 9: Hydrogeology and Chapter 10: Surface Water.</p> <p>During the Site Preparation and Enabling Works Phase water will be supplied from both existing boreholes and new boreholes for potable, general and construction use. A contingency measure of installation of temporary surface water abstraction is under consideration. Impacts on groundwater quality could result from accidental spillages and leaks of fuels and chemicals from bulk storage and vehicle and plant refuelling; the management of concrete lorry washout water. For the purpose of the impact assessment, it is assumed that the embedded mitigation measures in the Project design will be implemented to minimise the risk to groundwater quality in the underlying sand aquifer. With the implementation of the embedded mitigation measures, as well as regular water quality monitoring of the water supply boreholes on each site, and planned FEED Water abstraction feasibility study (which should confirm availability of ground water needs for the Project) the significance of the impact is classed as being of low to moderate adverse significance, depending on the relationship between the borehole location(s) and the location of potential contaminants. The magnitude of impacts on groundwater quality and availability will therefore be low.</p> <p>In terms of surface water quality and the ability of ecosystems to absorb flood risk, a range of potential impacts may occur. These include: interruptions or changes to natural watercourse flow regimes, drainage patterns and levels of surface water and increased flood risk. These may impact on key beneficiaries of this ecosystem service.</p> <p>It is assumed that embedded mitigation measures in the Project design will be implemented to minimise these risks. The magnitude of impacts on surface water is therefore likely to be low.</p>	Low	Moderate	Low/moderate adverse
Fibres and Ornamental Resources	<p>Earthworks in preparation of upgrades to roads (A1 in particular) and the Nile ferry crossing facility may facilitate access into the Murchison Falls-Albert Delta Ramsar site, along which papyrus gathering takes place. Similarly, upgrades to road A2 may facilitate access to shell collecting activities in Lake Albert. In addition, earthworks that improve the road network across the Study Area may increase demand for fibrous and ornamental materials by better connecting buyers and sellers. Project activities may therefore lead to an overall increase in the collection of fibres and ornamental resources, and so threaten their continued supply. The magnitude of this impact is likely to be limited, however, because only a significant increase in harvesting pressure would impair ecosystem service provision.</p> <p>In addition, ecosystem service provision is likely to recover in the short- to medium-term if harvesting pressures ease or if appropriate management measures are put in place, particularly given the regenerative capacity of papyrus. Finally, impacts will probably emerge sporadically, possibly in line with seasonal harvesting patterns.</p>	Negligible	Moderate	Low adverse

Ecosystem service	Potential impact during the Site Preparation and Enabling Works phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Biochemical s/ Natural Medicines	<p>As such the magnitude of the impact is likely to be negligible.</p> <p>Earthworks in preparation for the construction of new roads in the Study Area, and upgrades to existing roads, may facilitate access to MFNP and Budongo Forest Reserve, both of which are a source of medicinal plants and animal parts. Earthworks along the road network may therefore increase pressure on these resources and lead to over-harvesting. In addition, earthworks will remove medicinal plants that lie within their direct footprint. This is also true for site clearance activities associated with the Industrial Area, Masindi Vehicle Check Point and well pads. The impact footprint of Project components is small relative to the wider Study Area, and the limited number of healers in the Study Area means that any increases in harvesting pressure are likely to be low. The limited number of healers also means that only a small number of beneficiaries could be directly affected by decreases in the supply of biochemicals/natural medicines, although their patients may be indirectly affected. Finally, effects on ecosystem service supply are likely to be sporadic because medicinal plants can often be substituted. The overall magnitude is therefore likely to be low.</p>	Low	Low	Low adverse
Local and Global Climate Regulation	<p>Project activities may have an effect on local climate regulation, either through the clearance of vegetation during earthworks or the release of polluting emissions from plant and vehicle movements or the operation of power generation sets. These impacts may provide limited impairment to the ability of local ecosystems to moderate local climatic conditions, especially during drought periods when vegetation can facilitate the retention of water. At a global level, GHG emissions from plant, vehicles and power generation sets will contribute to global warming effects.</p> <p>The magnitude of these impacts on local- and global and climate regulation is likely to be low, however. Earthworks associated with the Project infrastructure will have a small footprint relative to the wider Study Area. The volume of vegetation cleared and pollutants emitted during the earthworks is therefore limited and is likely to be too small to impair local- and global climate regulation in any meaningful way (Chapter 13: Terrestrial Vegetation). Furthermore, impacts at a local level are unlikely to last more than a few seasonal cycles because patches of vegetation will regenerate and pollutants will dissipate.</p> <p>The magnitude of impacts is therefore likely to be low.</p>	Low	Low	Low adverse
Hazard Regulation	<p>Project activities during the Site Preparation and Enabling Works phase are considered unlikely to significantly impact hazard regulation and/or affect its continued provision. Whilst there may be loss of some types of vegetation which provide a role for mitigating potential hazards, ecosystem service beneficiaries are affected by impacts that occur sporadically. In this context it is estimated that up to 1176 ha will be acquired, leased or secured by way of an easement as a result of the Project; the total area of Natural Habitats under Project footprint within the CA-1 / LA-2 North in MFNP that will be lost is approximately 0.18%. Of this, the largest component is Bushlands SH2 (L-B-T) with 0.84% lost, followed by 0.22% of Open Moist Woodlands WO1, 0.21% of Dry Wooded Grassland WG2 and 0.20% of Dry Grassland GR2. This loss is likely to be too small and dissipated to impair hazard regulation services in any long-lasting and/or significant way. The number of people affected by impacts on the ecosystem service, and the degree to which they are affected, is low. As such the magnitude of impacts is considered to be low.</p>	Low	N/A	Insignificant
Cultural and Spiritual	<p>The land acquisition and expropriation process may require the relocation of sacred sites, and may also result in changes in public access to cultural heritage.</p>	Moderate	Medium	Moderate adverse

Ecosystem service	Potential impact during the Site Preparation and Enabling Works phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Values	<p>Potential impacts include impacts on local culture, including traditional knowledge and skills, social practices, rituals and festive events, and traditional religion. There is also potential for increased interference due to an increase in population and changes to public access arrangements.</p> <p>Given that some impacts may be permanent and short to medium term, the magnitude of impacts is moderate. Potential impacts are discussed in more detail in Chapter 17: Archaeology and Cultural Heritage.</p>			
Tourism and recreation values and wild species diversity	<p>Site preparation works associated within the well pads north of the Victoria Nile within MFNP (i.e. JBR-01 - JBR-10), new roads C1 and C3 and the Victoria Nile ferry crossing have the potential to lead to potential direct impacts. Indirect effects on visitors' perceptions of the MFPA in terms of sense of place, aesthetic value and experience are also likely to be significant. This is particularly relevant given the importance international tourists place on perceptions of the National Park's wildness and sense of place. Potential impacts are discussed in more detail in Chapter 7: Noise, Chapter 11: Landscape and Visual and Chapter 16: Social.</p> <p>Site preparation works for Project activities will also lead to habitat loss within MFPA. Effects will impact key species that range throughout the Park (e.g. Elephant, Rothschild's Giraffe, Uganda Kob, Lelwel's hartebeest and lion). Potential impacts are discussed in more detail in Chapter 13: Terrestrial Vegetation and Chapter 13: Terrestrial Wildlife.</p> <p>Impacts are anticipated to be moderate.</p>	Moderate	High	Moderate / high adverse
Scientific and Knowledge Values	<p>The Study Area hosts a number of research initiatives, centred in particular around wild animal populations in MFNP and the Budongo Conservation Field Station. The Study Area supplies scientific and knowledge values. It is possible that any or all of the Project activities planned for the Site Preparation and Enabling Works phase will impair this supply. However, impacts are mixed. More generally, the changes that the Study Area will undergo as a result of Project activities are likely to be of ecological, anthropogenic, economic, historical and sociological interest, and the studies undertaken as part of oil infrastructure development will help improve knowledge of the region. Project activities are therefore unlikely to limit the provision of scientific and knowledge values; instead they are likely to increase them, irrespective of the activity and its particular impact.</p>	High	Negligible	Moderate beneficial

19.8.5.2 Additional Mitigation and Residual Impact

In response to the potential impacts identified, the following additional mitigation measures are proposed for this phase of the project. These are designed to limit the significance of potential impacts. It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

Table 19-16: Summary of assessment, additional mitigation measures during the Site Preparation and Enabling Works phase and Residual Impact Significance

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Site Preparation and Enabling Works					
Crop production	Local people engaged in crop production and their families	Loss of land for crop production. Disruption to pathways used by communities to travel around farming areas. Changes in land tenure systems.	Moderate / high adverse	<ul style="list-style-type: none"> RAPs for future land acquisition Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Environmental Conservation Plan Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) 	Low adverse
Livestock and fodder/ pastoralism	Livestock owners Balaalo and other herders	Impacts on movement of livestock and their herders across the Study Area. Changes in land tenure systems.	Moderate adverse	<ul style="list-style-type: none"> RAPs for future land acquisition Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Road Safety and Transport Management Plan Stakeholder Engagement Plan (including 	Low adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Capture fisheries	Communities directly and indirectly engaged in fisheries activities	No significant impacts identified.	Low adverse	Community Engagement Capacity Building programme) • Influx Management Strategy	Insignificant
Timber and woody biomass	Local communities Charcoal producers	Reduced supply of timber and woody biomass. Increased demand for timber and woody biomass.	Low adverse	As additional mitigation proposed in Chapter 15: Aquatic Life • Influx Management Strategy • As additional mitigation proposed in Chapter 13: Terrestrial Vegetation •	Low adverse
Wildfoods and bushmeat	Subsistence and commercial hunters; those engaged in hunting for cultural traditions; hunters of high value species	Temporary and permanent loss of land previously used for collecting wildfoods. Impacts on hunting activities.	Low adverse	• Community Environmental Conservation plan including Natural Resources Enhancement and Community Wildlife Conflict Prevention initiatives • See Chapter 14: Terrestrial Wildlife for additional mitigation relating to impacts on species.	Low adverse
Water (for drinking, supply and regulation)	Communities within Study Area Grazing animals	Impact on groundwater availability (Type 1 and Type 2 impact) Impacts on groundwater quality and potential contamination of drinking water.	Low / moderate adverse	As additional mitigation proposed in Chapter 9: Hydrogeology, Chapter 10: Surface Water and Chapter 18: Health	Low adverse
Fibres and Ornamental Resources	Local people engaged in the collection and preparation of materials	Facilitation of access to collection areas. Increased demand for fibrous and ornamental materials.	Low adverse	None proposed.	Low adverse
Biochemicals/Natural Medicines	Local people who use natural medicines and	Increased collection of materials from MFNP and	Low adverse	None proposed.	Low adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
	the services of traditional healers	Budongo Forest Reserve.			
Local and Global Climate Regulation	Local people and climate	Clearance of vegetation during earthworks.	Low adverse	None proposed.	Low adverse
Hazard Regulation	Local people whose dwellings or livelihoods leave them vulnerable to damaging weather events such as floods or climatic changes such as extended drought periods	None identified.	Insignificant	None proposed.	Insignificant
Cultural and Spiritual Values	Local people who make use of sites of cultural and/or spiritual importance	Impacts on traditional knowledge, skills, practices, rituals, festive events and religion.	Moderate adverse	As additional mitigation proposed in Chapter 17: Archaeology and Cultural Heritage	Low adverse
Tourism recreation and wild species diversity	Local people employed in the tourist sector around MFPA and Central Forest Reserve. National and international visitors to MFPA and Central Forest Reserves and UWA and local/national government that benefit from the taxes and fees paid for park entry.	Damage to or the removal of specific cultural/spiritual sites Noise impacts from project-related traffic flows. Impacts on key species from habitat loss and degradation within MFNP. Impacts on visitors' perceptions of MFNP.	Moderate / high adverse	<ul style="list-style-type: none"> A Tourism Management Plan will set out objectives and procedures for managing relationships with and working with key tourism stakeholders to minimise potential negative effects of the Project on tourism and maximising benefits. All contractors and sub-contractors will be required to follow the measures and procedures set out in the plan. Also see Chapter 7: Noise, Chapter 10: Landscape and Visual, Chapter 13: Terrestrial Vegetation, Chapter 14: Terrestrial Wildlife and Chapter 15: Aquatic Life for additional mitigation measures 	Low adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Scientific Knowledge Values	<p>Researchers, academic community, local people who are employed in research efforts and/or learn from the research themselves, and local people, tourists and conservation organisations who benefit from research findings</p>	<p>Improved knowledge of the region due to changes in the area being of ecological, anthropogenic, economic, historical and sociological interest.</p>	<p>Moderate Beneficial</p>	<p>None proposed.</p>	<p>Moderate Beneficial</p>

