Gove-Chipindo-Cuvango-Jamba Transmission Line Project, Angola:

Volume 6: Addendum to the Environmental and Social Impact Assessment

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RNT & PAK YATIRIM

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Project Naming Clarification:
The Gove-Chipindo-Cuvango-Jamba Transmission Line Project was referred to as the Cassinga Electrical Power Supply Project during the ESIA process and stakeholder engagement.

Gove-Chipindo-Cuvango-Jamba Transmission Line Project, Angola –

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Executive Summary

The Gove-Chipindo-Cuvango-Jamba Transmission Line Project (*referred to as the Cassinga Electrical Power Supply Project during the ESIA process and stakeholder engagement*) (the Project) involves the construction and operation of a 220 kV overhead transmission line (OHTL) stretching 170 km through Huíla and Huambo provinces in Angola. This Addendum to the Environmental and Social Impact Assessment (ESIA) provides updates, clarifications, and additional measures based on the Independent Environmental and Social Consultant (IESC) review and feedback. It ensures alignment with Angolan legal requirements, International Finance Corporation (IFC) Performance Standards, and other applicable good international industry practice.

The Project addresses key environmental and social risks and impacts across its lifecycle – construction, operation, and decommissioning phases. These include management of wastes, cumulative impacts, natural resource consumption, social considerations for affected communities, including Indigenous Peoples (San).

Key management updates include improved waste management strategies such as proactive waste reduction measures, hazardous waste oversight, and improved monitoring protocols. The Waste Management Plan (WMP) now links to the Emergency Preparedness and Response Plan (EPRP) to ensure comprehensive integrated measures for addressing waste spills or leaks. Enhanced monitoring and reporting processes include performance indicators (KPIs), regular audits, and reporting requirements to track and improve waste handling performance.

For cumulative impacts, the Addendum recognises the collective responsibility of stakeholders, including contractors, authorities, and local communities to address shared environmental and social impacts. Adaptive management frameworks ensure flexibility to address evolving challenges like deforestation rates and water resource pressures.

Additionally, the Addendum strengthens engagement with stakeholders through links to the Stakeholder Engagement Plan (SEP), which facilitates clear communication of the Project's impacts and mitigation measures to affected communities. Measures for ongoing consultations, feedback mechanisms, and public awareness programmes aim to build trust and transparency throughout the Project lifecycle.

The Addendum includes updates under IFC PS6 on Biodiversity Conservation. The Critical Habitat (CH) Assessment acknowledges that while definitive CH presence cannot be confirmed at this stage, the Miombo, Secondary Miombo Woodland and Freshwater Habitats are precautionarily listed as Critical Habitat due to limited site-specific data and the region being largely unstudied. As a result, a Biodiversity Action Plan (BAP) is not required at this stage; however, future pre-construction monitoring studies and walkdowns will be undertaken to gather additional data and reassess CH status. In line with IFC PS6 requirements, the Project has implemented a Biodiversity Management Plan (BMP) and a No Net Loss (NNL) Strategy Framework to mitigate biodiversity risks, guide conservation actions, and ensure appropriate habitat management and potential offsetting, if required.

The Addendum introduces a Continuous Improvement section, ensuring the WMP and broader ESIA frameworks remain dynamic and responsive. Feedback mechanisms, periodic reviews, and education programmes support ongoing refinement of management practices while fostering environmental stewardship within the Project's area of influence (AoI).

In conclusion, the Addendum reinforces the Project's commitment to environmental and social sustainability through enhanced management measures, stakeholder engagement, and adaptive frameworks, ensuring compliance with applicable national legislation and international standards while minimising impacts on communities and ecosystems.

The Addendum should be applied in conjunction with Volume 1 of the ESIA and the management plans and measures presented in Volume 2 of the ESIA.

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List of Abbreviations

AoI	Area of Influence
ASM	Artisanal and Small-scale Mining
BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan
CH	Critical Habitat
CHSS	Community Health, Safety and Security
CIA	Cumulative Impact Assessment
EAAA	Ecologically Appropriate Area of Assessment
EHS	Environmental, Health, and Safety
EP4	Equator Principles 4
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
HIV	Human Immunodeficiency Virus
IDPs	Internally Displaced People
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
IMF	Influx Management Plan
IMF	Influx Management Framework
IP	Indigenous People
IUCN	International Union for Conservation of Nature
KPI	Key Performance Indicator
MARA	Major Accidents Risk Assessment
MPs	Measurement Points
OHTL	Overhead Transmission Line
PCB	Polychlorinated Biphenyl
PIIM	Project-Induced In-Migration
POP	Persistent Organic Pollutant
PS	Performance Standard
RDL	Red Data List
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SEP	Stakeholder Engagement Plan
SRK	SRK Consulting South Africa (Pty) Ltd
VEC	Valued Environmental and Social Components
VOCs	Volatile Organic Compounds
WMP	Waste Management Plan

1 Introduction and scope of report

This Addendum to the ESIA for the Gove-Chipindo-Cuvango-Jamba Transmission Line Project (*referred to as the Cassinga Electrical Power Supply Project during the ESIA process and stakeholder engagement*) (the Project) addresses updates and clarifications based on the Independent Environmental and Social Consultant's (IESC) feedback and additional considerations that have arisen post the finalisation of the revised ESIA, dated 25 October 2024 (Rev 1).

The Addendum presents supplementary information to ensure alignment with Angolan legal requirements, applicable lender standards and guidelines, and good international industry practice (GIIP), including the IFC Performance Standards on Environmental and Social Sustainability.

The ESIA dated 25 October 2024 (Rev 1) remains valid, and this Addendum should be read in conjunction with it to fully understand the environmental and social management requirements and commitments of the Project.

2 Background and Brief

2.1 Background of the project

The Project involves the construction and operation of a 220 kV overhead transmission line (OHTL) extending 170 km through Huíla and Huambo provinces, including substations and other infrastructure. The Project is designed to enhance regional electricity distribution, supporting local communities and economic development. The comprehensive overview of the Project is provided in Section 2 of the ESIA.

2.2 Purpose of the addendum

The Addendum aims to address the following:

- Supplementary analysis and mitigation measures for impacts identified during the ESIA;
- Additional clarification to ensure the ESIA reflects current understanding and GIIP for environmental and social management; and
- Updates to management plans or framework plans to enhance effectiveness and align with lender requirements.

3 Addendum Items: Environmental and Social Management Updates

The sections presented below provide supplementary information and clarifications to specific aspects of the Project identified through the IESC review. These updates are intended to enhance the Project's alignment with Angolan legal requirements and applicable lender standards.

For ease of reference, the additional information is presented in relation to each IFC Performance Standard, noting the specific PS and requirement as referenced by the IESC.

3.1 PS1 – ES4: Social baseline relating to migration

3.1.1 Migration in Angola

The three decades of civil war that ended in 2002 forced around 4 million people to flee, both within Angola and across its borders (IOM, 2006). In the post-conflict period, millions of Angolan refugees have returned, and internally displaced populations have been resettled. After the 30-year civil war, the Angolan government attempted to rebuild the country's economic infrastructure and the lives of its citizens whose socio-cultural livelihood was destroyed during the conflict (Carciotto, 2014).

However, since the cessation of hostilities between MPLA and UNITA forces in 2002, Angola has been grappling with the challenge of reintegrating internally displaced people (IDPs) and former refugees returning from exile in Namibia, Zambia, the Democratic Republic of Congo, Botswana and South Africa since 2003 (Carciotto, 2014; UNHCR, 2024). The country continues to experience substantial movements of people, driven by various socio-economic and political factors. Besides the internally displaced and returning Angolan war refugees, Angola is also witnessing an influx of both domestic and international economic migrants, attracted by the country's improving economic and political situation.

This situation presents challenges (and opportunities) for the communities where migrants originate, the communities that host them, the migrants themselves, Angolan policymakers and stakeholder organisations.

3.1.2 In-migration trends in Angolan development projects

Reliable data on migration trends in Angola are limited as a result of:

- The civil war and the fact that it has not been possible to collect sound scientific information;
- Limited capacity of national authorities to collect and manage information; and
- The often-undocumented nature of many migrants and mobile workers.

This has prevented researchers from conducting comprehensive and scientifically accurate studies on mobility in the country, much less the project area (Martins Almeida, 2010). As a result, analysing, updating and disseminating information about internal and international migration is inconsistent (Lopes, 2013).

However, certain sectors are likely to employ migrant workers in any country, whether internal or cross-border migrants. The sectors or types of work that involve substantial numbers of mobile and migrant workers, and that are directly and indirectly linked to this project include construction, transport (truck drivers), mining, domestic work, agriculture, uniformed services (military and security workers), informal trade, fishing, and commercial sex (IOM, 2006). Displaced populations and repatriated refugees are also impacted.

Government efforts to rebuild Angola through large-scale public infrastructure have driven significant growth in the construction industry since 2005. It is during the construction phase that the effects of large-scale development projects are mostly felt. Typically, migrant workers and host communities are affected by repatriation issues, safety and health concerns, power imbalances and competition for opportunities.

When refugees return to Angola from neighbouring countries, they struggle to secure employment (IFC, 2009). In many cases, these cross-border economic migrants do not have proof of Angolan citizenship as they may have been born in the country to which their parents fled.

In terms of health, the civil war inhibited the spread of Human Immunodeficiency Virus (HIV) by making large portions of the country inaccessible. The reopening of transportation routes and communication has enabled the spread of HIV (IOM, 2006). When development projects are located in remote, impoverished areas, poor women in particular may engage in transactional or commercial sex with construction workers. Construction workers, having disposable income, may encourage such behaviour. Moreover, the isolation of these sites can result in weak community ties, diminishing social cohesion and norms that regulate behaviour, which can foster risky sexual practices.

Construction workers typically live in single-sex hostels, with no option to bring their families or partners. Additionally, limited home leave further separates them from their partners. This separation can lead some workers to form multiple relationships, increasing the potential for HIV transmission. With few recreational activities or entertainment options at construction sites, workers often

experience boredom, loneliness, and isolation. Detached from traditional social support systems and norms, these conditions can lead to neglecting health considerations. The availability of commercial sex may also serve as a temporary outlet for emotional and sexual needs. Construction workers face daily physical risks and dangerous working environments. Due to the immediate challenges they face, such as the threat of injury, they may perceive communicable diseases as a distant concern, leading to a lack of attention to preventive health measures (IOM, 2006).

Sex workers often face challenges associated with illiteracy and a lack of information on the health and safety risks of their work. They usually are impoverished and without financial resources, making them more likely to adopt risky behaviour. Although these workers often use sex to obtain money, food or protection they are stigmatised and marginalised. Construction workers, truck drivers, and maintenance officials whose work is mobile often face matrimonial instability and absence from homes with opportunities for many sexual partners. Like sex workers, these groups may have little knowledge about the risks of contracting HIV infection without protection, experience difficulties accessing condoms or be unaware of the real risks faced by engaging multiple partners. Having the financial power to pay for sex, they can facilitate the transmission of communicable diseases from one region of the country to another. Uniformed workers experience and perpetuate the same risks as mobile workers but could use their authority to induce or force sexual relationships. Some uniformed workers may also be adventurous but inexperienced and naïve.