19.8.6 Assessment of Impacts: Construction and Pre-Commissioning

Table 19-17 below provides an overview of the nature and significance of potential Project impacts on ecosystem services and their beneficiaries during the Construction and Pre-Commissioning phase prior to the implementation of additional mitigation. Each of the ecosystem services assessed for this ESIA are analysed in turn.

Table 19-17: Assessment of Potential Impacts: Construction and Pre-commissioning Phase (Pre-additional mitigation)

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Crop production	<p>Project impacts on crop production are likely to be similar to those described under the Site Preparation and Enabling Works phase (Table 19-15). These direct effects are likely to be moderate.</p> <p>Project activities during the Construction and Pre-Commissioning phase may also have indirect and induced impacts on crop production. The large workforce required during this phase (4,400 people per month at peak construction) may encourage some local people to abandon crop production in anticipation of Project employment or indirect economic opportunities created by the Project and the overall development of the Study Area.</p> <p>Crop production may also be affected by increasing demand for crop products, driven by the emergence of a salaried workforce during the Construction and Pre-Commissioning phase and an associated rise in disposable incomes. Rising demand may change agricultural practices, especially in terms of the crop products grown by local people, the proportion of food they grow for market versus their own consumption, and the pressure placed on agricultural land. These changes may be long-term or permanent in nature. As such the magnitude of indirect and induced effect on crop production is likely to be moderate.</p>	Moderate	High	Moderate/ high Adverse
Livestock and fodder/pastoralism	<p>Project impacts on livestock and pastoralism are likely to be similar to those described under the Site Preparation and Enabling Works phase (Table 19-15). The magnitude of direct impacts is therefore likely to be low.</p> <p>As with crop production, the employment opportunities presented by the Construction and Pre-Commissioning phase may encourage local people to find employment on Project activities rather than in livestock production and pastoralism. However, in the case of Balaalo, many are less likely to benefit from project employment because they tend to be very low skilled.</p> <p>An increase in the number of local people earning reasonable incomes in the Study Area may raise demand for livestock products (e.g. meat and milk) and drive further livestock production. Changes in the dynamics of livestock production and pastoralism as a result of the Construction and Pre-Commissioning phase may be longer lasting. In particular, an increase in disposable incomes and additional demand for livestock products may cause a shift to more intensive agricultural practices and a long-term decline in traditional forms of pastoralism. Given these longer timescales, the magnitude of these indirect and induced impacts is likely to be moderate.</p> <p>Chapter 16: Social has more information on changes to traditional ways of life as a result of the Project.</p>	Direct impacts: Low Indirect impacts: Moderate	Moderate	Direct impacts: Low/ Moderate adverse Indirect impacts: Moderate Adverse
Capture fisheries	<p>If not controlled appropriately, surface water has the potential to cause detrimental impacts on aquatic life due to poor surface water drainage. Surface water is important as it feeds the surrounding waterbodies, which provide habitat for aquatic species. In this context during construction there may be an influence on the pluvial flow routes and infiltration rates of the site due to groundworks. Noise and vibration caused by the installation of the pipeline under the Victoria Nile may influence fish population dynamics and habitat availability for fish and macroinvertebrates. Similarly, light and noise from night time working during HDD for pipeline crossing may disturb aquatic species. Noise and vibration from Victoria Nile pipeline activities have the ability to disturb fish migration. Chapter 15: Aquatic Life discusses potential direct impacts during this phase in more detail. However, in terms of the magnitude of direct impacts from this phase of the Project on capture fisheries, impacts are likely to be low if embedded mitigation is effectively implemented.</p>	Direct impacts: low Indirect impacts: moderate to high	High	Direct impacts: Moderate Adverse Indirect impacts: Moderate/High Adverse

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Timber and woody biomass	<p>Indirect and induced impacts on capture fisheries are likely to have more significant effects than direct impacts. Following the pattern in crop production and livestock and fodder/pastoralism, an increase in employment opportunities as a result of the Construction and Pre-Commissioning phase may encourage local people involved in capture fisheries to seek salaried jobs within the Project rather than continuing fishing. Whilst this impact may decrease some fishing pressures in the short- medium term, an increase in the population resulting from an influx of those looking for employment opportunities has the potential to offset these benefits and create an overall increase in those engaged in fishing. Alongside, rising disposable incomes and increase in population may also drive additional demand for fish and other fisheries products. This has the potential to exacerbate existing problems associated with over-fishing.</p> <p>The magnitude of direct impacts on Capture Fisheries is assessed as low. However, the magnitude of indirect impacts is likely to be moderate, due to indirect and induced impacts increasing short and medium term fishing pressures and contributing to over-fishing.</p> <p>The construction of flow lines is likely to impact timber and woody biomass provision in nearby areas. Land expropriation may also impact on the ability of local people to access timber and woody biomass. In terms of key ecosystems, as highlighted in Chapter 13: Terrestrial Vegetation there are unlikely to be direct significant potential impacts on forest species or protected areas associated with Landscape Contexts D (Tropical High Forest) and F (Nebbi), because no project infrastructure is being built in these areas. The potential impacts on species are instead concentrated in Landscape Contexts A (MFNP), B (Savanna Corridor), C (Lake Albert and associated wetlands) and F (Mixed Landscapes).</p> <p>The impact footprint arising from construction and from disruption to communities is relatively limited and the number of beneficiaries affected by Project activities at this phase is therefore likely to be low. The degree to which they are affected is also likely to be low, in part because there are numerous alternative sources of timber and woody biomass throughout the Study Area. Alongside most impacts will have taken place already during the previous phase of the Project. This will limit the magnitude of direct impacts to low.</p> <p>In terms of indirect effects, the bringing online of roads C1, C3, N1 and N2, and upgrades to roads A1, A2, A3, A4, B1, B2 and M1 will improve access to areas of woodland. This is likely to lead to an increase in the number of people being able to access previously more difficult-to-reach areas of woodland, with associated increases in the collection of timber and woody biomass in these previously underutilised areas.</p> <p>Influx is expected in main urban centres within the region particularly Hoima town, Masindi town, Biiso town, Bulisa, and Pakwach town. Population growth triggered by the Project has the potential to lead to an increase in the harvesting of woody biomass. An increase in incomes will also contribute to an increase in the number of people purchasing wood for building houses, boats or other purposes. In addition to areas outside of protected areas, this may increase the prevalence of such collection in protected areas such as MFPA and the protected areas in the vicinity of Hoima.</p> <p>Short and medium term increases in the population of the area during this phase from those seeking employment opportunities are likely to increase the overall demand for firewood and woody biomass in the area. The magnitude of indirect impacts is likely to be moderate.</p>	<p>Direct impacts: Low</p> <p>Indirect impacts: Moderate</p>	<p>Moderate/ high</p>	<p>Direct impacts: Low/ Moderate Adverse</p> <p>Indirect impacts: Moderate / High Adverse</p>
Wildfoods	<p>Damage to woody ecosystems, savannah and scrub- and shrublands caused by the clearing of vegetation and</p>	<p>Direct</p>	<p>Moderate</p>	<p>Direct</p>

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
and bushmeat	<p>soils is likely to lead impacts on the key habitats where bushmeat and wildfoods are sourced. In particular, the construction of the Industrial Area and well pads are likely to impact on the collection of wildfoods in these locations. Land acquisition may also impact the ability of local people to access timber and woody biomass. However most impacts will have taken place already during the previous phase of the Project.</p> <p>In terms of key ecosystems, as highlighted in Chapter 13: Terrestrial Vegetation potential impacts are concentrated in Landscape Contexts A (the MFNP), B (Savanna Corridor), C (Lake Albert and associated wetlands) and F (Mixed Landscapes). This has the potential to lead to impacts on the key ecosystems where wildfoods are sourced. The magnitude of direct impacts are however likely to be low for the reasons highlighted above.</p> <p>The bringing online of roads C1, C3, N1 and N2, and upgrades to existing roads will improve access to areas previously less accessible to hunters within the MFPA. This is likely to lead to an increase in the number of people being able to access previously more difficult-to-reach areas, with associated increases in hunting activities in these previously underutilised areas.</p> <p>The drilling at well pads JBR-01 to JBR-10 may disturb game species in MFNP, making them harder to approach and therefore less likely to be hunted. Similarly, the presence of well-pads and personnel may discourage hunters from pursuing game animals within MFNP because they are more likely to be spotted by Project employees. Increased transport from Bugungu airstrip and surrounding roads would have the same effect. Project employees may also spot snares and traps and alert UWA officials to their presence. Although these impacts would reduce the supply of bushmeat in the Study Area, it would have positive consequences for the abundance of game species.</p> <p>An increase in the Study Area's population resulting from the Project has the potential to lead to an increase in subsistence and commercial hunting, including both to meet basic needs and/or to generate a monetary income. This will take place due to a combination of an increase in the overall number of people engaged in hunting, supported by an increase in demand for bushmeat from an enlarged temporary population and increased incomes. This is particularly likely to affect availability of bushmeat in savannah and woodland ecosystems where hunting is most productive. In addition, an increase in exposure between the human population and biodiversity due to increases in population has the potential to lead to increased human-wildlife conflict, leading to an increase in reactive or pre-emptive hunting due to perceptions of livestock predation, crop raiding or social injustice. The magnitude of these impacts will be moderate to high.</p>	<p>Impacts: Low</p> <p>Indirect impacts: Moderate/High</p>		<p>Impacts: Low/Moderate Adverse</p> <p>Indirect impacts Moderate/High Adverse</p>
Water (for drinking, supply and regulation)	<p>As highlighted in Chapter 9: Hydrogeology the main elements of this stage of the Project which potentially could impact on groundwater (a Type 2 ecosystem service) are similar to those already considered for the Site Preparation and Enabling Works phase, i.e. moderate.</p> <p>In terms of impacts of this phase of the Project on surface water, possible impacts include as follows (these are discussed in more detail in Chapter 10: Surface Water):</p> <ul style="list-style-type: none"> • Potential contamination of main and/or ordinary surface watercourses/water bodies and ground water aquifers arising from accidental discharge of hazardous substances (e.g. oil, fuel, chemicals incl. drilling fluids/cuttings) discharge during transport, offloading and storage at the site; or during drilling, etc.; • Potential interruptions or changes to natural watercourse flow regime, drainage pattern or levels of surface 	Moderate	Moderate	Moderate Adverse

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
	<p>water:</p> <ul style="list-style-type: none"> • Potential impacts on watercourses (banks, beds and hydraulic flow); • Potential reduction in the catchment area, which feeds local water resources; <p>The magnitude of these direct impacts is likely to be moderate given the number of people affected by impacts on the ecosystem service, and the degree to which they are affected.</p> <p>Indirect impacts may arise from indirect effects relating to an increase in the Study Area's population. This is given existing groundwater scarcity issues, and issues relating to sanitation. The indirect magnitude is also considered to be moderate.</p>			
Fibres and Ornamental Resources	<p>The construction of well-pad KW-01 and associated pipelines and flowlines - which are located close to Lake Albert – may lead to soil run-off from compacted surfaces and murrum, causing increased water turbidity and knock-on effects for shell production. Similar impacts may occur during the construction of the Lake Albert Water Abstraction Facility, especially during pipeline laying which may bring up mud and silt from the bottom of the Lake. However, pollutants in run-off are likely to be of limited significance and short-term in duration. It will only occur sporadically during periods of high rainfall and/or high winds. Furthermore, the total volume of run-off will be too small to have a meaningful or widespread impact on water quality and shell production, especially relative to size of Lake Albert and linked assimilative capacity.</p> <p>Similarly, construction activities along the Murchison Falls-Albert Delta Ramsar site – in which papyrus harvesting is common – may affect papyrus production. Discharges of surface runoff may have more significant impacts on soil and water quality and the supply of fibres and ornamental resources if these are contaminated. However if embedded mitigation is effective, contaminated discharges will not occur during normal operations.</p> <p>In terms of indirect and induced impacts, as with other provisioning services such as crop production and capture fisheries, improvements in the employment prospects of local people as a result of Project activities may encourage a shift into Project or other employment rather than fibres/ornamental resources gathering. Harvesting pressures on fibres and ornamental resources may therefore fall. However, an increase in disposable incomes as a result of Project employment may drive additional demand for fibre- and ornamental resource products, encouraging further harvesting. Certain resources – e.g. shells – are likely to be relatively resilient to increased harvesting pressure because of their current abundance. Others such as papyrus are more vulnerable because they are limited to a particular parts of the Study Area (e.g. the Albert Delta-Murchison Falls Ramsar site), and may decline as a result of over-harvesting (although it should be noted that papyrus has good regenerative qualities). Given the resilience of ecosystems and the relative current abundance of environmental goods, the magnitude of direct and indirect impacts will be negligible to low.</p>	Negligible/ Low	Moderate	Low Adverse
Biochemical s/ Natural Medicines	<p>The drilling at well-pads JBR-01 to JBR-10, and increased road traffic as a result of Project activities may discourage local people from collecting medicinal plants and animals from within MFNP as the presence of Project employees and vehicles will increase the likelihood of being spotted. Given the small footprint of the activities in terms of site clearance, the total loss of natural medicines is likely to be limited. It is possible that specific medicinal plant species will be lost if Project activities happen to take place at the particular locations where they are found, but the likelihood of this occurrence is considered limited, particularly given the relative substitutability of the species.</p>	Direct impacts: Low Indirect impacts: Moderate	Low	Direct impacts: Low Adverse Indirect impacts: Moderate

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
	<p>As such the magnitude of direct impacts is anticipated to be low. Higher magnitude indirect and induced impacts may emerge as a result of improvements in employment opportunities and disposable incomes brought about by Project activities. The use of traditional healers is already common in the Study Area, but an improvement in incomes may drive additional demand for their services. One consequence of rising demand for healers and traditional medicines will be an increase in harvesting pressure on particular medicinal species which could in turn drive price increases for scarce species, making their harvest even more attractive. The Construction and Pre-Commissioning phase of the Project may therefore have significant indirect and induced impacts on rare plant and animal species in a wider area. As many of these species are unique, scarce and of high conservation value, impact magnitude is therefore increased to moderate.</p>			Adverse
Local and Global Climate Regulation	<p>Project activities may have an effect on local climate regulation, either through the clearance of vegetation during construction or the release of polluting emissions from plant and vehicle movements or the operation of power generation sets. These impacts may provide limited impairment the ability of local ecosystems to moderate local climatic conditions, especially during drought periods when vegetation can facilitate the retention of water. At a global level, GHG emissions from plant, vehicles and power generation sets will contribute to global warming effects. The magnitude of these impacts is likely to be low. Construction activities will lead to the loss of vegetation with carbon sequestration and carbon storage potential. This impact is anticipated to be negligible in terms of its effect on global climate regulation given the small area of vegetation – and therefore the limited amount of carbon sequestration and carbon storage - permanently lost. Project derived greenhouse gas emissions are discussed in Chapter 6: Air Quality and Climate.</p>	Low	Low	Low Adverse
Hazard Regulation	<p>Project impacts on hazard regulation are likely to be lower than those described under the Site Preparation and Enabling Works phase (Table 19-15); due to limited vegetation clearance during this phase. Impact magnitude is identified as Negligible.</p>	Negligible	Low	Insignificant
Cultural and Spiritual Values	<p>The use of pipeline and flow line routing marker posts could have a physical impact upon cultural sites. Vehicle tracking may develop adjacent to boundary fences and insertion of marker posts may impact upon any underlying deposits. Potential impacts include impacts on local culture, including traditional knowledge and skills, social practices, rituals and festive events, and traditional religion due to construction (pipeline network), physical presence, transportation, drilling activities. There is also potential for vehicle damage, human interference due to an increased population and changes to public access arrangements. The magnitude of these impacts is likely to be moderate, given that the number of people affected by impacts on the ecosystem service, and the degree to which they are affected. Potential impacts are discussed in more detail in Chapter 17: Archaeology and Cultural Heritage.</p>	Moderate	Medium	Moderate
Tourism and recreation values and	<p>Construction works associated within the well pads north of the Victoria Nile within MFNP (i.e. JBR-01 to JBR-10), transportation using new roads C1 and C3 and construction of the ferry and pipeline crossings of the Victoria Nile have the potential to lead to direct impacts on noise from project-associated traffic flows and from drilling</p>	High	High	High Adverse

Ecosystem service	Potential impact during Construction and Pre-Commissioning phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
wild species diversity	<p>activities. Indirect effects on visitors' perceptions of the MFPA in terms of sense of place, aesthetic value and experience are also likely to be significant. This is particularly relevant given the importance international tourists place on perceptions of the National Park's wildness and sense of place. These impacts are discussed in more detail in Chapter 7: Noise, Chapter 11: Landscape and Visual and Chapter 16: Social</p> <p>Further construction works for Project activities will also lead to habitat loss and degradation within MFPA. Effects will impact key species that range throughout the Park (e.g. Elephant, Rothschild's Giraffe, Uganda Kob, Lelwel's hartbeest and lion). Potential impacts are discussed in more detail in Chapter 13: Terrestrial Vegetation and Chapter 13: Terrestrial Wildlife.</p> <p>Indirect impacts during this phase will be from indirect and induced population change as a result of influx. An increase in the Study Area's population resulting from the Project has the potential to lead to an increase in subsistence and commercial hunting, including both to meet basic needs and/or to generate a monetary income. This will take place due to a combination of an increase in the overall number of people engaged in hunting, supported by an increase in demand for bushmeat from an enlarged population and increased incomes. This will be further facilitated by the Project's contribution to population growth in the urban centres within the wider Aol, particularly Hoima town, Masindi town, Biiso town, Buliisa town and Pakwach town. In addition, an increase in exposure between the human population and biodiversity has the potential to lead to increased human-wildlife conflict, leading to an increase in reactive or pre-emptive hunting due to perceptions of livestock predation, crop raiding or social injustice.</p> <p>There is also risk that population growth and an increase in incomes has the potential to increase instances of commercial hunting of flagship species to support the wider national and international market for such activities. This has the potential to lead to increased hunting of such species, including within the MFPA, Budongo Forest Reserve, Bugungu Game Reserve, as well as the other forest reserves in the wider Project Aol.</p> <p>The bringing online of roads C1, C3 will improve access to areas previously less accessible to hunters, including in the vicinity of the National Park. This is likely to lead to an increase in the number of people being able to access previously more difficult-to-reach areas, with associated increases in hunting activities in these previously underutilised areas.</p> <p>Given that beneficiaries will be continually affected by impacts, and the ecosystem service can only recover in the long term with significant interventions, the magnitude of both direct and indirect impacts is high.</p>	High	Negligible	Moderate Beneficial
Scientific and Knowledge Values	<p>Impacts are likely to be high beneficial. However Project impacts on scientific and knowledge values are likely to be lower than those described under the Site Preparation and Enabling Works phase (Table 19-15).</p>	High	Negligible	Moderate Beneficial

19.8.6.1 Additional Mitigation and Residual Impact

In response to the impacts identified, the following additional mitigation measures are proposed for this phase of the project. These are designed to limit the significance of potential impacts. It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

Table 19-18: Summary of assessment, additional mitigation measures during the Construction and Pre-commissioning phase and residual impact significance