There is the possibility that the Project will lead to an influx of international migrant workers. This could also be the result of bilateral agreements between countries that are partnering on the Project. For instance, Chinese migrants to Africa include temporary labour migrants linked to public building works and large infrastructure development projects, small-time entrepreneurs, transit migrants and agricultural workers. According to the Chinese Chamber of Commerce, more than 500 Chinese companies operate in Angola, and Chinese immigrants are estimated between 100 000 and 260 000 – mainly employed in post-war reconstruction (infrastructure) activities (CEDOC, 2014). Angola also has a substantial community of Portuguese nationals, with a total of €304 328 million flowing out of Angola to Portugal as remittances in 2014 (Carciotto, 2014).

The government has indicated that over one million unauthorised migrants live in Angola, although it is difficult to quantify exactly (MIDSA, 2013). This is encouraged by the expansion of the Angolan economy, widespread investment in development projects, and artisanal and small-scale diamond mining, exacerbated by under-resourced border control efforts, especially between individuals of the same ethnic group (Carciotto, 2014). Unauthorised migrants may seek work and take advantage of influx resulting from large-scale construction projects.

Unauthorised migration is also linked to human trafficking. It is common for women, children, young boys, and men to be trafficked both within Angola and across its borders for various exploitative jobs in sectors such as agriculture, construction, domestic work, and artisanal diamond mining (US Department of State, 2024). Domestically, traffickers lure impoverished families with promises of material and financial benefits in exchange for women and men working in primary sectors of the economy (Carciotto, 2014). Unaccompanied children in urban areas are especially at risk of being trafficked, more so in the presence of migrants present as a result of an extensive project.

Angola is experiencing an high rate of urbanisation of 69% (UNDP, 2024) and population growth rates of 3.03% in 2023 (Trading Economics, 2024). Numerous IDPs and economically driven migrants have moved and are moving into urban areas looking for security and income-generating opportunities. The three urban areas to benefit from this Project, namely Jamba, Cuvango and Chipindo, may experience influx for these reasons, adding to the cumulative impact of project-induced migration.

3.1.3 Influx management framework

Purpose and Objectives

The Influx Management Plan (IMP) for the Project should be designed to address and manage the challenges posed by project-induced in-migration (PIIM) during the construction and operation of the 220 kV transmission line. The objectives of the IMP would be to:

- Prevent or minimise the adverse social, environmental, and health impacts associated with in-migration;
- Enhance benefits such as skills transfer, employment opportunities, and infrastructure improvement;
- Ensure compliance and alignment with Angolan legislation, IFC Performance Standards (PS1, PS2, and PS4), and GIIP; and
- Integrate influx management into broader environmental and social management systems.

To achieve the objectives of the IMP, an Influx Management Framework (IMF) has been developed as a guide and is presented below.

Principles underpinning the Influx Management Framework

The principles underpinning the IMF are designed to ensure effective and sustainable management of in-migration impacts and relate to integration, stakeholder engagement, proportionality and transparency.

Integration is a central feature and involves aligning influx management strategies with the Project's ESMP, SEP, Community Health, Safety and Security, and Labour Management Plans to maintain coherence across all initiatives. Equally important is stakeholder engagement, which prioritises the active involvement of local communities, government authorities, and civil society in both the development and implementation of the IMF, promoting collaboration and shared ownership of the process.

The IMF also upholds proportionality, adopting interventions to match the scale and specific impacts of PIIM at different phases of the project. Transparency is a key principle, ensuring that objectives, planned actions, and expectations are communicated clearly and openly to all stakeholders, building trust and accountability throughout the project lifecycle. These principles collectively promote a balanced and inclusive approach to managing PIIM while supporting sustainable development.

Key components of the IMF

Table 3-1 summarises the key elements of the IMP. It outlines the primary categories of action, associated measures, and their intended outcomes to ensure effective management of PIIM.

Table 3-1: Components of the IMF

Category	Actions and measures	Key outcomes
Stakeholder engagement and monitoring	• Integration with the SEP to promote dialogue and manage expectations regarding employment, land access, and services. • Monitor population movements and social dynamics in project areas to adaptively manage PIIM.	Improved trust and collaboration with stakeholders; better management of PIIM and social dynamics.
Workforce and recruitment management	• Implement preferential hiring policies to benefit local communities, reducing speculative migration. • Develop codes of conduct for workers and subcontractors to ensure respectful community interactions and mitigate risks	Increased local employment opportunities; reduced conflicts and health risks.

Category	Actions and measures	Key outcomes
	like communicable diseases and social tensions.	
Infrastructure and services planning	• Provide access/information on available housing, healthcare, and sanitation to workers to prevent informal settlements and reduce stress on local infrastructure. • Collaborate with local authorities on the anticipated PIIM.	Improved living standards for workers; reduced strain on local infrastructure and services.
Community health and safety	• Conduct awareness campaigns on public health, including communicable disease prevention (link to EHS plan). • Integrate with the grievance mechanism to address community concerns promptly.	Better public health outcomes; timely resolution of community grievances.
Economic and social development	• Promote local procurement and small-business development to build economic resilience in host communities. • Support vocational training to prepare the local workforce for long-term employment opportunities.	Strengthened local economy; enhanced workforce skills and long-term employment prospects.

Implementation arrangements

Effective implementation of the IMF requires clear roles, responsibilities, and a collaborative approach involving project stakeholders. This section outlines the operational structure and partnerships necessary to deliver on the framework's objectives, ensuring its seamless integration into broader project plans.

Project management responsibilities

A dedicated Influx Management Coordinator should be appointed to oversee the day-to-day execution of the IMF. This individual will act as the central point of coordination between project teams, community representatives, and other stakeholders. Key responsibilities include:

1. The coordinator will ensure that influx management activities are aligned with the ESMP and complementary plans such as the SEP, EHS Training and Awareness Plan, Labour Management Plan and Community Health, Safety and Security (CHSS) management plan. This integration ensures a unified approach to environmental and social management.
2. The coordinator will lead the development and implementation of monitoring systems to track PIIM-related dynamics, including population influx, pressure on infrastructure, and social tensions. Insights from monitoring will inform regular updates to the IMP, enabling the project to respond proactively to emerging challenges.
3. Internal project teams will receive training on influx management principles and practices, ensuring that all personnel involved in implementation are adequately prepared to execute their roles effectively.
4. Regular reports on the status and outcomes of influx management measures will be prepared and shared with key stakeholders, including project leadership, lenders, and community representatives.

Collaboration with stakeholders

Given the complex and multi-dimensional nature of project-induced in-migration, collaboration with stakeholders is vital for achieving effective and sustainable outcomes. The implementation of the

IMP should consider establishing partnerships and engaging key stakeholders through the following approaches:

1. Engaging government authorities involving
    - Work with municipal and provincial governments to align influx management strategies with public infrastructure and service planning. This collaboration will help address cumulative regional impacts and support the development of sustainable solutions.
    - Consultation with relevant national agencies to align influx management efforts with broader national development goals and policies, such as land-use planning and health services.
2. Partnering with non-governmental organisations (NGOs) and community leaders involving
    - Collaboration with NGOs specialising in community development, public health, and environmental management to co-develop and implement targeted interventions.
    - Inclusion of traditional and local community leaders to ensure culturally appropriate measures, secure local buy-in, and leverage existing community structures for outreach and engagement.
3. Public-Private Partnerships should be explored to determine opportunities to mobilise resources for infrastructure development, such as water, sanitation, and healthcare facilities. Such partnerships can amplify the reach and impact of influx management measures.
4. Regional coordination and collaboration with other projects and industries should be considered to address shared influx-related challenges. This includes co-developing regional action plans and advocating for increased investment in regional infrastructure and social services.

Monitoring and evaluation

Monitoring and evaluation are a critical aspect of the IMP, ensuring that the project adapts effectively to dynamic conditions and addresses both anticipated and unforeseen impacts of PIIM. An effective monitoring and evaluation system provides the data and insights needed to assess the efficacy of influx management measures and refine strategies over time. Table 3-2 presents some of the key aspects to be considered in the development of an IMP in terms of monitoring and evaluation.

Table 3-2: Key monitoring and evaluation considerations

Aspect	Details
Development of indicators	• Track population size, migration trends, and settlement growth. • Monitor employment rates, training program participation, and satisfaction with project benefits. • Measure communicable disease rates and safety incidents. • Evaluate usage of healthcare, water, sanitation, and public services strain.
Data collection methods	• Use surveys, focus groups, and interviews to gather insights. • Monitor settlement growth and infrastructure usage with satellite imagery and site visits. • Partner with providers to track trends and service demands. • Analyse PIIM data for recurring or emerging issues.
Periodic evaluations	• Conduct evaluations at milestones (e.g., post-construction, annual reviews) • Compare outcomes with baseline data and indicators. • Assess effectiveness and relevance of measures. • Identify gaps, challenges, or unintended consequences. • Collect stakeholder feedback from communities, authorities, and project teams.

3.2 PS1 – ES6: Major accidents risk assessment (MARA)

The MARA evaluates the Project's vulnerability to major accidents arising from hazards such as natural disasters, fire, electrical incidents, and the transportation of hazardous materials. While it

draws on the impact assessment methodology described in Section 6.3.2 of the ESIA, it focuses on assessing the risks associated with major accidents.

The MARA builds on the information presented in Section 6.10.3 of the ESIA and ensures compliance with IFC PS1 and Equator Principles 4 (EP4). It complements the ESIA by identifying potential hazards, evaluating associated risks, and assessing their likelihood and severity. Additionally, it proposes targeted mitigation measures to prevent, manage, or respond to these risks which have been incorporated into the ESMP and relevant plans (Volume 2). By applying a structured risk evaluation framework, the MARA enhances the Project's resilience and safety throughout its lifecycle.

3.2.1 Baseline conditions

The Project faces significant risks due to limited infrastructure resilience and evolving climate-related vulnerabilities. Natural hazards (e.g., floods, landslides), risks from bushfires, electrical infrastructure challenges, and hazardous materials transportation and handling are critical areas of concern. Project employees, local communities and ecosystems may face long-term impacts without effective mitigation.

3.2.2 Major accident scenarios

A major accident scenario for the Project involves events that could lead to severe consequences for human safety, environmental damage or disruption of service. A number of scenarios have been identified, drawing from Section 6.10.3 of Volume 1 of the ESIA and are presented below.

- Natural disasters, notably:
    - Flooding of substations and infrastructure; and
    - Landslides affecting transmission lines.
- Fire hazards, notably:
    - Equipment malfunction leading to fires; and
    - Vegetation fires near powerlines.
- Electrical hazards, notably:
    - Worker electrocution during maintenance; and
    - Arc flash incidents at substations.
- Transportation and handling of hazardous materials, notably:
    - Spills of insulating oil during transit; and
    - Chemical leaks affecting soil and water quality.
- Disruption of service, notably:
    - Power outage affecting residential and industrial users and processes; and
    - Power outage impacting lifesaving healthcare procedures.

The assessed risks associated with the scenarios above are presented in Table 3-3 to Table 3-8.