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Construction and Pre-Commissioning					
Crop production	Local people engaged in crop production and their families	Increased demand for crop products and associated changes in agricultural practices. Alternative employment may result in abandonment of crop production.	Moderate / high adverse	<ul style="list-style-type: none"> RAPs for future land acquisition Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Community Environmental Conservation Plan Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) 	Low Adverse
Livestock fodder/pastoralism	Livestock owners Balaalo and other herders	<u>Direct</u> Impacts on movement of livestock and their herders. <u>Indirect</u> Increased demand for livestock products and associated pressure on pasture.	Direct impacts: low / moderate adverse Indirect impacts: moderate adverse	<ul style="list-style-type: none"> RAPs for future land acquisition Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) 	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Capture fisheries	Communities directly and indirectly engaged in fisheries activities	<p>Decline in a pastoral way of life as alternative employment opportunities become available.</p> <p>Changes in the scale of benefit that is currently derived from the ecosystem service.</p> <p><u>Direct</u> Impacts on aquatic life from surface water runoff and disruption of fish and macroinvertebrates from light, noise and vibrations.</p> <p><u>Indirect</u> Over fishing in Lake Albert from in-migration and indirect and induced population growth as a result of Project activities.</p> <p>Increased demand for fisheries products from in-migration as a result of Project activities.</p> <p>Reduction in species diversity and catch size as a result of Project contribution to overfishing.</p>	<p>Direct impacts: moderate adverse</p> <p>Indirect impacts: moderate / high adverse</p>	<ul style="list-style-type: none"> Road Safety and Transport Management Plan Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) 	
				<ul style="list-style-type: none"> Community Environmental Conservation Plan to consider initiatives including: <ul style="list-style-type: none"> Sensitisation on illegal fishing Community based fisheries management and monitoring programme (as detailed in Chapter 16: Social) Community Content, Economic Development and Livelihood Plan, including measures to mitigate impact of increased pressure on fisheries resources due to population growth including looking at ways of providing a registration scheme for the fishing industry (e.g. so only local people are registered and can fish) Influx Management Strategy: including in relation to the following aspects: <ul style="list-style-type: none"> Working with local government in in-migration hot spots and building their capacity in dealing with impacts Rolling out a series of education campaigns and capacity-building training to impacted communities on a range of key in-migration impacts <p>Also see additional mitigation measure proposed in Chapter 13: Terrestrial Vegetation and Chapter 15: Aquatic Life</p>	Moderate Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Timber and woody biomass	Local communities Charcoal producers	<u>Direct</u> Reduction in the supply of timber and woody biomass. <u>Indirect</u> Impacts on timber and woody biomass from an enhancement in access to potential collection areas. Increased demand for timber and woody biomass from population growth.	Direct impacts: low / moderate adverse Indirect impacts: moderate / high adverse	<ul style="list-style-type: none"> RAPs for future land acquisition Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation, Cultural Heritage and Archaeology Management Plan (including support for cultural activities) Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Road Safety and Transport Management Plan Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) <p>Also see additional mitigation measure proposed in Chapter 13: Terrestrial Vegetation and Chapter 14: Terrestrial Wildlife.</p>	Low Adverse
Wild foods and bushmeat	Subsistence and commercial hunters; those engaged in hunting for cultural traditions; hunters of high value species	<u>Direct</u> Impacts on key habitats where bushmeat and wild foods are sources. <u>Indirect</u> Improved access to areas previously less accessible to hunters. Increase in the Study Area's population resulting from the Project leading to an increase in subsistence and commercial hunting, including both to meet	Direct impacts: low / moderate adverse Indirect impacts: moderate / high adverse	<ul style="list-style-type: none"> <i>Labour Management Plan:</i> The Project will implement a Workers Code of Conduct, under which general site rules will include ban on bushmeat hunting/purchase for employees and employee sensitisation against bushmeat hunting/purchase (within component on environmental awareness training) <i>Influx Management Strategy:</i> Including in relation to the following aspects: <ul style="list-style-type: none"> Working with local government in in-migration hot spots and building their capacity in dealing with impacts The in-migration risk assessment will be regularly updated based on monitoring data to assess which protected areas, species and habitats are most at risk of indirect impacts, both imminently and in the 	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
		basic needs and/or to generate a monetary income.		<ul style="list-style-type: none"> Reviewing the range of management plans which will deal with in-migration impacts and ensuring each Project department is putting in place the required measures Rolling out a series of education campaigns and capacity-building training to communities Community Environmental Conservation plan including Natural Resources Enhancement and Community Wildlife Conflict Prevention initiatives 	
Water (for drinking, supply and regulation)	Communities within Study Area Grazing animals	Impacts on groundwater supplies (Type 1 and Type 2 impacts on ecosystem service.) Impacts on water quality.	Moderate adverse	Also see Chapter 14: Terrestrial Wildlife. As additional mitigation proposed in Chapter 9: Hydrogeology, Chapter 10: Surface Water and Chapter 18: Health	Low Adverse
Fibres and Ornamental Resources	Local people engaged in the collection and preparation of materials	Direct impacts on the supply and collection of these resources.	Low adverse	None proposed	Low Adverse
Biochemicals and natural medicines	Local people who use natural medicines and the services of traditional healers Traditional healers	<p>Direct Loss of or disturbance to medicinal plants and animals.</p> <p>Indirect Increased demand for natural medicines and the services of traditional healers, leading to over-harvesting, resulting in a change in the number of ecosystem service beneficiaries</p>	<p>Direct impacts: low adverse</p> <p>Indirect impacts: moderate adverse</p>	<ul style="list-style-type: none"> Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Community Environmental Conservation Plan Cultural Heritage and Archaeology Management Plan (including support for cultural activities) Livelihood Restoration Plan Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building 	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures (programme)	Residual Impact Significance
Local and Global Climate Regulation	Local people and climate	Loss of vegetation with carbon sequestration and carbon storage potential. Production of GHG emissions during Project activities.	Low adverse	Also see Chapter 17: Archaeology and Cultural Heritage . None proposed.	Low Adverse
Hazard Regulation	Local people whose dwellings or livelihoods leave them vulnerable to damaging weather events such as floods or climatic changes such as extended drought periods	Clearance of vegetation with a role in hazard regulation.	Insignificant	None proposed.	Insignificant
Cultural and Spiritual Values	Local people who make use of sites of cultural and/or spiritual importance	Damage to or the removal or relocation of specific cultural/spiritual sites.	Moderate adverse	As additional mitigation proposed in Chapter 17: Archaeology and Cultural Heritage	Low Adverse
Tourism recreation values and wild species diversity	Local people employed in the tourist sector around MFPA and Central Forest Reserve. National and international visitors to MFPA and Central Forest Reserves and UWA and local/national government that benefit from the taxes and fees paid for park entry.	Disturbance on wild animals and visitors to MFPA. Damage to MFNP's reputation for remoteness and wildness. Increase in hunting activities due to improved access to remote areas.	High adverse	<ul style="list-style-type: none"> A Tourism Management Plan will set out objectives and procedures for managing relationships with and working with key tourism stakeholders to minimise potential negative effects of the Project on tourism and maximising benefits. All contractors and sub-contractors will be required to follow the measures and procedures set out in the plan. Also see Chapter 7: Noise, Chapter 10: Landscape and Visual, Chapter 13: Terrestrial Vegetation, Chapter 14: Terrestrial Wildlife and Chapter 15: Aquatic Life for additional mitigation measures 	Moderate Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Additional Mitigation Measures	Residual Impact Significance
Scientific and Knowledge Values	Researchers, academic community, local people who are employed in research efforts and/or learn from the research themselves, and local people, tourists and conservation organisations who benefit from research findings	Improved knowledge of the region due to changes in the area being of ecological, anthropogenic, economic, historical and sociological interest.	Moderate beneficial	None proposed.	Moderate Beneficial

19.8.7 Assessment of Impacts: Commissioning and Operations

Table 19-19 below provides an overview of the nature and significance of potential Project impacts on ecosystem services and their beneficiaries during the Commissioning and Operations phase prior to the implementation of additional mitigation. Each of the ecosystem services assessed for this ESIA are analysed in turn.

Table 19-19: Assessment of Potential Impacts: Commissioning and Operations Phase (Pre-additional mitigation)

Ecosystem service	Potential impact during Commissioning and Operations phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Crop production	<p>Most agriculture in the Study Area is rain fed. Therefore water use from the Project is not likely to have a serious effect on crop production (given the main Project water supply will be from Lake Albert). The magnitude of Direct impacts is classed as being negligible.</p> <p>Indirect and induced impacts as a result of economic growth may have more significant effects than direct impacts. The long duration of the Commissioning and Operations phase (estimated at 25 years) may provide long-term employment and a regular wage, however direct employment from the project will be reduced to about 200 individuals during the operations phase. A stimulation of the wider local economy, and an associated increase in employment opportunities may lead to higher incomes. This may increase demand for crop products and cause an expansion in crop production. This impact is potentially long-term. Over the short- to medium-term, it may put the edges of MFNP under pressure from agricultural encroachment (although land previously used for construction could be brought into agricultural use). It may also increase prosperity within the Study Area as local people produce more crops and sell more produce at local markets. Over the long-term, it may lead to changes in traditional ways of life and a loss of a sense of place and community. Indirect impacts are likely to be moderate.</p> <p>Indirect and induced changes of this kind are discussed in more detail in Chapter 16: Social.</p>	<p>Direct impacts: Negligible</p> <p>Indirect impacts: Moderate</p>	High	<p>Direct impacts: Low Adverse</p> <p>Indirect impacts: Moderate to High Adverse</p>
Livestock and fodder/pastoralism	<p>Operation of Project infrastructure is likely to have a limited magnitude of impacts on livestock and fodder/pastoralism. As Project components will have been in place for a number of years by the time Commissioning and Operation begins, it is expected that herders and their animals will have become accustomed to them and changed their behaviour accordingly. Project-related transport on roads in the Study Area is also expected to be significantly less than in the previous two phases of the project. The magnitude of direct impacts is therefore likely to be negligible.</p> <p>Indirect and induced impacts as a result of Project employment opportunities may have more significant effects on livestock production/pastoralism than direct impacts. The long duration of the Commissioning and Operations phase may provide local people with long-term employment and a regular wage. Higher incomes may increase demand for livestock products and cause changes in patterns of livestock production. This impact is potentially long-term and may change the ecology, economy and culture of the Study Area. Over the longer term it may put the edges of MFNP under pressure from livestock grazing. It may also increase prosperity within the Study Area as local people produce more crops and sell more produce at local markets. Over the long-term, it may lead to changes in traditional ways of life and a loss of a sense of place and community. Indirect and induced changes of this kind, which are likely to be moderate in magnitude are discussed in more detail in Chapter 16: Social.</p>	<p>Direct impacts: Negligible</p> <p>Indirect impacts: Moderate</p>	Moderate	<p>Direct impacts: Low Adverse</p> <p>Indirect impacts: Moderate Adverse</p>
Capture fisheries	<p>It is possible during the Commissioning and Operations phase that the Lake Albert Water Abstraction Facility may affect the behaviour of fish and other aquatic organisms in a way that impacts fisheries productivity. The long duration of the Commissioning and Operations phase (c.25 years) may exacerbate any disturbance. However, the small footprint of the Water Abstraction Facility suggests that any disturbance will be localised, limited in scope, reversible, and unlikely to significantly impact fisheries and their beneficiaries across the wider lake. The magnitude of likely impacts is therefore negligible.</p>	<p>Direct impacts: Negligible</p> <p>Indirect impacts:</p>	High	<p>Direct impacts: Low Adverse</p> <p>Indirect impacts: High</p>

Ecosystem service	Potential impact during Commissioning and Operations phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
	<p>Indirect and induced impacts as a result of in migration, population change and economic growth across the Study Area are likely to have more significant effects on capture fisheries than direct impacts, exacerbated by the long duration of the Commissioning and Operations phase (25 years). These elements may lead to the following key impacts in relation to this ecosystems service: over fishing in Lake Albert from in-migration and indirect and induced population growth as a result of project activities; increased demand for fisheries products from in-migration; and a reduction in species diversity and catch size as a result of Project contribution to overfishing. The magnitude of these impacts have the potential to be high given ecosystem service beneficiaries are likely to be continuously affected by impacts, and the degree to which the impacts occur are likely to be high.</p>	High		Adverse
Timber and woody biomass	<p>Direct project impacts on timber and woody biomass are likely to be similar (or even lower) to those described under the Construction and Pre-Commissioning phase (Table 19-15). The magnitude of direct impacts is classed as being low.</p> <p>Indirect impacts on timber and woody biomass are likely to be higher to those described under the construction and pre-commissioning phase (Table 19-15).</p> <p>The construction of new roads and enhanced access provided by the Rights of Way for the production pipelines, water abstraction pipeline and water injection lines will improve access to areas of woodland. This is likely to lead to an increase in the number of people being able to access previously more difficult-to-reach areas of woodland, with associated increases in the collection of timber and woody biomass in these previously underutilised areas.</p> <p>Indirect and induced impacts from population influx are likely to be high in magnitude during this phase of the Project. In this context the Project has the potential to contribute to influx into the Study Area. In addition it will contribute to influx to main urban centres within the region particularly Hoima town, Masindi town, Biiso town, Bulisa, and Pakwach town. Population growth triggered by the Project has the potential to lead to an increase in the harvesting and woody biomass. An increase in incomes will also contribute to an increase in the number of people purchasing wood for building houses, boats or other purposes. In addition to areas outside of protected areas, this may increase the prevalence of such collection in protected areas such as MFPA and the protected areas in the vicinity of Hoima.</p> <p>Whilst increases in disposable incomes as a result of the employment opportunities offered by Project activities are likely to encourage local people to buy alternative fuel sources, such as paraffin tadoobas, medium and long-term increases in the population of the area during this phase from those seeking employment opportunities are likely to increase the overall demand for firewood and woody biomass in the area. The magnitude of Indirect impacts is classed as being high.</p>	<p>Direct impacts: Low</p> <p>Indirect impacts: High</p>	Moderate/High	<p>Direct impacts: low/Moderate Adverse</p> <p>Indirect impacts: High Adverse</p>
Wildfoods and bushmeat	<p>Direct impacts on wild food and bushmeat provision during the Commissioning and Operations phase are anticipated to be limited due to lower operations and presence. The magnitude of direct impacts is classed as being negligible. The operation of well pads JBR-01 to JBR-10 may disturb game species in MFNP, making them harder to approach and therefore less likely to be hunted. Similarly, the presence of well-pads may discourage hunters from pursuing game animals within MFNP because they are more likely to be spotted by Project employees (although it should be noted that well pads will be largely unmanned). Increased transport from Bugungu airstrip and surrounding roads would have the same effect. Project employees may also spot snares and traps and alert UWA officials to their presence. Although these impacts would reduce the supply of</p>	<p>Direct impacts: Negligible</p> <p>Indirect impacts: High</p>	Moderate	High Adverse

Ecosystem service	Potential impact during Commissioning and Operations phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
<p>Water (for drinking, supply and regulation)</p>	<p>bushmeat in the Study Area, it would have positive consequences for the abundance of game species. Key impacts at this stage will be from indirect and induced population change as a result of influx. An increase in the Study Area's population resulting from the Project has the potential to lead to an increase in subsistence and commercial hunting, including both to meet basic needs and/or to generate a monetary income. There is also risk that population growth and an increase in incomes has the potential to increase instances of commercial hunting of flagship species to support the wider national and international market for such activities. In this context the magnitude of indirect impacts on wildfood and bushmeat are likely to be similar (high) to those described under the construction and pre-commissioning phase (Table 19-17), particularly given the longer term increase in population in the area as a result of project activities.</p> <p>For this phase of the Project, the principal water supply will be sourced from Lake Albert, which provides a Type 2 ecosystem service. Groundwater usage will be restricted to the provision of water supply at the camps for potable supply and other ancillary uses and from the water supply boreholes at the well pads for maintenance purposes. The groundwater requirement for this phase of the Project is estimated less than half the requirement for the Construction and Pre-Commissioning phase. Accordingly, the potential impact on the availability of groundwater resources will be substantially less than for the two preceding phases of the Project. During this phase of the Project, surface water abstracted from Lake Albert (a Type 2 ecosystem service) will be used mainly for re-injection. A detailed assessment of the potential impacts on the regional and local water resources availability and sustainability as a result of the proposed abstraction from Lake Albert is presented in Chapter 10: Surface Water, Section 10.7.3.1. The assessment shows that the peak water abstraction volume (0.013 billion m³/annum) from Lake Albert for the Project will constitute less than 0.034% of the average annual outflow from the lake. Moreover, there will be reduced need for water towards the end of Project lifetime compared with peak years. In this context the magnitude of impacts on drinking water availability is likely to be negligible.</p> <p>In terms of impacts of this phase of the Project on surface water, possible impacts include as follows (these are discussed in more detail in Chapter 10: Surface Water):</p> <ul style="list-style-type: none"> • Potential contamination of sensitive main and/or ordinary surface features and/or groundwater arising from accidental discharge of hazardous substances (e.g. oil, fuel, lubricants, chemicals polymer), contaminated (i.e. potentially contaminated) and untreated and/or poorly treated wastewater or storm water discharges from Project components; • Potential for erosion as a result of a change in surface water run-off rates due to extreme rainfall events; • Maintenance (well workover, facilities, flowlines and pipeline maintenance); and • Alterations to existing flood characteristics of landscape. <p>Given the number of people affected by impacts on the ecosystem service, and the degree to which they are affected, would likely be limited, and beneficiaries would be affected by impacts that occur very sporadically, the magnitude of direct impacts is low.</p> <p>Indirect impacts have the potential to take place from population influx as a result of the Project. Population growth will place additional pressures on water resources, including leading through a greater number of users</p>	<p>Direct impacts: Negligible/Low</p> <p>Indirect impacts: Moderate</p>	<p>Moderate</p>	<p>Direct impacts: Low/Moderate</p> <p>Indirect impacts: Moderate</p>

Ecosystem service	Potential impact during Commissioning and Operations phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Fibres and Ornamental Resources	<p>by water point and a potential contamination of domestic water sources from overcrowding. In addition increased forest and vegetation clearance for subsistence agriculture and residential structures may contribute to increased rates of soil erosion and levels of sediment in rivers and streams used for water supply. The magnitude of these impacts is likely to be moderate given the increased number of beneficiaries affected.</p> <p>Direct impacts on the supply of fibres and ornamental resources during the Commissioning and Operations phase are anticipated to be limited. It is possible that the operation of the Lake Albert Water Abstraction Facility will have a localised impact on the abundance of snails for shell collecting, either by changing local ecological conditions or by directly reducing the abundance of snails. However, the overall magnitude of this impact on the supply of fibres and ornamental resources is likely to be negligible.</p> <p>The long duration of the Commissioning and Operations phase may provide some local people with long-term employment and a regular wage. Higher incomes may increase demand for fibres and ornamental resources. Over the short- to medium-term, this may intensify harvesting pressures and lead to over-harvesting. It may also increase prosperity within the Study Area leading to local people gathering more fibres and ornamental resources and sell more produce at local markets. Indirect and induced impacts as a result of income increases and improved employment opportunities are likely to be low in magnitude given the ecosystem service can recover from the impact quickly and without interventions from these impacts.</p>	<p>Direct effects: Negligible</p> <p>Indirect effects: Low</p>	Moderate	Low Adverse
Biochemicals/Natural Medicines	<p>Direct impacts on the supply and/or collection of natural medicines are anticipated to be of low magnitude. Harvesting medicinal plants and animals from within the National Park is illegal. The operation of well-pads JBR-01 to JBR-10, and increased road traffic as a result of Project activities may discourage local people from collecting medicinal plants and animals from within MFNP as the presence of Project employees and vehicles will increase the likelihood of being spotted. Similar effects are also likely to take place from the well pads and infrastructure located outside of the National Park.</p> <p>Indirect and induced impacts as a result of income increases and improved employment opportunities may have more significant effects on the supply of biochemical/natural medicines. The long duration of the Commissioning and Operation phase may provide some local people with long-term employment and a regular wage. Higher incomes may increase demand for biochemicals and natural medicines. Over the short- to medium-term, this may intensify harvesting pressures and lead to over-harvesting. Over the long-term, the Study Area may become more prosperous and encourage people to seek treatment using conventional medicine rather traditional healers. If this scenario takes place, it is likely that the number of people using traditional healers will fall, with an associated decline in demand for and harvesting of medicinal plants and animals. Furthermore, it may lead to changes in traditional ways of life and a loss of a sense of place and community. Indirect and induced changes of this kind are discussed in more detail in Chapter 16: Social. The magnitude of indirect impacts is classed as being high.</p>	<p>Direct impacts: Low</p> <p>Indirect impacts: High</p>	Low	<p>Direct impacts: Low Adverse</p> <p>Indirect impacts: Moderate Adverse</p>
Local and Global Climate Regulation	<p>The Commissioning and Operations phase will not lead to the significant loss of climate regulating ecosystems. This is given there will be little additional loss of the ecosystems providing this service. The magnitude of impacts is classed as being low.</p> <p>Project derived greenhouse gas emissions are discussed in Chapter 6: Air Quality.</p>	Low	Low	Low adverse

Ecosystem service	Potential impact during Commissioning and Operations phase (pre-additional mitigation)	Impact Magnitude	Receptor Sensitivity	Potential Impact Significance
Hazard Regulation	Project impacts on hazard regulation are likely to be lower than those described under the Construction and Pre-commissioning phase (Table 19-17) due to there being limited additional loss of vegetation providing a hazard regulation service. The magnitude of impacts is likely to be negligible.	Negligible	Low	Insignificant
Cultural and Spiritual Values	<p>Any cultural sites in areas that would be directly affected may result in perceived impacts of disruption to sacred sites and spirits from physical presence, transportation, gas flaring (non-routine), noise generation, visual intrusion, reduction in tranquility impacting on the setting of cultural sites and places of worship. This would affect the cultural value of those sites and could have an impact on any cultural activity that takes place at those sites.</p> <p>The magnitude of these impacts is likely to be low.</p> <p>Potential impacts are discussed in more detail in Chapter 17: Archaeology and Cultural Heritage.</p>	Low	Medium	Low Adverse
Tourism and recreation values and wild species diversity	<p>Project infrastructure and project-associated traffic flows have the potential to lead to impacts on noise and visual amenity. This is however likely to be of a lower magnitude than during previous phases given the reduced level of continuous activities.</p> <p>Indirect impacts are expected to be similar to those described under the Construction and Pre-commissioning phase (Table 19-17).</p> <p>Overall however, the potential impacts of Project infrastructure, project-related traffic and indirect and induced population change will lead to a high magnitude of impacts at this phase of the Project. This is given that beneficiaries will be continually affected by impacts, and the ecosystem service can only recover in the long term with significant interventions.</p>	High	High	High Adverse
Scientific and Knowledge Values	Project impacts on scientific and knowledge values are likely to be lower than those described under the Site Preparation and Enabling Works phase (Table 19-17). The magnitude of these impacts is likely to be high.	High	Negligible	Moderate Beneficial

19.8.7.1 Additional Mitigation and Residual Impact

In response to the impacts identified, the following additional mitigation measures are proposed for this phase of the project. These are designed to limit the significance of potential impacts. It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed during the detailed design phase to ensure their adequacy in mitigating the potential impacts.