3.2.3 Major Accident Risk Assessment (MARA)

Table 3-3: MARA for natural disasters – Flooding (construction and operation phase)

Major hazard: Natural disasters – flooding								
Major accident risk: Flooding of substations and infrastructure								
Project phase: Construction and operation								
ND1 – Major Accident Risk Summary: Flooding disrupting construction activities, substation operations, causing electrical outages and contamination from transformer oils								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Long term*	*Local*	***High***	*Likely*	***High***	*-*	*Medium*
Management Measures: *1. Ensure proper site drainage during land clearing and construction activities to prevent localised flooding;* *2. Conduct regular inspections to identify water accumulation near construction areas;* *3. Store construction materials on elevated platforms to minimise water damage;* *4. Install appropriately designed drainage systems and flood barriers at substations;* *5. Ensure substations have an appropriate foundation and use flood-resistant materials in design; and* *6. Ensure the Emergency Preparedness and Response Plan (EPRP) addresses flooding scenarios.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*High*

Table 3-4: MARA for natural disasters – Landslides (construction and operation phase)

Major hazard: Natural disasters – landslides								
Major accident risk: Damage to infrastructure and risks to communities from landslides								
Project phase: Construction and operation								
ND2 – Major Accident Risk Summary: Landslides caused by unstable slopes near infrastructure, leading to damage to transmission lines and safety risks to workers and communities								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Long term*	*Regional*	***High***	*Possible*	***Medium***	*-*	*Medium*
Management Measures: *1. Conduct detailed geotechnical assessments of slopes near project infrastructure;* *2. Reinforce high-risk areas using appropriate engineering solutions (e.g., retaining walls, slope stabilisation);* *3. Regularly monitor slopes for early signs of instability using geotechnical instruments; and* *4. Develop an emergency evacuation plan for nearby communities.*								
After Management	*Minor*	*Short term*	*Local*	***Low***	*Unlikely*	***Low***	*-*	*High*

Table 3-5: MARA for fire risks (Operation phase)

Major hazard: Fire hazards								
Major accident risk: Equipment or bushfires near powerlines								
Project phase: Operation								
FR1 – Major Accident Risk Summary: Fires damaging infrastructure and posing safety risks to workers and communities								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*High*	*Medium term*	*Regional*	***High***	*Likely*	***High***	-	*Medium*
Management Measures: *1. Maintain vegetation clearance near powerlines and substations;* *2. Install firebreaks around critical infrastructure; and* *3. Provide fire safety training for workers and strategically placed fire-fighting equipment (e.g. fire extinguishers).*								
After Management	*Moderate*	*Short term*	*Site*	***Medium***	*Unlikely*	***Low***	-	*High*

Table 3-6: MARA for electrical hazards – Electrocution risks (Operation phase)

Major hazard: Electrical hazards								
Major accident risk: Electrocution incidents during maintenance								
Project phase: Operation								
ER1 – Major Accident Risk Summary: Workers face risks of electrocution without adequate safety measures								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*High*	*Short term*	*Local*	***High***	*Possible*	***Medium***	*-*	*Medium*
Management Measures: *1. Provide regular electrical safety training, emphasising PPE and lockout/tagout protocols;* *2. Conduct routine maintenance of electrical infrastructure to prevent hazards; and* *3. Implement OHS management and emergency response plans for electrical incidents.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*High*

Table 3-7: MARA for hazardous material transport and handling – Spills (Operation and decommissioning phase)

Major hazard: Hazardous material transport								
Major accident risk: Spillage of insulating oil during transport and handling								
Project phase: Operation and decommissioning								
SR1 – Major Accident Risk Summary: Spills contaminating soil and water resources, posing risks to ecosystem functioning, agriculture and community health								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Long term*	*Regional*	***Medium***	*Possible*	***Medium***	*-*	*Medium*
Management Measures: *1. Use certified contractors and secure containers for hazardous material transport and handling;* *2. Inspect vehicles and packaging before transportation; and* *3. Develop a spill response plan with containment and communication protocols.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*Medium*

Table 3-8: MARA for disruption of service (Operation phase)

Major hazard: Disruption of service								
Major accident risk: Power outages affecting critical services such as residential, industrial, and healthcare facilities								
Project phase: Operation								
DS1 – Power outages disrupting residential and industrial processes, including critical healthcare procedures, resulting in economic losses and risks to human health								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*High*	*Medium term*	*Regional*	***High***	*Likely*	***High***	*-*	*Medium*
Management Measures: *1. Implement a preventative maintenance program for substations and transmission infrastructure to minimise failures;* *2. Develop and maintain an emergency response plan specifically addressing power outages, including backup power solutions for critical facilities;* *3. Ensure redundant power supply systems (e.g., emergency generators or alternate grids) for healthcare and industrial operations;* *4. Establish clear communication protocols with affected communities and key stakeholders during service disruptions; and* *5. Conduct periodic system reliability audits and simulations to assess infrastructure resilience under emergency scenarios.*								
After Management	*Moderate*	*Short term*	*Local*	***Medium***	*Unlikely*	***Low***	*-*	*High*

3.3 PS1 – ES7: Waste management impacts

3.3.1 Baseline conditions

The Project area lacks adequate waste management infrastructure, including facilities for the segregation, storage, and disposal of hazardous and non-hazardous waste. Communities in the region rely on informal practices such as open dumping and burning, which pose risks to soil, water, and air quality, particularly in areas with poor regulatory oversight or enforcement. This situation necessitates reliance on certified waste disposal services located in urban centers like Huambo and Luanda. Without mitigation, the limited capacity for waste management could lead to increased soil and water contamination, air pollution, and habitat degradation during construction and operational phases. A detailed overview of waste management conditions is provided in Section 2.9 of the ESIA.

3.3.2 Impact identification

Key potential impacts of the Project on waste management capacity include:

- Soil and water contamination due to improper disposal, storage, or transport of hazardous materials, including hydrocarbons and solvents, which can leach into groundwater and affect community water supplies;
- Accumulation of construction waste leading to localised habitat degradation and visual pollution;
- Air quality impacts arising from informal burning of waste, contributing to respiratory health risks for workers and nearby communities; and
- Logistical and operational challenges in managing increased quantities of organic, solid, and hazardous waste generated during construction and operations.

3.3.3 Impact description

The absence of adequate waste management infrastructure in the Project area poses a significant concern, as Project activities may further exacerbate the burden on local systems. Given the reliance on informal practices, such as open dumping and burning, the additional waste generated during construction and operation phases could overwhelm the limited capacity for proper waste segregation, storage, and disposal. Without intervention, this situation may heighten environmental risks, including soil and water contamination, air pollution, and habitat degradation.

Where feasible, existing formalised waste facilities in main towns, such as Huambo and Luanda, could be upgraded or enhanced to accommodate Project-related wastes. This would not only provide a sustainable solution to manage Project-generated waste but also leave a long-term benefit for the surrounding communities. Collaborative efforts with local authorities to improve these facilities could help address systemic challenges and ensure proper waste handling, thereby mitigating environmental risks such as soil and water contamination, air pollution, and habitat degradation.

Proper management measures are therefore critical to mitigate the compounded impact on already strained waste management conditions.

Soil and water contamination

Improper handling and disposal of hazardous waste, such as hydrocarbons and solvents, could result in long-term contamination of local soil and water resources. This poses risks to agricultural productivity, community water supplies and ecosystems. Unmitigated, the risk is high due to the reliance on informal disposal practices; however, mitigation measures such as the establishment of containment and transport protocols will significantly reduce this impact.

Construction waste accumulation

The Project's construction phase will generate substantial amounts of waste, including packaging materials, construction debris, and non-biodegradable items. Without effective segregation, storage, and timely disposal, waste could accumulate, leading to habitat degradation and reduced visual amenity. This impact is rated as medium, but proper implementation of the Waste Management Plan (WMP), including training and certified disposal services, can reduce this impact to a low significance.

Air quality impacts

The practice of burning waste, common in areas with limited waste infrastructure, generates pollutants, including particulate matter and harmful gases. These emissions could degrade air quality and pose health risks to workers and nearby communities. While the impact significance is rated as medium without mitigation, it can be reduced by prohibiting open waste burning and ensuring proper waste segregation and disposal.

Risk of hazardous waste spillage

During the operational phase, the transport of hazardous waste poses risks of spillage, particularly during transit to certified disposal facilities. Uncontrolled spills can result in localised contamination of soil and water resources, with potential long-term impacts. The application of mitigation measures, including proper vehicle inspection and emergency response planning, can reduce this risk from medium to a low significance.

3.3.4 Impact assessment

The impact significance ratings of the identified potential impacts on constrained waste management capacity during construction and operation phases are provided in Table 3-9 and Table 3-10. Management measures are also presented which have been incorporated into the ESMP and relevant plans (Volume 2). Impacts associated with the decommissioning phase are considered to be similar to those of the construction phase, albeit less severe.

Table 3-9: Waste management impacts (construction phase)

Activity: Waste handling and disposal								
Project phase: Construction								
WM1 – Impact Summary: Soil and water contamination due to improper disposal of hazardous materials								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Long term*	*Local*	***High***	*Definite*	***High***	*-*	*Medium*
Management Measures: *1. Implement a Waste Management Plan (WMP) for segregation, storage, and safe disposal of hazardous waste;* *2. Establish dedicated storage areas with spill-proof containment for hazardous materials;* *3. Contract licensed hazardous waste disposal service providers;* *4. Provide spill kits and conduct training on emergency spill response for all workers;* *5. Conduct regular inspections of waste handling processes to ensure compliance with protocols; and* *6. Collaborate with local authorities to identify and upgrade existing formalised waste facilities in main towns to accommodate Project-generated hazardous waste.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Possible*	***Low***	*-*	*Medium*
Activity: Construction waste generation and handling								
Project phase: Construction								
WM2 – Impact Summary: Habitat degradation and visual pollution due to accumulation of construction waste								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Short term*	*Site*	***Medium***	*Possible*	***Medium***	*-*	*Medium*
Management Measures: *1. Provide dedicated bins for recyclable, organic, and general waste at strategic locations;* *2. Engage certified waste contractors for the removal and recycling of construction debris;* *3. Establish temporary waste storage areas at construction camps and ensure proper disposal procedures;* *4. Include waste management practices in worker training sessions; and* *5. Explore opportunities to integrate Project waste into upgraded municipal waste facilities where feasible.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*Medium*

Activity: Open waste burning practices								
Project phase: Construction								
WM3 – Impact Summary: Air pollution from burning of waste at construction sites								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*Short term*	*Local*	***Medium***	*Likely*	***Medium***	*-*	*Medium*
Management Measures: *1. Prohibit open burning of waste on-site and ensure safe transportation to certified disposal facilities;* *2. Regularly collect and segregate waste to avoid accumulation that could lead to unauthorized burning; and* *3. Monitor air quality around construction sites to ensure compliance with permissible emission standards; and* *4. Engage with local waste management authorities to identify and utilise formalised waste treatment solutions, reducing the need for open burning.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*Medium*

Table 3-10: Waste management impacts (operation phase)

Activity: Transport of hazardous waste								
Project phase: Operation								
WM4 – Impact Summary: Risk of spillage during transport of hazardous waste								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*long term*	*Local*	***Medium***	*Possible*	***Medium***	*-*	*Medium*
Management Measures: *1. Ensure hazardous material transport complies with regulatory requirements and uses certified contractors;* *2. Inspect vehicles for leak-proof integrity prior to each transport operation;* *3. Develop an emergency response plan for addressing spills during transportation;* *4. Maintain a log of all transported hazardous materials for monitoring and compliance; and* *5. Collaborate with waste disposal service providers to ensure the use of upgraded, compliant facilities for the handling and disposal of hazardous waste.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	*-*	*Medium*

3.4 PS1 – ES7: Natural resources consumption impacts

3.4.1 Baseline conditions

The Project area exhibits significant reliance on natural resources, including water and construction materials such as sand, gravel, and aggregates. These resources are critical for local livelihoods, including agriculture and domestic use. However, the region is characterised by limited water availability, especially during dry seasons, and unregulated extraction of construction materials, which leads to habitat degradation and potential conflicts over resource use. Without mitigation, Project activities could exacerbate existing pressures on natural resources, especially during construction. A detailed overview of natural resource availability and usage is provided in Section 2.7 of the ESIA.

3.4.2 Impact identification

Key potential impacts of the Project on natural resources consumption include:

- Strain on local water resources due to high consumption during construction, including dust suppression, concrete mixing, and domestic use in worker camps;
- Depletion of construction materials, including sand and gravel, leading to habitat degradation and reduced availability for local communities; and
- Potential ecological impacts on nearby water sources and quarrying areas from unregulated or excessive extraction.

3.4.3 Impact description

Strain on Local Water Resources

High water consumption during construction activities, such as concrete mixing, dust suppression, and camp operations, could strain already limited water resources in the region. This could affect the availability of water for local communities and agriculture, especially during dry periods. Without mitigation, the impact is high. However, water-efficient technologies and monitoring measures can reduce the significance to medium.

Depletion of Construction Materials

The demand for construction materials such as sand and gravel could exacerbate unsustainable quarrying practices, leading to habitat degradation, soil erosion, and loss of biodiversity in extraction areas. This impact is assessed as medium but can be mitigated to low by sourcing materials from certified suppliers and reusing excavated material where feasible.

Ecological Impacts of Resource Extraction

Unregulated extraction of natural resources could alter the flow regimes of local rivers, destabilise slopes, and damage critical habitats for flora and fauna. If unmanaged, this impact could lead to long-term ecological degradation. Mitigation through sustainable sourcing and ecological restoration practices can significantly minimise this impact. The application of mitigation measures, including conducting environmental impact assessments, implementing ecological restoration practices, and restricting activities to pre-approved low-sensitivity areas, can reduce this risk from high to a medium significance.

3.4.4 Impact assessment

The impact significance ratings of the identified potential impacts on natural resources consumption during construction phase is provided in Table 3-11. Management measures are also presented which have been incorporated into the ESMP and relevant plans (Volume 2). No significant impacts are anticipated during the operational and decommissioning phases.

Table 3-11: Natural resources consumption impacts (construction phase)

Activity: Water use								
Project phase: Construction								
NR1 – Impact Summary: Strain on local water resources due to high consumption for construction and domestic use								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*High*	*long term*	*Local*	***High***	*Definite*	***High***	-	*Medium*
Management Measures: *1. Conduct a water demand assessment to plan resource allocation efficiently;* *2. Use water-saving technologies for construction processes, such as recycling water for dust suppression;* *3. Establish agreements with local authorities to secure water resources without disrupting community supply; and* *4. Monitor and report water usage during all project phases.*								
After Management	*Moderate*	*Short term*	*Site*	***Medium***	*Likely*	***Medium***	-	*Medium*
Activity: Procurement and extraction of construction materials								
Project phase: Construction								
NR2 – Impact Summary: Depletion of sand and gravel resources leading to habitat degradation								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*Moderate*	*long term*	*Local*	***Medium***	*Likely*	***Medium***	-	*Medium*
Management Measures: *1. Source materials only from certified suppliers who meet sustainability standards;* *2. Reuse excavated materials from the project site wherever feasible;* *3. Monitor material usage to ensure compliance with environmental regulations; and* *4. Restore quarry sites post-extraction to prevent habitat loss and erosion.*								
After Management	*Minor*	*Short term*	*Site*	***Low***	*Unlikely*	***Low***	-	*Medium*
Activity: Resource extraction and water abstraction								
Project phase: Construction								

NR3 – Impact Summary: Ecological degradation from unregulated resource extraction								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+ /-**	**Confidence**
Before Management	*High*	*long term*	*Local*	***High***	*Definite*	***High***	*-*	*Medium*
Management Measures: *1. Conduct environmental impact assessments for all borrow pit sites;* *2. Implement ecological restoration measures for disturbed areas;* *3. Limit extraction activities to pre-approved areas with minimal ecological sensitivity; and* *4. Engage independent auditors to review compliance with sustainability practices.*								
After Management	*Moderate*	*Short term*	*Local*	*Medium*	*Possible*	***Medium***	*-*	*Medium*

3.5 PS1 – ES8: Social impacts

3.5.1 Impact SE5.3: Dissatisfaction due to unfulfilled expectations

There are high expectations among communities within and near the project area that there will be positive economic and social development as a result of the Gove-Chipindo-Cuvango-Jamba Transmission Line Project initiative. There is significant interest in the electrification of households in Jamba, Cuvango and Chipindo. Stakeholders in the AoI might experience and express dissatisfaction as a result of unfulfilled expectations about the long-term benefits and potential opportunities resulting from the project's operation.

The impact rating before and after mitigation measures are applied, is described in Table 3-12.

All mitigation measures proposed have been copied to the ESMP in Volume 2.

Table 3-12: Dissatisfaction due to unfulfilled expectations

Activity: Project operation								
Project phase: Construction and Operation								
SE5.3 - Impact Summary: Dissatisfaction due to unfulfilled expectations about long-term benefits and opportunities from the operation of the project								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Major*	*Long-term*	*Local*	***High***	*Likely*	***High***	-	*Medium*
Management Measures:								
1. Implement SEP developed for this project, noting the importance of engaging at different project stages, especially prior to and during construction to ensure expectations are adequately managed; *2. Publicise the grievance mechanism through appropriate forums at local level;* *3. Ensure that Project Affected Persons (PAPs) receive fair or better compensation and livelihood restoration;* *4. Ensure adequate resourcing for stakeholder engagement by implementer;* *5. Create awareness of the project, the difference between transmission and distribution of electricity and how the nature of the project allows for limited work and enterprise development opportunities; and* *6. Maintain ongoing stakeholder engagements as new stakeholders (such as job-seekers) might come to the areas affected by construction over time.* *7. Encourage and implement a policy of preferential procurement and employment from nearby communities and towns.* *8. Communicate the planned electrical connections in the AoI.* *9. Connections should be implemented systematically and to the appropriate specifications.*								
After Management	*Moderate*	*Long-term*	*Local*	***Medium***	*Possible*	***Medium***	-	*Medium*

3.6 PS1 – ES10: Post-demining route confirmation and ESIA updates

Following the completion of the demining exercise, any changes to the Overhead Transmission Line (OHTL) route shall be assessed and confirmed. This process will adhere to the steps outlined below.

3.6.1 Evaluation of changes

The demining survey outcomes will be reviewed to identify any necessary adjustments to the OHTL route. Any deviations from the originally approved alignment will be analysed for environmental and

social impacts in accordance with the ESMP framework and the Management of Change (MoC) Procedure (PY-ANG-MOC-PRO-00001).

3.6.2 Application of the Management of Change Procedure

In the event of route modifications, the Management of Change (MoC) Procedure (PY-ANG-MOC-PRO-00001) will be triggered to evaluate the significance of these changes and their implications for environmental and social performance.

3.6.3 ESIA update requirements

An updated ESIA or addendum shall be prepared to ensure compliance with Angolan legal requirements and GIIP standards, such as IFC Performance Standards, if the route changes result in:

- Additional environmental or social impacts beyond those assessed in the current ESIA;
- A requirement for new mitigation measures; and/or
- Impacts on critical habitats, cultural heritage sites, or sensitive receptors.

3.6.4 Integration into the ESMP

Any route changes and associated mitigation measures will be reflected in the ESMP and its relevant management plans, ensuring alignment with site-specific implementation requirements. By adopting this approach, the Project ensures that any modifications resulting from the demining exercise are adequately evaluated, documented, and mitigated to uphold environmental and social compliance standards.

3.7 PS1 – ES11: Cumulative impacts

This rapid Cumulative Impact Assessment (CIA) builds on and supplements the information provided in Section 6.9 of the ESIA to ensure alignment with the IFC Handbook on Cumulative Impact Assessment and Management (2013). It identifies the Area of Influence (AoI), establishes baseline conditions, incorporates other relevant developments, and proposes management and monitoring strategies with adaptive measures. The assessment is designed to address cumulative impacts comprehensively, focusing on Valued Environmental and Social Components (VECs) within the Project's direct and indirect areas of influence. Recognising that cumulative impacts result from the combined effects of multiple stakeholders and natural drivers, their effective management will require a collaborative approach involving the Project proponent, local authorities, industries, and communities.

3.7.1 Area of Influence

The AoI encompasses both direct and indirect areas affected by the Project, but it also considers the influence of other developments and natural drivers. The direct AoI includes the 170 km project corridor, comprising Miombo Woodlands, rivers, and nearby settlements directly affected by construction and operation activities. The indirect AoI extends to the larger Zambezi and Okavango River catchments, where cumulative impacts on water availability and ecosystems are influenced not only by the Project but also by regional land-use changes, agricultural runoff, and climate variability.

In addition, VEC-specific AoIs have been identified to address region-wide pressures:

- Freshwater ecosystems: Zambezi River headwaters and tributaries affected by sedimentation and pollution;
- Miombo Woodland habitats: Areas impacted by land clearance, agriculture, and fuelwood harvesting;

- Groundwater resources: Local aquifers shared by rural communities and influenced by increasing borehole abstraction;
- Cultural heritage sites: Sacred sites and culturally significant features at risk from land-use changes; and
- Socio-economic infrastructure: Schools, healthcare, and trade facilities in towns like Jamba, Cuvango, and Chipindo, which act as regional hubs.

3.7.2 Baseline conditions

The baseline conditions reflect a combination of natural and socio-economic factors that are integral to the region but already under pressure from existing activities and environmental drivers.

Environmental conditions include freshwater ecosystems such as the Zambezi River headwaters, which are critical for regional water resources and biodiversity. However, these systems face pressures from agricultural runoff, sedimentation, and fluctuating flows driven by both climate change and upstream activities. Miombo Woodlands provide essential ecosystem services and biodiversity support but are increasingly fragmented due to subsistence farming, charcoal production, and road development.

Socio-economic conditions are shaped by subsistence-based livelihoods such as farming and informal mining. Rural communities depend heavily on groundwater accessed via boreholes, but growing demands threaten resource sustainability. Sacred cultural sites and landmarks hold deep significance for local populations, and the limited availability of education, healthcare, and infrastructure in towns like Jamba further exacerbates socio-economic challenges.

3.7.3 Other developments

Cumulative impacts are influenced by the Project's interaction with past, present, and anticipated activities in the region. Existing developments include the Gove Hydroelectric Dam, a critical infrastructure asset supplying regional electricity but vulnerable to climate change-related water level fluctuations. Additionally, the non-operational Cassinga Iron Mine holds the potential for future industrial activity, which could increase regional environmental and social pressures.

Anticipated developments, including expanded access to electricity facilitated by the Project, are likely to stimulate growth in agriculture, mining, and industrial sectors. While this growth may yield significant socio-economic benefits, it could also exacerbate pressures on natural resources, increase deforestation, and strain local infrastructure and services and induce influx by job-seekers. Addressing these cumulative impacts will require coordination among multiple stakeholders, including local authorities and industries operating in the region.