Table 19-20: Summary of assessment, additional mitigation measures during the Commissioning and Operations phase and residual impact significance

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Commissioning and Operations					
Crop production	Local people engaged in crop production and their families	<p><u>Direct</u> Reduction in the quality of water available for irrigation, affecting crop yields.</p> <p><u>Indirect</u> Change in the scale of benefit that is currently derived from the ecosystem service</p> <p>Change in number of ecosystem service beneficiaries</p> <p>Increased demand for crop products and associated changes in agricultural practices as a result of indirect and induced impacts.</p>	<p>Direct impacts: low adverse</p> <p>Indirect impacts: moderate /high adverse</p>	<ul style="list-style-type: none"> Community Impact Management Strategy Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Community Environmental Conservation Plan Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) 	Low Adverse
Livestock and fodder/pastoralism	Livestock owners Balaalo and other herders	<p><u>Direct</u> Decline in a pastoral way of life as alternative employment opportunities become available.</p> <p><u>Indirect</u> Increased demand for livestock products and associated pressure on pasture.</p> <p>Changes in the patterns of livestock production</p>	<p>Direct impacts: low adverse</p> <p>Indirect impacts: moderate adverse</p>	<ul style="list-style-type: none"> Community Impact Management Strategy Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Cultural Heritage and Archaeology Management Plan (including support for cultural activities) Livelihood Restoration Plan Community Content, Economic Development and Livelihood Plan (including Land Use Planning) Road Safety and Transport Management Plan Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building 	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Capture fisheries	Communities directly and indirectly engaged in fisheries activities	<p><u>Direct</u> Impacts upon the behaviour of fish and other aquatic organisms from project activities.</p> <p>Impacts on aquatic life from surface water run-off and disruption of fish and macroinvertebrates from light, noise and vibrations.</p> <p><u>Indirect</u> Increased demand for fisheries products from in-migration as a result of Project activities.</p> <p>Over fishing in Lake Albert from in-migration and indirect and induced population growth as a result of Project activities.</p> <p>Reduction in species diversity and catch size as a result of Project contribution to overfishing.</p>	<p>Direct impacts: low adverse</p> <p>Indirect impacts: high adverse</p>	<p>programme)</p> <ul style="list-style-type: none"> Community Environmental Conservation Plan to consider initiatives including: <ul style="list-style-type: none"> Sensitisation on illegal fishing Community based fisheries management and monitoring programme (as detailed in Chapter 16: Social) Community Content, Economic Development and Livelihood Plan, including measures to mitigate impact of increased pressure on fisheries resources due to population growth including looking at ways of providing a registration scheme for the fishing industry (e.g. so only local people are registered and can fish) Influx Management Strategy: including in relation to the following aspects: <ul style="list-style-type: none"> Working with local government in in-migration hot spots and building their capacity in dealing with impacts Rolling out a series of education campaigns and capacity-building training to impacted communities on a range of key in-migration impacts <p>Also see additional mitigation measure proposed in Chapter 13: Terrestrial Vegetation and Chapter 15: Aquatic Life.</p>	Moderate adverse
Timber and woody biomass	Local communities Charcoal producers	<p><u>Direct</u> Improved access to timber and woody biomass in previously difficult to reach locations.</p> <p><u>Indirect</u> Increased demand for timber and woody biomass from population influx and</p>	<p>Direct impacts: low / moderate adverse</p> <p>Indirect impacts: high adverse</p>	<ul style="list-style-type: none"> Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity); Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Community Environmental Conservation Plan (which will consider community based 	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Wildfoods and bushmeat	Communities within Study Area Grazing animals	<p>increases in incomes.</p> <p>Increase in subsistence and commercial hunting, including both to meet basic needs and/or to generate a monetary income.</p> <p>Increased hunting activities from improved access.</p> <p>Increased demand for bushmeat.</p> <p>Increases in human-wildlife conflict.</p> <p>Increase in instances of commercial hunting of flagship species to support the wider national and international market for such activities.</p>	High adverse	<p>programmes for extension of tree nurseries and promotion of alternative fuel use)</p> <ul style="list-style-type: none"> • Livelihood Restoration Plan • Community Content, Economic Development and Livelihood Plan (including Land Use Planning) • Influx Management Strategy • Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) <p>Also see additional mitigation measure proposed in Chapter 13: Terrestrial Vegetation and Chapter 14: Terrestrial Wildlife.</p> <ul style="list-style-type: none"> • <i>Labour Management Plan:</i> The Project will implement a Workers Code of Conduct, under which general site rules will include ban on bushmeat hunting/purchase for employees and employee sensitisation against bushmeat hunting/purchase (within component on environmental awareness training) • <i>Influx Management Strategy:</i> Including in relation to the following aspects: <ul style="list-style-type: none"> ○ Working with local government in in-migration hot spots and building their capacity in dealing with impacts ○ The in-migration risk assessment will be regularly updated based on monitoring data to assess which protected areas, species and habitats are most at risk of indirect impacts, both imminently and in the foreseeable future ○ Reviewing the range of management plans which will deal with in-migration impacts and ensuring each Project department is putting in place the required measures ○ Rolling out a series of education campaigns and capacity-building training to communities • Community Environmental Conservation plan 	Low/ Moderate adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Water (for drinking, supply and regulation)	Subsistence and commercial hunters; those engaged in hunting for cultural traditions; hunters of high value species	<u>Direct</u> Impacts on drinking water quality <u>Indirect</u> Impacts on drinking water quality and quantity from induced population growth.	Direct impacts: low / moderate adverse Indirect impacts: moderate adverse	including Natural Resources Enhancement and Community Wildlife Conflict Prevention initiatives Also see Chapter 14: Terrestrial Wildlife . As additional mitigation proposed in Chapter 9: Hydrogeology , Chapter 10: Surface Water and Chapter 18: Health .	
Fibres and Ornamental Resources	Local people engaged in the collection and preparation of materials	Increased demand for Fibres and Ornamental Resources Potential overexploitation of some resources. Changes in traditional way of life.	Low adverse	None proposed	Low Adverse
Biochemicals and natural medicines	Local people who use natural medicines and the services of traditional healers Traditional healers	<u>Direct</u> Loss, damage or degradation to features or characteristics of the ecosystem service. <u>Indirect</u> Increased demand for natural medicines and the services of traditional healers, leading to over-harvesting (change in the scale of benefit that is currently derived from the ecosystem service.) Changes in traditional ways of life.	direct impacts: low adverse Indirect impacts: moderate adverse	<ul style="list-style-type: none"> Community Impact Management Strategy (including compensation procedure for temporary disturbance associated with Project activity) Community Health, Sanitation, Safety and Security Plan (including building capacity for a participatory approach to social impact management, monitoring and evaluation) Community Environmental Conservation Plan Livelihood Restoration Plan Influx Management Strategy Stakeholder Engagement Plan (including Community Engagement Capacity Building programme) Also see Chapter 17: Archaeology and Cultural Heritage .	Low Adverse
Local and Global	Local people and	Production of GHG	Low adverse	None proposed.	Low Adverse

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Climate Regulation	climate	emissions during Project activities.			
Hazard Regulation	Local people whose dwellings or livelihoods leave them vulnerable to damaging weather events such as floods or climatic changes such as extended drought periods	No significant effects identified.	Insignificant	None proposed.	Insignificant
Cultural and Spiritual Values	Local people who make use of sites of cultural and/or spiritual importance	Damage to or the removal of specific cultural/spiritual sites. Reduction of tranquility impacting the setting of cultural heritage sites.	Low adverse	None proposed	Low Adverse
Tourism and recreation values and wild species diversity	Local people employed in the tourist sector around MFPA and Central Forest Reserve. National and international visitors to MFPA and Central Forest Reserves and UWA and local/ national government that benefit from the taxes and fees paid for park entry.	Damage to MFNP's reputation for remoteness and wildness. Loss or degradation of habitats as a result of direct and indirect impacts. Increased commercial hunting of key 'flagship' species.	High adverse (direct and indirect)	<ul style="list-style-type: none"> A Tourism Management Plan will set out objectives and procedures for managing relationships with and working with key tourism stakeholders to minimise potential negative effects of the Project on tourism and maximising benefits. All contractors and sub-contractors will be required to follow the measures and procedures set out in the plan. Also see Chapter 7: Noise, Chapter 10: Landscape and Visual, Chapter 13: Terrestrial Vegetation, Chapter 14: Terrestrial Wildlife and Chapter 15: Aquatic Life for additional mitigation measures 	Moderate Adverse
Scientific and Knowledge Values	Researchers, academic community, local people who are employed in research efforts	Improvement of knowledge of the region due to changes in the area being of ecological, anthropogenic, economic, historical and sociological	Moderate Beneficial	None proposed	Moderate Beneficial

Ecosystem Service	Beneficiaries	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
	and/or learn from the research themselves, and local people, tourists and conservation organisations who benefit from research findings	interest			

19.8.8 Assessment of Impacts: Decommissioning

Table 19-21 below provides an overview of the nature and significance of potential Project impacts on ecosystem services and their beneficiaries during the Decommissioning phase prior to the implementation of additional mitigation. The final type and magnitude of impacts will be dependent upon final decommissioning strategy. Each of the ecosystem services assessed for this ESIA are analysed in turn.