3.7.4 Key cumulative impacts

Drawing on the CIA in Section 6.9, several cumulative impacts have been identified across environmental and socio-economic dimensions. The key cumulative impacts identified align with the interconnected nature of environmental and socio-economic systems.

Environmental impacts include:

- Increased sedimentation and pollution of freshwater ecosystems due to construction activities, agriculture, and mining runoff, exacerbated by climate change;
- Fragmentation and loss of Miombo Woodland habitats, driven by access road construction, land clearance, and fuelwood collection; and
- Over-abstraction of groundwater resources as improved electricity access leads to greater use of electric borehole pumps.

Socio-economic impacts include:

- Strain on education, healthcare, and basic services due to population influx and increased demand;
- Expansion of land-based livelihoods (e.g., agriculture and artisanal mining) potentially exacerbating deforestation, soil degradation, and water stress; and
- Positive impacts such as improved employment opportunities and economic growth tempered by risks from unregulated small-scale mining (ASM).

3.7.5 Management measures

The management of cumulative impacts requires a shared and coordinated approach involving the Project proponent, local authorities, communities, and other industries. Environmental measures include establishing buffer zones to protect sensitive ecosystems, promoting sustainable land-use practices, and supporting post-construction vegetation restoration to regenerate Miombo Woodlands. Collaborative water resource management should focus on sustainable abstraction and pollution prevention, while climate-resilient designs will address vulnerabilities from natural drivers like climate change.

Socio-economic measures should focus on enhancing infrastructure in local towns, supporting sustainable livelihoods, formalising ASM practices, and building community capacity through training programmes. Multi-stakeholder partnerships will be critical to achieving these goals collectively and ensuring long-term resilience.

3.7.6 Monitoring systems

Monitoring cumulative impacts will involve collaboration among stakeholders to track environmental and socio-economic trends effectively. Environmental monitoring should focus on water quality, groundwater levels, deforestation rates, and biodiversity health. Socio-economic monitoring should include tracking population growth, infrastructure utilisation, and livelihood trends. Data-sharing platforms will enable transparency and support evidence-based decision-making.

3.7.7 Adaptive management

Adaptive management will ensure flexibility and responsiveness to cumulative impacts. Trigger thresholds for VECs, such as river flows and deforestation rates, will prompt timely interventions. Monitoring data will inform dynamic adjustments to mitigation strategies, while continuous stakeholder engagement will align management measures with evolving regional priorities. Collaborative platforms will foster shared accountability and proactive solutions.

3.8 PS1 – ES16: Analysis of alternatives

Section 2.6 of the ESIA outlines the alternatives analysis for the locations of substations and the route of the Overhead Transmission Line (OHTL), focusing on minimising environmental and social impacts while ensuring technical and economic feasibility. The preferred substation locations in Chipindo, Cuvango, and Jamba were identified during the initial planning stages by RNT. These sites were selected based on their strategic proximity to underserved communities, integration with the Gove Hydroelectric Plant, and alignment with future infrastructure needs.

During the initial planning, alternative substation sites were evaluated using high-level environmental and socio-economic screening criteria, including accessibility, soil stability, and the potential to minimise disruption to local ecosystems, for example, prioritising previously disturbed sites, as was the case for the Jamba substation. No high risks or fatal flaws were identified for the proposed substation locations during this assessment. However, RNT has not provided detailed records or mapping of location alternatives, limiting the ability to visually compare or further explore other potential options. Despite this limitation, the original sites were identified as the most suitable

by RNT based on their alignment with these criteria and have been carried forward into the ESIA, which did not present any high risks or fatal flaws for the substation locations.

In addition to substation locations, the OHTL route underwent a detailed assessment to address environmental sensitivities and construction challenges during the ESIA process. During the early planning stages, RNT conducted an initial assessment of the OHTL route, focusing on key technical, environmental, and socio-economic criteria. This included avoiding sensitive areas such as wetlands, cultural heritage sites, and steep slopes, and minimising the number of riverbed crossings. Based on this initial assessment, a initial route alignment was proposed and later refined during the ESIA process following a topographical survey. These route refinements aimed to further mitigate risks by prioritising stable and accessible terrain, ensuring safer and more cost-effective construction, and reducing potential environmental and social impacts. A map illustrating the initial and revised OHTL routes is included below in Figure 3-1.

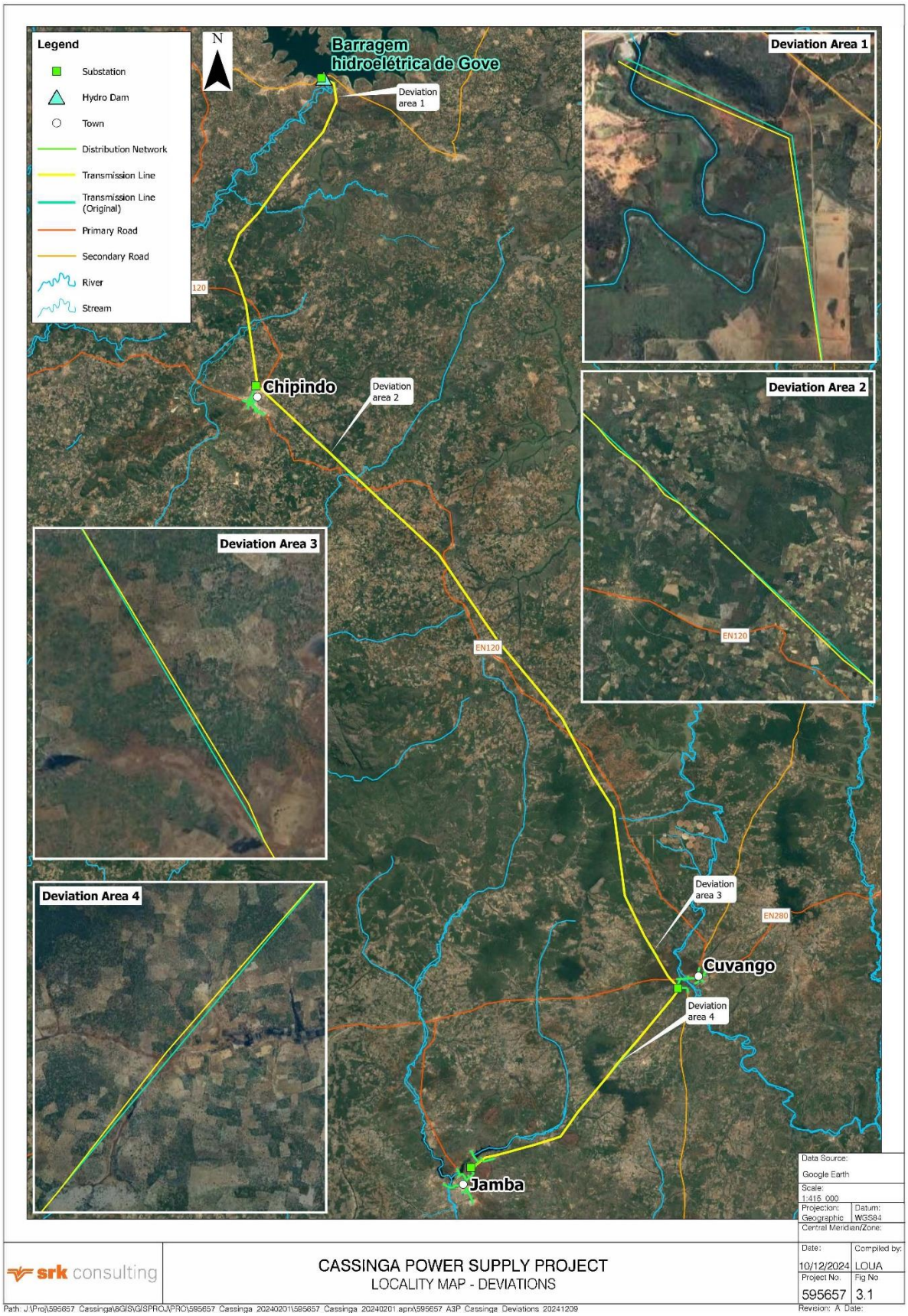

Figure 3-1: Gove-Chipindo-Cuvango-Jamba Transmission Line Project OHL route showing deviation of alternative route layout

The analysis of alternatives was based on all information available at the time of assessment. It is recognised that Project conditions may evolve during implementation, necessitating changes to substation locations or the OHTL route. Any such changes will be managed through PAK Yatirim's Management of Change Procedure (PY-ANG-MOC-PRO-00001), which includes a structured process designed to ensure that adjustments align with environmental and social safeguards established in the ESIA. The procedure involves a thorough evaluation of proposed changes to identify potential impacts, consultation with relevant stakeholders, and the integration of appropriate mitigation measures. This ensures that all modifications are transparent, scientifically informed, and compliant with national laws and international standards.

3.9 PS2 – LW2: Human rights risks associated with migrant labour

3.9.1 Impact HR4.7: Human rights abuses of migrant workers

In addition to Angolan workers, it is anticipated that the workforce will include workers from Portugal, Brazil and Turkey. Migrant workers may be more vulnerable to unfair and discriminatory working conditions because of their nationality, ethnicity, or migrant status.

There is a risk that migrant workers may face unfair wage practices, including being paid less than local workers for the same job or below the minimum wage, having wages withheld, receiving no overtime pay, or being paid less than initially agreed by recruiters. Some contractors and suppliers may hire migrant workers without proper documentation, resulting in them working without formal contracts or bypassing the official work permit process entirely which increases their vulnerability to exploitation. Additionally, migrant workers may be provided with substandard or overcrowded living conditions which may not meet international standards.

Due to their potentially precarious legal status, fear of deportation or job loss, migrant workers may be reluctant to report discriminatory practices or unsafe and unfair conditions, allowing these issues to persist without intervention.

The Project could cause these human rights impacts if staff engage in discriminatory practices towards migrant workers or if contractors and suppliers hire migrant workers without proper documentation. These impacts can be significantly mitigated by applying suitable management measures.

The impact rating before and after mitigation measures are applied, is described in Table 3-13.

All mitigation measures proposed have been copied to the ESMP in Volume 2.