Table 19-21: Assessment of Potential Impacts: Decommissioning Phase (Pre-additional mitigation)

Ecosystem service	Potential impact during Decommissioning phase (pre-additional mitigation)	Impact Magnitude/likelihood	Receptor Sensitivity	Potential Impact Significance
Crop production	<p>The removal of above ground Project infrastructure and backfilling with topsoil will return some of the areas that were previously closed to agriculture to crop production. However, given the small footprint of Project infrastructure relative to the area of cultivated land in the Study Area, and the likelihood that land will be acquired by the Government, the benefits to crop production from Decommissioning activities are likely to be small. It also possible that changes to land tenure by the time Decommissioning begins will constrain crop production. In the absence of any evidence concerning land tenure changes, however, it is assumed that crop production will still be permissible on Decommissioned land. Chapter 16: Social covers changes to traditional land tenure systems in more detail.</p>	Negligible	High	Low Beneficial
Livestock and fodder/pastoralism	<p>The removal of above ground Project infrastructure may re-open grazing areas and herding paths that were closed or to which access was limited during Project operations. This is likely to benefit Balaalo and other herders and their animals, which will have more pasture available and more options for reaching that pasture. In addition, backfilling with topsoil and vegetation will go some way toward restoring areas of pasture that were lost during previous Project phases. However, the degree to which Balaalo and herders will benefit from these changes is likely to be small. The area of pasture re-opened as a result of the removal of Project infrastructure is not significant relative to the area of total pasture. In addition, it is likely that Balaalo and other herders will have become accustomed to the presence of Project infrastructure and will have identified alternative areas of pasture and herding paths for their animals. Land will also be acquired by the Government at Decommissioning. The removal of Project infrastructure is therefore predicted to have a low impact magnitude on the supply of livestock production and pastoralism.</p>	Low	Moderate	Low Beneficial
Capture fisheries	<p>During decommissioning works some habitat loss or degradation may occur in case of accidental spills from working areas, although embedded mitigation to control run off, chemical storage, release of contaminants and erosion should prevent this. Decommissioning and restoration should benefit species within aquatic habitats as disturbance should decrease and available habitat increase. Disturbance is likely to be minimal at this stage and mostly related to human presence on the shores of aquatic habitats and barge crossing use. Overall, in terms of the overall functioning of the capture fisheries ecosystems service, decommissioning should have a negligible magnitude of effects with embedded mitigation.</p>	Negligible	High	Low Adverse

Ecosystem service	Potential impact during Decommissioning phase (pre-additional mitigation)	Impact Magnitude/likelihood	Receptor Sensitivity	Potential Impact Significance
Timber and woody biomass	<p>The removal of above ground Project infrastructure and backfilling with topsoil and vegetation may lead to an increase in the provision of timber and woody biomass. Woody plants will be able to grow on areas previously cleared for Project activities, thus providing local people with additional sources of timber and woody biomass. However, given the relatively small footprint of Project infrastructure, the area of new trees and woody plants generated during Decommissioning is likely to be small, and therefore the increase in timber and woody biomass supply will be limited. Furthermore, it will take some time for trees and woody plants to mature to a stage where they can produce firewood or be used in charcoal production. The benefits to local people of these limited and long-term increases in timber and woody biomass supply will therefore be insignificant. In addition, it is possible that the overall development of the Study Area over the lifespan of the Project will have caused a shift in patterns of fuel use away from firewood and charcoal toward gas and electricity. The magnitude of impacts is therefore negligible.</p> <p>Impacts from the economic development of the Study Area is discussed in more detail in Chapter 16: Social.</p>	Negligible	Moderate to high	Low Beneficial
Wildfoods and bushmeat	<p>Backfilling of removed Project infrastructure with topsoil and vegetation may cause an increase in the supply of wild foods as plants and other organisms colonise land previously within the footprint of Project components. However, the area of land re-colonised by wild foods will be limited as the Project's footprint is relatively small. In addition, it may take some time for plants to reach a stage where they can be used as food or can contribute to honey production (for example, Acacia trees may take several years to grow before they produce flowers). Any increases in the provision of wild foods as a result of re-colonisation will therefore be small, with a negligible magnitude of impact.</p> <p>Decommissioning of project infrastructure may increase access to areas previously inaccessible for wildfood collection and hunting. However this impact is likely to be limited.</p>	Negligible	Moderate	Low Beneficial
Water (for drinking, supply and regulation)	<p>In relation to surface and groundwater, as highlighted by Chapter 9: Hydrogeology and Chapter 10: Surface Water, impacts would be similar as those identified during the Site Preparation and Enabling Works and Construction and Pre-Commissioning phases of the Project (see above). However these impacts are likely to be more limited in magnitude than during these phases given decommissioning activities will lead to a decrease in impacts on water resources over time.</p> <p>Overall, the successful implementation of embedded mitigation measures will help minimise the magnitude of potential impacts to negligible.</p>	Negligible	Moderate	Low Adverse
Fibres and Ornamental Resources	<p>The removal of above ground Project infrastructure and backfilling with topsoil and vegetation may cause an increase in the supply of fibres and ornamental resources. In particular, the removal of the Lake Albert Water Abstraction Facility may mitigate impacts on snails used in shell collecting. Decommissioning of well-pads may encourage the re-establishment of grasses used to feed livestock and to make brooms and other household tools. However, the small area of land released by the removal of Project infrastructure, and uncertainty following the removal of Project components and the ownership of the land by the Government following Decommissioning means increases in the supply of fibres and ornamental resources are likely to be limited. Negligible magnitude of impacts therefore predicted.</p>	Negligible	Moderate	Low Beneficial

Ecosystem service	Potential impact during Decommissioning phase (pre-additional mitigation)	Impact Magnitude/likelihood	Receptor Sensitivity	Potential Impact Significance
Biochemicals/ Natural Medicines	<p>The removal of above ground Project infrastructure and backfilling with topsoil and vegetation may lead to an increase in the supply of medicinal plants and animals growing in the Study Area. In particular, medicinal plants will be able to grow on land released by the removal of Project infrastructure.</p> <p>The total area of land released by Decommissioning activities will be too small to cause a substantial increase in the supply of medicinal plants, and harvesting pressures are therefore unlikely to rise sharply. Negligible magnitude of impacts therefore predicted.</p>	Negligible	Low	Insignificant
Local and Global Climate Regulation	<p>Project activities at the Decommissioning phase will increase GHG emissions during activities. However, after decommissioning local and global climate regulation may be enhanced by re-opening land that was previously under Project infrastructure to vegetation growth. New vegetation may moderate local climate by influencing rainfall rates and retaining water during dry spells. However, the area of land released to vegetation by the removal of Project components is not large enough to cause a significant increase in the amount of vegetation. Furthermore, plants and trees are relatively slow-growing and it may take some time before they are well-enough established to affect climate regulation. The overall increase in vegetation will therefore cause only a negligible magnitude of impacts on local and global climate regulation.</p>	Negligible	Low	Insignificant
Hazard Regulation	<p>It is possible that the removal of above-ground Project infrastructure will allow native vegetation to re-colonise areas previously removed for Project activities. This new vegetation may contribute to hazard regulation by moderating surface water run-off or reducing topsoil erosion. However, these impacts are likely to be of limited magnitude given the small footprint of Project infrastructure and the moderate effect that new vegetation will have on hazard regulation across the wider Study Area. Indeed, the impact of new vegetation on hazard regulation services such as topsoil erosion is likely to be concentrated in small geographic areas and is therefore of localised and limited benefit. Negligible magnitude of impacts therefore predicted.</p>	Negligible	Low	Insignificant
Cultural and Spiritual Values	<p>Project activities at the Decommissioning phase may disturb sites of cultural and spiritual value through the production of noise, light and other nuisances. However, these impacts will be short-term and sporadic and will only last as long as the Decommissioning phase itself. In addition, it is likely that cultural and spiritual sites will have been under various kinds of disturbance during previous phases of the Project. It is possible that local people will have become accustomed to disturbances and that Decommissioning will therefore not impact the supply of cultural and spiritual values substantially. As a result, the significance of impacts from Decommissioning activities will be limited in scope and short-term in duration. Negligible magnitude of impacts therefore predicted.</p>	Negligible	Medium	Insignificant

Ecosystem service	Potential impact during Decommissioning phase (pre-additional mitigation)	Impact Magnitude/likelihood	Receptor Sensitivity	Potential Impact Significance
<p>Tourism and recreation values and wild species diversity</p>	<p>Decommissioning of Project infrastructure in the MFNP has the potential to lead to impacts on noise and landscape quality. This will lead to impacts on visitors' perceptions of the MFNP in terms of sense of place, aesthetic value and experience. Key impacts are likely to relate to the demolition of facilities and infrastructure, equipment and vehicle movements; and earthworks. Potential impacts are discussed in more detail in Chapter 7: Noise, Chapter 11: Landscape and Visual and Chapter 16: Social. However Project activities at the Decommissioning phase are likely to improve the long-term supply of tourism and recreational values and wild species diversity. In particular, the removal of above-ground Project infrastructure in MFNP may restore the National Park's reputation for remoteness or wildness, thus encouraging growing numbers of tourists to visit the area and increasing tourism revenue. Decommissioning will also end disturbances from Project operations on wildlife within the National Park. These impacts are likely to be long-term in duration and will benefit both tourists and local people employed in the tourism sector.</p>	<p>Moderate</p>	<p>High</p>	<p>Moderate Adverse</p>
<p>Scientific and Knowledge Values</p>	<p>The Study Area hosts a number of research initiatives, centred in particular around wild animal populations in MFNP and the Budongo Conservation Field Station. The Study Area is therefore well-studied and supplies scientific and knowledge values around the world. More generally, the changes that the Study Area will undergo as a result of Project activities are likely to be of ecological, anthropogenic, economic, historical and sociological interest, and the studies undertaken as part of oil infrastructure development will help improve knowledge of the region. Project activities are therefore unlikely to limit the provision of scientific and knowledge values; instead they are likely to increase them, irrespective of the activity and its particular impact.</p>	<p>High</p>	<p>Negligible</p>	<p>Moderate Beneficial</p>

19.8.8.1 Additional Mitigation and Residual Impact

In response to these impacts, the following additional mitigation measures are proposed for this phase of the project. It is intended that those mitigation measures will be flexible and that feedback on the success of mitigation measures will be reviewed in order to ensure that the mitigation objectives are actually achieved. These will also be reviewed closer to the decommissioning phase to ensure their adequacy in mitigating the potential impacts.

Table 19-22: Summary of assessment, additional mitigation measures during the Decommissioning phase and residual impact significance

Ecosystem Service	Impact Description	Potential Impact Significance	Mitigation Measures	Residual Impact Significance
Decommissioning				
Crop production	Changes in land tenure may limit small scale crop production. Beneficial impacts relating to re-opening of land for agriculture.	Low Beneficial	None proposed.	Low Beneficial
Livestock and fodder/ pastoralism	Beneficial impacts relating to re-opening of pasture grounds/	Low Beneficial	None proposed.	Low Beneficial
Capture fisheries	Disturbance of fish populations. Potential habitat loss or degradation if materials.	Low adverse	None proposed.	Low Adverse
Timber and woody biomass	Limited increases in timber and woody biomass. Shift in patterns of fuel use.	Low Beneficial	None proposed.	Low Beneficial
Wildfoods and bushmeat	Small increases to wild food availability due to re-colonisation.	Low Beneficial	None proposed.	Low Beneficial
Water (for drinking, supply and regulation)	Potential impacts on water quality.	Low adverse	None proposed.	Low Adverse
Fibres and Ornamental Resources	Small increases in the supply of these resources.	Low Beneficial	None proposed.	Low Beneficial
Biochemicals/Natural Medicines	Small increases in the supply of these resources.	Insignificant	None proposed.	Insignificant
Local and Global Climate Regulation	Increase of vegetation with carbon sequestration and carbon storage potential. New vegetation may influence rainfall rates and retain water.	Insignificant	None proposed.	Insignificant
Hazard Regulation	Increase in vegetation with a hazard regulation role.	Insignificant	None proposed.	Insignificant
Cultural and Spiritual	Disruption to specific	Insignificant	None proposed.	Insignificant

Ecosystem Service	Impact Description	Potential Significance	Mitigation Measures	Residual Impact Significance
Values	cultural/spiritual sites through decommissioning activities			
Tourism recreation and wild species diversity	Some impacts on noise and landscape quality as a result of decommissioning activities, affecting visitors' perceptions of the MFNP. Improvement of the long-term supply of tourism and recreation values and wild species diversity	Moderate adverse	<ul style="list-style-type: none"> A Tourism Management Plan will set out objectives and procedures for managing relationships with and working with key tourism stakeholders to minimise potential negative effects of the Project on tourism and maximising benefits. All contractors and sub-contractors will be required to follow the measures and procedures set out in the plan. Also see Chapter 7: Noise, Chapter 10: Landscape and Visual, Chapter 13: Terrestrial Vegetation, Chapter 14: Terrestrial Wildlife and Chapter 15: Aquatic Life for additional mitigation measures 	Low Adverse
Scientific Knowledge Values	Improved knowledge of the region due to changes in the area being of ecological, anthropogenic, economic, historical and sociological interest	Moderate Beneficial	None proposed.	Moderate Beneficial

19.9 Unplanned Events

Further details on unplanned events relevant to the Project are detailed in **Chapter 20: Unplanned Events**.