Table 3-13: Human rights abuses of migrant workers

Activity: Employment of migrant workers						
Project phase: Construction						
HR 4.7 - Impact Summary: Human rights abuses of migrant workers						
	Scale *Gravity*	**Scope** *No. of affected rights-holders*	**Irremediability**	**Severity**	**Likelihood**	**Heat map rating**
Before Management	*Moderate*	*Small no. of RHs*	*Can be remediated*	***3***	***3***	
Management Measures:						
1. Provide onsite oversight and supervision into working conditions and workplace practices to ensure that migrant workers are treated fairly and are not subjected to discriminatory practices;						

2. Ensure migrant workers are provided with safe, adequate and hygienic accommodation that complies with international standards, including access to clean water, sanitation, and proper ventilation; 3. Conduct due diligence on contractors and suppliers, including their views on hiring and remuneration of migrant workers in their policies; 4. Create awareness among contactors' employees on the importance of inclusivity and non-discrimination in the workplace. This could be done through visual media and toolbox talks on site, and other passive awareness media such as posters in dining and ablution areas; 5. Be mindful of potential unwillingness of migrant workers to report grievances for fear of losing their jobs or deportation. Contractor management should reinforce positive messaging about the role of labour-related grievance mechanisms as part of due diligence and continuous improvement while providing strong and credible assurances about non-retaliation for raising concerns; 6. Conduct labour audits of contractors and suppliers; and 7. Ensure that working conditions that PAK and RNT have direct control over, are decent so as not to contribute to H&S issues.						
After Management	*Minor*	*Small no. of HHs*	*Can be remediated*	***3***	***2***	

3.10 PS2 – LW10: Human rights risks associated with electrical supply from Gove Dam substation

The potential human rights risks associated with the Gove Dam can be understood in the context of broader trends in large-scale hydropower and electrical infrastructure projects, particularly in regions like Angola that are undergoing rapid development. Key risks include:

- Conflict financing: Some minerals used in hydropower infrastructure are sourced from conflict zones, contributing to armed conflict and human rights abuses (Human Rights Watch, 2020; DCAF, 2016). Ensuring ethical supply chains is a persistent challenge;
- Environmental impact on livelihoods: Alterations to river ecosystems can disrupt fishing and agriculture, which are primary sources of income for many rural communities. These changes may exacerbate poverty and food insecurity;
- Labour rights violations: Infrastructure projects may involve exploitative labour practices, particularly when workers lack representation or clear contracts. This includes risks of unsafe working conditions and insufficient wages;
- Inequitable energy access: While such projects aim to improve energy supply, rural or marginalised communities might not benefit equally, perpetuating existing inequalities; and
- Security risks: Large projects can lead to militarisation of affected areas to prevent protests or protect assets. This sometimes results in human rights abuses like intimidation or violence against local residents.

In supply chains where goods and services are procured from first, second and third-tier suppliers, there are a number of common human rights risks that can arise, which are presented below.

Forced and child labour:

- Workers, especially in developing regions, may be subjected to exploitative conditions, including forced labour and child labour, particularly in sectors like mining, agriculture, and manufacturing; and
- Industries dependent on raw materials (e.g., cobalt and copper) are particularly vulnerable to these risks due to unregulated or informal supply chains, especially as it might be associated with ASM.

Unsafe working conditions:

- Workers may face hazardous environments without proper safety measures, training, or protective equipment; and

- This is common in industries like construction, electronics, and textiles, where workplace safety regulations are lax or poorly enforced.

Low wages and exploitation:

- Workers are often paid below minimum wages or deprived of benefits, leaving them in poverty. This risk is exacerbated in informal and subcontracted labour arrangements.

Gender-based discrimination:

- Women in supply chains face unequal pay, limited advancement opportunities, and gender-based violence, particularly in the agriculture and manufacturing sectors.

Environmental impacts:

- Irresponsible sourcing can degrade natural resources, pollute water sources, and harm ecosystems, adversely affecting the rights of communities reliant on these resources for their livelihoods.

Conflict and violence:

- Supply chains for minerals like cobalt, gold, and diamonds often intersect with conflict zones, where materials are extracted under coercion or to fund armed groups.

Inadequate grievance mechanisms:

- A lack of channels for workers and communities to report abuses perpetuates these risks and denies them justice.

The following high-level mitigation strategies are recommended to attempt to prevent or mitigate human rights violations in supply chains applicable to the Project:

- Conduct regular audits and request goods and services providers to disclose supply chain practices;
- Collaborate with local communities, non-governmental organisations, and governments to ensure responsible practices through local sourcing where possible; and
- Partner with organisations that certify ethical sourcing where possible (e.g., Rainforest Alliance, Fair Labour Association).

These mitigation measures have been added to Human Rights Impacts 4.5 and 4.6 in the ESIA, HRIA and ESMP.

3.11 PS3 – RE1: Resource efficiency measures integrated into the Project

The Project integrates resource efficiency measures at every stage of its development to minimise environmental impacts while ensuring operational sustainability. These measures address critical aspects such as energy use, material consumption, water management, waste reduction, and sustainable sourcing. By incorporating these strategies, the Project aligns with GIIP standards, contributing to a more sustainable and efficient power transmission network. Below are the key resource efficiency measures integrated into the Project, drawing on information contained in Section 2 of the ESIA.

3.11.1 Energy efficiency

The Project incorporates energy-efficient technologies to ensure optimal performance while minimising energy losses. The substations in Chipindo, Cuvango, and Jamba will utilise advanced transformer designs that significantly reduce energy loss during operation. This improvement aligns with the Project's objective of creating a reliable and efficient power transmission network. Additionally, lightning and earthing protection measures are integrated into the infrastructure to prevent energy disruptions, further supporting resource efficiency during operational phases.

3.11.2 Material optimisation

The design of the transmission towers reflects a commitment to material efficiency. Towers have been standardised to a height of 47 meters, with a compact footprint of 10m x 10m, optimising steel usage while reducing land disturbance. This approach ensures minimal material wastage during construction. Furthermore, the Project includes precise calculations for concrete, steel, and fuel requirements, minimising over-procurement and excess resource consumption.

3.11.3 Water conservation

To mitigate water use, the Project will employ systems for recycling and reusing water during construction activities. These measures ensure that water is only consumed for essential purposes, such as dust suppression and concrete mixing, reducing unnecessary wastage in a water-stressed area where resources are limited and critical for local communities and ecosystems.

3.11.4 Sustainable sourcing

The Project emphasises sourcing materials and equipment from suppliers that meet international environmental and social standards. This includes transformers and cables that align with recognised sustainability criteria, ensuring a lower environmental footprint across the supply chain.

3.11.5 Transportation and logistics

The logistics plan will be designed to optimise transportation efficiency by consolidating shipments and reducing the frequency of material deliveries. This approach lowers fuel usage and minimises emissions associated with the movement of construction materials and equipment.

3.11.6 Waste reduction

A comprehensive waste management protocol has been incorporated into the Project to handle construction debris responsibly. This protocol includes provisions for recycling construction materials and ensuring the proper disposal of hazardous waste, such as transformer oils, to minimise environmental impacts.

3.12 PS3 – RE2: Measures to address impacts from GHG emissions, solid waste management, and surface water use

The Project integrates specific actions to mitigate the impacts of greenhouse gas (GHG) emissions, solid waste management, and surface water use as detailed in the sections below. These actions build upon information presented in the ESIA, specifically Sections 2.1 to 2.10 and 6.1 to 6.8, aligning with GIIP standards and Angolan regulatory requirements. These actions have been incorporated into the ESMP and relevant management plans (Volume 2).

3.12.1 GHG emissions

Actions for GHG emissions mitigation (see air quality management measures in ESMP (Volume 2 – Section 7.3)):

- Construction vehicles and equipment are required to meet Euro VI or equivalent emission standards, ensuring reductions in CO, NOx, SO_2, and Volatile Organic Compounds (VOCs) in order to minimise GHG emissions from combustion engines.
- Regular servicing of machinery and training for operators on fuel-efficient practices are mandated to reduce unnecessary fuel consumption and emissions, which should be achieved by minimising idling times and optimising logistics for equipment use.
- Low-VOC paints, solvents, and adhesives are specified for construction to minimise emissions during application, addressing indirect GHG sources.

3.12.2 Solid waste management

Additional actions for solid waste management (see waste management measures in ESMP (Volume 2 – Section 7.3)):

- Construction waste, including scrap metal, timber, and packaging materials, will be segregated at source for recycling. Hazardous waste, such as solvents and batteries, will be collected and stored securely before disposal by certified waste handlers.
- Special protocols must be established for managing hazardous materials, including storing them in spill-proof containers and ensuring safe transport to licensed disposal facilities.
- Collaboration with local waste management facilities is encouraged to ensure responsible disposal of non-recyclable and biodegradable waste thereby minimises transportation impacts while supporting local infrastructure.

3.12.3 Surface Water Use and Management

Additional actions for surface water use and management (see surface water management and natural resource consumption management measures in ESMP (Volume 2 – Section 7.3)):

- Surface water abstraction for construction activities such as concrete mixing and dust suppression must follow sustainable withdrawal rates.
- Water abstraction volumes will be monitored to avoid over-extraction.
- Water recycling practices will be incorporated, particularly for concrete batching and dust suppression, to reduce the demand for freshwater abstraction.
- Construction wastewater, including runoff from concrete mixing and equipment cleaning, will undergo sedimentation and treatment before discharge, ensuring compliance with applicable water quality standards and discharge limits to protect downstream water quality.
- Implement erosion control measures, including the installation of silt barriers and vegetation management, to reduce the risk of sedimentation in rivers and streams near construction areas.

3.13 PS3 – RE6: Noise

3.13.1 Measured environmental noise levels

Measured environmental noise levels were updated to include the sampling period and the representative sites. The results are summarised in Table 3-14.

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Table 3-14: Measured environmental noise levels

Measuring point	Location	L_{Aeq}	L_{Max}	L_{Min}	L90	Remarks	Representing	Measurement time	Distance from OHP - meters
1	Jamba	37.7	59.3	31.2	33.1	Domestic, birds and distant traffic.	Residential	20min	1 280
2	Jamba	50.6	70.3	28.7	33.8	Motorbikes, wind.	Residential	20min	160
3	Jamba	41.4	65.0	29.6	34.8	Domestic and distant traffic.	Residential	20min	600
4	Com 13	45.9	63.8	35.0	38.9	Domestic and distant traffic.	Residential	20min	290
5	Cuvango	46.5	68.9	29.7	34.0	Domestic and distant traffic.	Residential	30min	580
6	Cuvango	37.5	62.2	30.9	33.1	Distant water, insects, and birds.	Residential	30min	820
7	Com 12	38.0	55.6	25.5	29.8	Distant domestic, people, traffic, and birds.	Residential	20min	980
8	Com 11	38.0	55.6	25.5	29.8	Domestic and distant traffic.	Residential	20min	885
9	Com10	38.3	66.2	26.7	30.7	No people at village, distant traffic.	Residential	34min	1053
10	Com9	42.2	67.5	38.8	37.6	Animals, domestic and children playing.	Residential	40min	1480
11	Com9	42.2	67.5	38.8	37.6	Domestic, distant generator, animals, and insects.	Residential	40min	1079
12	Com8	45.1	65.0	35.8	39.3	Domestic, wind and distant mill.	Residential	20min	819
13	Com 7 North	49.6	68.4	37.8	42.8	Wind and domestic.	Residential	20min	1526
14	Com7 South	49.5	67.4	37.9	42.9	Wind and domestic.	Residential	20min	1533
15	Com6					1.45km from OHP and not accessible.			1450
16	Com5	49.6	71.6	38.1	43.6	Wind and domestic.	Residential	20min	700
17	Com4					2.5km from OHP and not accessible.	Residential		2500
18	Chipindo	60.9	87.3	43.3	48.9	Motor bikes and people.	Residential	33min	1975
18A	Chipindo	53.0	71.2	46.0	48.2	Distant generator, motorbikes	Institutional	37min	1972
18B	Chipindo	46.3	63.8	37.7	41.5	School ground and distant domestic	Residential	30min	1956

Measuring point	Location	L_{Aeq}	L_{Max}	L_{Min}	L90	Remarks	Representing	Measurement time	Distance from OHP - meters
19	Chipindo	41.3	68.5	26.8	31.1	Motor bikes and people.	Institutional	27min	113
20	Chipindo	43.2	62.0	30.7	35.2	Motor bikes and people.	Residential	30min	40

3.13.2 Noise measurement context

Due to the rural nature of the measuring points, the following observations were made:

- Measurement Points (MPs) 1, 2, and 3 were located on the outskirts of Jamba, while MPs 5 and 6 were on the outskirts of Cuvango. MPs 7 to 16 were positioned along the EN120 road. However, the intermittent nature of traffic on this route, combined with the distance of the measurement points from the road, meant that traffic noise did not significantly elevate ambient noise levels. Noise levels exceeding 50.0 dBA were recorded only at Jamba (MP2) and Chipindo (MP18 and MP18A), where intermittent traffic noise was observed. This was deemed insignificant in terms of sustained traffic noise impacts;
- Longer noise surveys were not required as the noise levels measured during 10- to 30-minute samples were sufficient to represent the prevailing ambient noise conditions in the area. The night-time noise survey was not conducted due to the presence of insects, which would have artificially inflated noise levels beyond daytime conditions;
- At all measuring points, where electricity infrastructure is absent, the prevailing ambient noise sources were natural and domestic, including people conversing near home fires, insect activity, and animal noises;
- According to the WHO Guidelines for Community Noise, major community noise sources include road, rail, and air traffic, industries, construction, and public works. These sources were not present in the study area except in Jamba, Chipindo, and Cuvango, where minimal and intermittent traffic noise temporarily increased noise levels; and
- Extended noise monitoring was not feasible due to logistical constraints, such as the shared use of a motor vehicle with the social team. However, longer monitoring was unnecessary, as the 20- to 30-minute measurements adequately captured the prevailing ambient noise levels across the various measuring points.

3.13.3 Key conclusions

The following key conclusions are drawn from the noise study:

- Prevailing ambient noise levels in and around villages may increase with the introduction of electricity however this is anticipated to be insignificant at noise receptors;
- Villages abutting the EN120 were exposed to prevailing ambient noise levels between 38.1dBA and 45.5dBA due to intermittent traffic, a grain mill, animals and/or domestic activities; and
- The communities of Jamba, Cuvango and Chipindo are already exposed to multiple noise sources increasing the prevailing ambient noise levels (37.6dBA to 52.4dBA) such as motor vehicles, heavy-duty vehicles and motorcycles.

3.14 PS3 – RE7: Water resources

3.14.1 Hydrology

The location of surface water monitoring points is presented in Figure 3-2. Details of these monitoring points and baseline water quality results are presented in the ESIA and Hydrology study (refer to Volume 4, Appendix G of the ESIA).

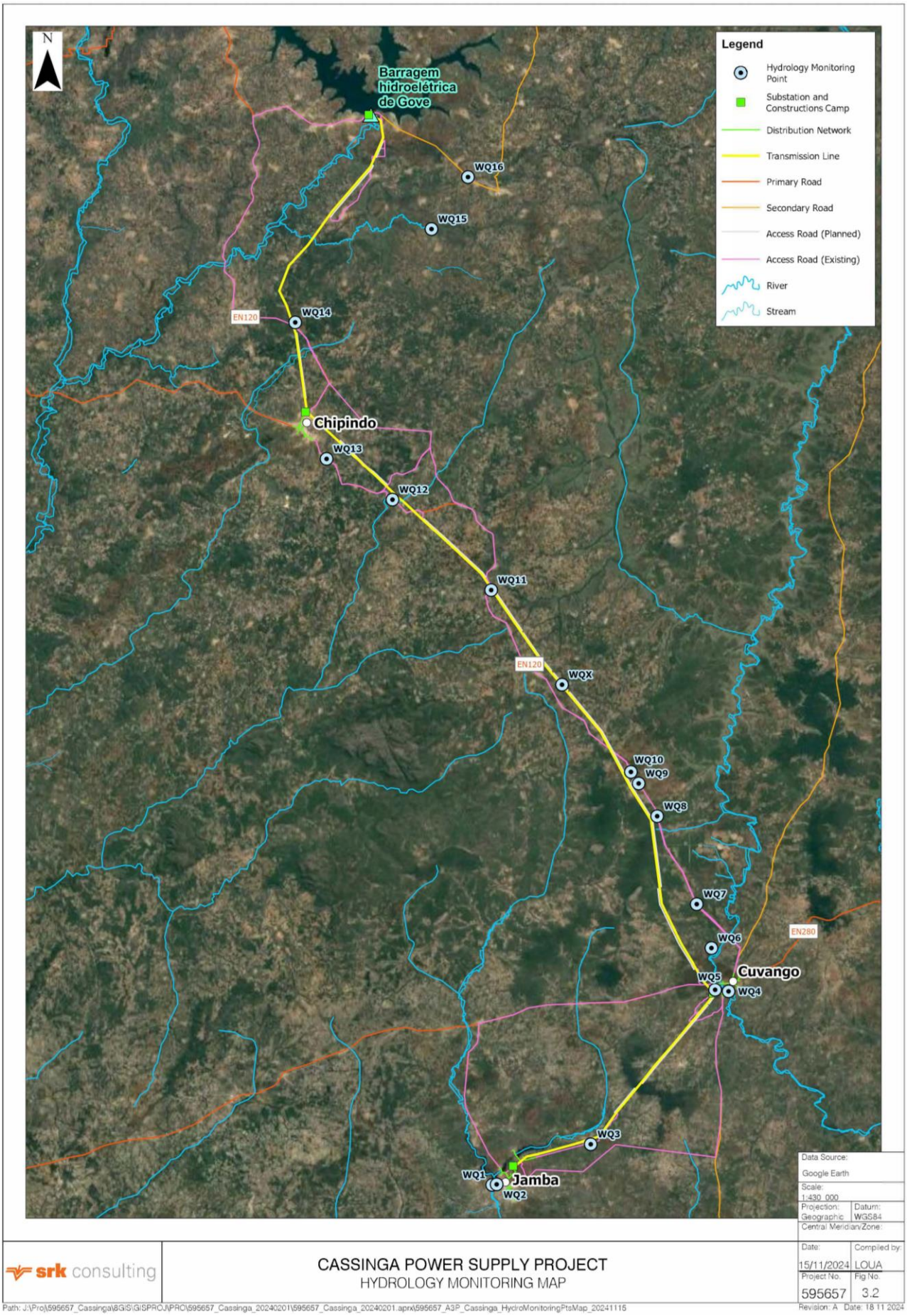

Figure 3-2: Locality of surface water monitoring points

The water quality constituents considered in the hydrology study are presented in Table 3-15. The water quality samples were analysed by a professional laboratory (AMBIAFRICA Angola). The water quality data was compared to water quality limits stated in Presidential Decree 261/11 of Angolan Law – Annex I (Class A1 – Physical Treatment and Disinfection) – Quality of Freshwater for Production of Water for Human Consumption. These are shown in Table 3-15. The emphasis is on human consumption. Water quality specifically focused on aquatic use was assessed as part of the freshwater ecosystems assessment..

Total content refers to all present mass of the parameter in question. Dissolved metals are typically cations in solution or particulate metals in suspension. There are no guideline values for suspected solids. It is typical for Total suspended solids to be high in rainy season, especially in rural areas where agriculture takes place along watercourses. In the Angolan context, farmers typically farm the "nacas" (i.e. area between low flow level and high flow level of the river/stream). This farming activity results in a loose substrate in the watercourse, which contributes to suspended solids in the early rainy season. These impacts will be temporal and transient. Water quality impacts are likely to be highly variable as they are dependent on amount of activity present, and frequency, duration and timing of high-flow events, and whether stabilising vegetation has had a chance to recover or not.

Table 3-15: Water quality criteria

Determinant	Units	Max recommended value	Max allowable value
Coliform Bacteria	Counts/100ml	50	
E coli	Counts/100ml		
Feacal coliforms	Counts/100ml	20	
Number of colonies @ 22°C	Counts/ml	20	
Number of colonies @ 37°C	Counts/ml	100	
Enterococcus	Counts/100ml	10	
Pseudomonas aeruginosa	Counts/100ml		
Salmonella	Counts/ml	Absent in 5000ml	
Ammonium	mg/l NH_4	0.05	
Boron	mg/l B	1	
Cadmium	mg/l Cd	0.001	0.005
CBO_5 (Biochemical oxygen demand)	mg/l O_2	3	
Smell @ 25°C	Dilution factor	3	
Lead	mg/l Pb		0.05
Cyanide	mg/l Cn		0.05
Chloride	mg/l Cl	200	
Total Chlorine	mg/l Cl_2		
Copper	mg/l Cu	0.02	0.05
Electrical conductivity	µS/cm	1000	
APHA colour	mg/l PtCo	10	20
COD (Chemical oxygen demand)	mg/l O_2		
Chromium (VI)	mg/l Cr		0.05

Determinant	Units	Max recommended value	Max allowable value
Anionic detergents	mg/l	0.2	
Iron	mg/l Fe	0.1	0.3
Fluoride	mg/l F	0.7-1	1.5
Phosphates	mg/l P_2O_5	0.4	
Total hydrocarbons	mg/l		
Manganese	mg/l Mn	0.05	
Nickel	mg/l Ni		
Nitrate	mg/l NO_3	25	50
Dissolved oxygen	% saturated O_2	70	
pH		6.5-8.5	
Total suspended solids	mg/l		
Sulphate	mg/l SO_4	150	250
Total organic carbon	mg/l C		
Zinc	mg/l Zn	0.5	3

3.14.2 Hydrogeology

Detailed groundwater studies were not included in the scope of the ESIA. A hydrogeology impact statement is included in Volume 4, Appendix C of the ESIA. Given the nature of the project, a linear infrastructure with minimal subsurface impact, the risk of contamination to groundwater resources is inherently low. Powerlines typically involve limited ground disturbance, primarily for pole foundations, which minimises direct interaction with groundwater systems. Additionally, the absence of significant excavation or extensive subsurface work reduces potential pathways for contamination, making a detailed groundwater risk analysis less critical in this context.

However, recognising the importance of groundwater resources for local communities, measures have been recommended to avoid and mitigate potential impacts on community boreholes. These measures include conducting a hydrocensus to identify sensitive receptors, implementing groundwater level monitoring during construction, and ensuring that spill prevention and response measures are strictly adhered to on-site. This approach ensures that any risks to groundwater availability and quality, particularly around community wells, are identified early and effectively managed.

3.15 PS3 – RE8: Waste Management Plan

This addendum outlines additional management measures to the Waste Management Plan (WMP) (Volume 3, Appendix M) to address issues identified during the review process. As the WMP has been formally submitted to the Angolan authorities, updates and additional measures should be applied during implementation.

3.15.1 Objectives of WMP

Amend Section 1.3 to include the following objective:

- Implementing proactive measures to reduce waste production at all stages of the Project lifecycle.

3.15.2 Construction phase

Amend Section 6.1 to include:

- If incineration is considered as a solution for the treatment of waste, efforts will be made to minimise chemicals listed in Annex C of the Stockholm Convention to prevent the formation of unintentional Persistent Organic Pollutants (POPs); and
- The Contractor's Environmental, Health, and Safety (EHS) Manager will supervise waste segregation and storage at all designated waste management areas. The EHS Manager will ensure compliance with segregation protocols, monitor waste storage practices, and conduct regular inspections.