19.10 In-Combination Effects

As described in **Chapter 4: Project Description and Alternatives**, the Project has a number of supporting and associated facilities that are being developed separately (i.e. they are subject to separate permitting processes and separate ESIA or EIAs). These facilities include:

- Tilenga Feeder Pipeline;
- East Africa Crude Oil Export Pipeline (EACOP);
- Waste management storage and treatment facilities for the Project;
- 132 kV Transmission Line from Tilenga CPF to Kabaale Industrial Park; and
- Critical oil roads.

As these facilities are directly linked to the Project and would not be constructed or expanded if the Project did not exist, there is a need to consider the in-combination impacts of the Project and the supporting and associated facilities. This is distinct from the Cumulative Impact Assessment (CIA) which consider all defined major developments identified within the Project's Area of Influence (and not just the associated facilities) following a specific methodology which is focussed on priority Valued Environmental and Social Components (VECs) (see **Chapter 21: Cumulative Impact Assessment**).

The in-combination impact assessment considers the joint impacts of both the Project and the supporting and associated facilities. The approach to the assessment of in-combination impacts is presented in **Chapter 3: ESIA Methodology**, Section 3.3.5.

Seven Ecosystem Services identified within Table 19-23 are predicted to have the potential for their impacts to be exacerbated when considering in-combination effects with supporting and associated facilities. A comment is provided on the potential in-combination impacts, the ecosystem services affected, and the need for additional collaborative mitigation between Project Proponents to address these impacts.

Table 19-23: In-Combination Effects

Ecosystem Service	Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
Crop production	Loss of land for crop production	Displacement for supporting infrastructure and associated facilities will further reduce availability of replacement land for crop production
Livestock and fodder/pastoralism	Impacts on movement of livestock and their herders and loss of grazing land.	Displacement for supporting infrastructure and associated facilities will further reduce availability of replacement land for livestock/pastoralism and lead to additional impacts on movement of livestock and their herders across the Study Area.
Capture fisheries	Increased demand for fisheries products. Over fishing in Lake Albert from in-migration and indirect and induced population growth.	Influx into the region will be exacerbated due to in-migration related to development of supporting infrastructure and associated facilities. This will contribute to potential effects through increasing the demand for fisheries products and increasing the number of individuals engaged in the procurement of these goods. Main roads will be upgraded for the Project including the R1 linking Buliisa to Hoima; R2 from Masindi to Biso; R3 linking Masindi to Bugungu; R4 from Hoima to Masindi; and R5 from Kigumba to Masindi. The improved road network will enhance

Ecosystem Service	Description of Potential Impact of the Project	Comment on Potential in-combination effects with associated facilities
		access to markets for fisheries products. This will reduce the cost of these products and increase their availability, stimulating demand.
Timber and woody biomass	Increased collection and demand for timber and woody biomass	<p>Main roads will be upgraded for the Project including the R1 linking Buliisa to Hoima; R2 from Masindi to Bisio; R3 linking Masindi to Bugungu; R4 from Hoima to Masindi; and R5 from Kigumba to Masindi.</p> <p>The improved road network will improve access into and out of the Project Area. This will improve access to areas previously less accessible for the collection of timber, woody biomass, with associated impacts on the key ecosystems which provide these goods.</p> <p>In-combination effects on population growth have the potential to increase the demand for timber products for buildings materials and other uses.</p>
Wildfoods and bushmeat	<p>Over-exploitation of game animals</p> <p>Reduction in species diversity</p>	<p>Influx into the region will be exacerbated due to in-migration related to development of supporting infrastructure and associated facilities. This has the potential to contribute to an increase in subsistence and commercial hunting, including both to meet basic needs and/or to generate a monetary income. This will take place due to a combination of an increase in the overall number of people engaged in hunting, supported by an increase in demand for bushmeat from an enlarged population and increased incomes.</p> <p>Main roads will be upgraded for the Project including the R1 linking Buliisa to Hoima; R2 from Masindi to Bisio; R3 linking Masindi to Bugungu; R4 from Hoima to Masindi; and R5 from Kigumba to Masindi. The improved road network will enhance access to markets for bushmeat and wildfood products. This will reduce the cost of these products and increase their availability, stimulating demand.</p>
Biochemicals/ Natural Medicines	<p>Direct impacts on biochemicals/ natural medicines from impacts on source ecosystems.</p> <p>Direct impacts on fibres and ornamental resources on source ecosystems</p>	<p>Site preparation and construction of the associated and supporting facilities could impact directly on Protected Areas and forests, leading to habitat loss and degradation. This has the potential to impact on the loss of key habitats supporting these ecosystem services.</p> <p>The areas most at risk include the southern part of MFPA, Bugungu Wildlife Reserve, Budongo Central Forest Reserve and other Forest Reserves in the Masindi Area.</p>
Tourism and recreation values and wild species diversity	Impact on tourism and recreational value.	<p>Site preparation and construction of associated and supporting facilities will lead to a further increase in vehicles on roads (e.g. on road R3) and increase disturbance (visual, artificial lighting, noise, vibration). This could impact on the integrity of the Protected Areas. The effects of the Project will therefore be exacerbated in areas where these activities occur in similar locations. This may have impacts on the ecosystem services provided by these areas in relation to tourism and recreational value. The areas most at risk include the southern part of MFPA, Bugungu Wildlife Reserve, Budongo Central Forest Reserve, and other Forest Reserves in the Masindi Area.</p>

Additional collaborative mitigation measures to help reduce any adverse in-combination effects include:

- Project Proponents will invite other developers to participate in joint planning initiatives with local government and other relevant stakeholders, and will continue to share best practices to allow other developers to learn from successful implementation of mitigation measures for the Project;
- The Project Proponents will invite other developers, local and national government and other relevant stakeholders to participate in joint planning initiatives to address influx. Feasibility of jointly sponsoring a regional level Influx Management Strategy will be assessed;
- Lessons learned from education and skills training and capacity building programmes will be shared with other developers. Where feasible, other developers will be invited to invest expertise or resources in the joint implementation of these programmes;
- The Project Proponents will invite other developers, local and national government and other relevant stakeholders to participate in joint planning of the mitigation concepts for dealing with likely residual indirect impacts on terrestrial and aquatic habitats and species (as presented in section 14.8.2 Chapter 14: Terrestrial wildlife); and
- Strategic collaboration platforms will be established with local and regional authorities, UWA, NFA development and conservation NGOs and other stakeholders as appropriate to regularly evaluate and review the extent of impacts, share understanding of causes and identify adapted or additional mitigation requirements.

19.11 Cumulative Impact Assessment

Chapter 21: Cumulative Impact Assessment provides an assessment of the potential cumulative effects of the Project together with other defined developments in the Project AOI. The CIA has focussed on VECs that were selected on the basis of set criteria including the significance of the effects of the Project, the relationship between the Project and other developments, stakeholder opinions and the status of the VEC (with priority given to those which are of regional concern because they are poor or declining condition).

On the basis of the selection process, six relevant VECs (Nature-based Tourism in Protected Areas, Sustainable Woodland, Bushmeat, Lake Albert Capture Fisheries, Open-Access Grazing Land and Access to Safe Drinking Water Resources) were considered to be priority VECs in relation to ecosystem services and are considered further in the CIA.

19.12 Conclusions

Impact assessment criteria were developed and utilised for assessing the potential impacts to ecosystem services from the Site Preparation and Enabling Works, Construction and Pre-Commissioning, Commissioning and Operations; and Decommissioning phases of the Project, and include impact magnitude and receptor sensitivity. The assessment of impacts has been undertaken by identifying and evaluating a range of activities and scenarios that could occur throughout the four phases of the Project.

Tables 19-16, Table 19-18, Table 19-20 and Table 19-22 provide a summary of the residual impacts anticipated during the four phases of the Project. These take into account embedded and additional mitigation measures.

The assessment assumes that the embedded and additional mitigation will be successful in achieving its objectives for potential direct and indirect impacts. As such residual impacts related to the majority of the ecosystems services assessed are considered not to be significant. Significant adverse residual impacts have however been identified for the Tourism, Recreation Values and Wild Species ecosystem service and the Capture Fisheries ecosystem service.

In relation to the Tourism, Recreational Values and Wild Species Diversity ecosystem service, these relate to potential direct and indirect impacts to the MFNP's reputation for remoteness and wildness, the potential loss or degradation of habitats and increased commercial hunting of key 'flagship' species. With regard to the Capture Fisheries ecosystem service, potentially significant impacts largely relate to increased demand for fisheries products, over fishing in Lake Albert and an

associated reduction in species diversity and catch size. These are as a result of potential indirect impacts caused by pressures relating to induced population growth and in-migration to the Study Area as a result of Project activities.

A Moderate beneficial impact across all phases of the Project is anticipated in relation to the Scientific and Knowledge Values as information is gathered as a result of greater scrutiny and monitoring of all priority ecosystems identified within the Project Area.

Overall, it is considered that the indirect impacts are likely to be more significant than the direct impacts identified and harder to mitigate. However, if the implementation of mitigation strategies addressing indirect impacts is successful, pressures on the key ecosystems supporting these ecosystem services are likely to be less significant. There will however need to be monitoring of the success of mitigation strategies undertaken to ensure that interventions remain effective.

It should also be noted that the Project has a commitment to achieving No Net Loss (NNL)/ Net Gain (NG) in key biodiversity values. These provisions have been discussed in more detail in **Chapter 13: Terrestrial Vegetation**, **Chapter 14: Terrestrial Wildlife**, and **Chapter 15: Aquatic Life**.

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