3.15.3 Hazardous waste management during construction

Amend Section 6.1.4 to include:

- The Contractor will ascertain whether licensed disposal sites are operated to acceptable standards by:
    - Requesting and reviewing licenses and permits for third-party waste disposal facilities;
    - Conducting due diligence audits or site inspections to verify compliance with national laws and international standards; and
    - Requiring waste disposal certificates and compliance documentation for each hazardous waste consignment.

3.15.4 Waste management procedures

Amend Section 6.3.1 to include:

- Measures to reduce waste production:
    - Implement the waste hierarchy of prevent, reduce, reuse, and recycle as a guiding principle;
    - Adopt procurement strategies to reduce packaging waste by sourcing materials in bulk and selecting suppliers with take-back programmes;
    - Use durable and reusable materials where possible, such as prefabricated components to minimise waste generation onsite; and
    - Monitor material inventories to avoid over-ordering and maximise the reuse of offcuts and surplus materials.

3.15.5 Monitoring and reporting

Amend Section 8 of the WMP to include:

- To centralise and standardise all performance tracking activities, the following framework will be implemented:
    - Performance Indicators (KPIs) -
        - Amount of waste generated (by type);
        - Percentage of waste recycled, reused, or composted;
        - Compliance rates for disposal of hazardous waste;
    - Monitoring Plan -
        - Waste management performance will be monitored through regular site audits, inspections, and waste tracking registers;
        - Monthly inspections and quarterly audits by the EHS Manager; and
    - Reporting requirements -
        - Contractors will submit monthly waste reports detailing waste quantities, types, and destinations;
        - Annual waste summaries will be prepared for internal review and reporting to external stakeholders, as required.

This comprehensive monitoring and reporting framework ensures transparency, accountability, and continual improvement of waste management practices throughout the Project lifecycle.

3.15.6 Link to Emergency Preparedness and Response Plan (EPRP)

Add a new section titled “Link to Emergency Preparedness and Response Plan (EPRP)”:

- The WMP is directly linked to the EPRP presented in Volume 2, Section 7.4.5. Procedures for addressing waste-related incidents, including hazardous waste spills or leaks, are outlined in the EPRP. Emergency response protocols include:
    - Immediate containment and cleanup of spills;
    - Notification of emergency response teams and certified disposal facilities; and
    - Contact information for emergency teams and hazardous waste contractors is maintained in the EPRP.

3.15.7 Link to Stakeholder Engagement Plan (SEP)

Add a new section titled “Link to Stakeholder Engagement Plan (SEP)”:

- The WMP is aligned with the SEP, which outlines strategies for engaging stakeholders and local communities. Key elements include:
    - Communicating waste management plans to stakeholders and affected communities;
    - Engaging communities regarding potential impacts and mitigation measures; and
    - Providing updates on waste management activities through community meetings or information sessions.

3.15.8 Continuous improvement

Add a new section titled “Continuous improvement”:

- To ensure the WMP remains effective, a process of continuous improvement will be established:
    - A feedback mechanism will be provided to workers, stakeholders, and the community through the Project’s Grievance Management Procedure;
    - The WMP will be regularly reviewed and updated based on performance data, regulatory changes, and lessons learned during implementation; and
    - Initiatives will be developed to raise awareness among local communities about proper waste management practices, particularly if public lands or facilities are affected.

3.16 PS3 – RE10: Use of pesticides

Regarding the use of Polychlorinated Biphenyls (PCBs)/Pesticides by RNT during the operational phase, RNT clarified that they are a member of the Southern African Power Pool (SAPP), a regional organisation focused on the expansion and integration of the electrical system across Southern African Development Community (SADC) member states.

SAPP operates through various subcommittees, including the Environmental Subcommittee, which is actively working on initiatives to eliminate the use of PCBs among member states. However, Angola is currently not part of this specific program, which is funded by the World Bank and managed by an independent organisation.

RNT emphasised Angola’s ongoing efforts to sell energy to SAPP. As part of their commitment to modern environmental standards, RNT does not use PCBs in new substations, although legacy PCB usage persists in older substations. RNT confirmed that PCBs will not be used during the operation of the Project Substations.

3.17 PS4 – CS1: Local political context

The Huíla province, including the municipalities of Jamba, Cuvango, and Chipindo, has seen relative stability since the end of the Angolan Civil War in 2002. There is no indication of active significant armed or organised opposition groups in these regions currently. Governance structures have been reinforced after the conflict period, and economic activities such as mining and agriculture are prioritised (BTI, 2024). However, issues related to development, resource management, and

governance persist. The region's ethnic diversity, particularly with groups like the Nganguela and Umbundu, influences local socio-political dynamics.

While Jamba is noted for its mineral wealth, including iron and possibly diamonds, Chipindo and Cuvango are more reliant on subsistence agriculture (Provincial Government of Huíla, 2021). Any tension or grievances about economic struggles, rising living costs, and social services are more likely expressed through political or civil society engagement such as grassroots activism, rather than militant activity.

In Huíla, local populations face difficulties such as inadequate healthcare and economic hardships exacerbated by public debt and inflation, as noted by residents and civil society observers (VOA, 2023; Angop, 2024). Although national opposition groups like UNITA are active across Angola, their influence in the interior regions like Huila varies and may not always result in visible local movements.

There have been reports of dissatisfaction and protests in other provinces about governance and social conditions, often suppressed by the government. This suggests that while organised opposition groups may not be prominent in Huíla's rural areas, the underlying socio-economic conditions could foster local grievances that might later align with broader national movements. This should be monitored as part of the project's CHSS plan and ongoing risk assessments.

3.18 PS4 – CS1: Security impacts

Although the regional security context described in PS4-SC1 above does not currently pose any major threats, community security impacts have been identified. These impacts could stem from existing or new vulnerabilities caused by existing social or political marginalisation, power dynamics, or project benefits distribution.

3.18.1 Impact SE4.8: Unfair distribution of electricity

Currently, it is envisaged that a limited number of electrical connections will be made to the beneficiary towns of Jamba, Cuvango and Chipindo. This means that the households in the villages between these towns and along the transmission line would not benefit from the Project's proposed household electrical connections. It also means that not every single household in a given town will receive a connection. It could also mean that certain governmental services, such as the municipal administration buildings, and health and educational facilities will be prioritised for such connections. Stakeholders might also gain knowledge of planned mining and metals manufacturing projects to the south of the project site, which could also benefit from the transmission line. The limited number and the prioritisation of certain connections might be seen by stakeholders as partiality on the part of the implementer, the government in general, the municipal administrations, or the electricity distribution entity.

The impact rating before and after mitigation measures are applied, is described in Table 3-16.

Table 3-16: Unfair distribution of electricity

Activity: Project operation								
Project phase: Operation								
SE4.8 - Impact Summary: Unfair distribution of electricity								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Major*	*Long-term*	*Regional*	***High***	*Definite*	***High***	-	*Medium*

Management Measures:								
1. *Publicise intended connections well ahead of time;* 2. *Consult stakeholders on preferred, most communally beneficial connections. If possible, prioritise connections for public lighting that would increase safety, public services such as clinics, or business centres that would allow various persons to benefit from a single connection;* 3. *Provide regular feedback on when connections are planned for implementation;* 4. *Communicate the IFC-compliant grievance mechanism in the Project Affected Communities (PACs);* 5. *The long-term functioning and maintenance of the powerlines and substations must be sustained to ensure that it benefits the PACs permanently;* 6. *Expansions from the newly constructed transmission line (after this Project) would further increase the geographical reach of the benefits associated with electricity availability; and* 7. *The potential to include remote groups such as the settled San families should also be considered in long-term strategic planning for the expansion of the transmission network.*								
After Management	*Minor*	*Long-term*	*Regional*	***Medium***	*Possible*	***Medium***	-	*Medium*

3.18.2 Impact SE4.9: Perceived preferential project benefits

Any planned project benefits, such as employment or business opportunities, as well as social/community investment programmes will inevitably only benefit some individuals or groups. The Project simply cannot employ everyone who is unemployed or has a business in its AoI, nor can it provide social investments to stop all current gaps in public services.

Those who are unsuccessful in obtaining employment, contracts, or social/community investment benefits will likely feel excluded and dissatisfied because they did not benefit from the Project as they anticipated. This could undermine trust in the implementer, the government, or any future projects of a similar nature.

The impact rating before and after mitigation measures are applied, is described in Table 3-17.

Table 3-17: Perceived preferential project benefits

Activity: Project benefit distribution								
Project phase: Construction and Operation								
SE4.9 - Impact Summary: Perceived preferential project benefits								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Major*	*Long-term*	*Regional*	***High***	*Definite*	***High***	-	*Medium*
Management Measures:								
1. *Communicate the IFC-compliant grievance mechanism in the PACs;* 2. *Where local small, medium and micro enterprises (SMMEs) are available, the project should aim to make use of their products or services where possible. SMME databases might be available from local municipal administrations;* 3. *Where local SMMEs are supported, ensure that it does not cause division between those with whom the contractor does business and those with whom it does not;* 4. *Ensure that the main construction contractor has a preferential recruitment policy in place that requires a certain number of local employees from within all six affected municipalities, not just the three beneficiary municipalities;* 5. *Where possible, designate employment opportunities for women and disabled persons employees from within all affected municipalities, not just the three beneficiary municipalities;* 6. *Where local skillsets are available, the Project should aim to employ these persons as far as practicable. Skills databases can be obtained from local municipal administrations;*								

7. *Establish a mobile labour desk prior to the construction phase, so that potential workers residing in the villages, and not just the municipal urban centres, can all get a fair chance to apply through a single channel;* 8. *Awareness-raising of application opportunities should be done beforehand with the support of local municipal administrators and sobas to ensure that applicants can prepare the relevant documents. Capacity building with municipal administrators and sobas on the importance of inclusivity and non-discrimination might be necessary to ensure true support;* 9. *Ensure that, when any engagements related to employment opportunities and financial management take place, all adult members of the household are present. Females might be preparing agricultural fields, harvesting, collecting water, washing clothes, or bathing during normal working hours when these engagements are conducted;* 10. *Any wage payments should be provided along with relevant education on financial literacy and responsible spending; and* 11. *Visuals and simple text in Umbundu, Nganguela and Portuguese should be used in workplaces, awareness and education sessions on inclusion and financial literacy. Communicating in Umbundu and Nganguela is very important to ensure that women who do not understand Portuguese know their rights as employees.*								
After Management	*Minor*	*Long-term*	*Regional*	***Medium***	*Possible*	***Medium***	-	*Medium*

3.18.3 Impact SE4.10: ASM restrictions and consequent safety risks

If there are any ASM sites on or close to the Project sites, the implementer might involve law enforcement to move the artisanal miners out of the areas before construction can commence. This could result in violence, conflict or security incidents affecting the communities in the AoI.

The impact rating before and after mitigation measures are applied, is described in Table 3-18.

Table 3-18: ASM restrictions and consequent safety risks

Activity: ASM exclusion								
Project phase: Construction								
SE4.10 - Impact Summary: ASM restrictions and consequent safety risks								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Major*	*Short-term*	*Local*	***Medium***	*Possible*	***Medium***	-	*Medium*
Management Measures:								
1. *Communicate the IFC-compliant grievance mechanism in the PACs;* 2. *Ensure that agreements with the appointed security company include the following, and that local law enforcement are aligned with the following:* a) *When hiring security personnel, a reasonable effort must have been made to screen them for past abuses* b) *Security personnel need to be properly trained in the use of force and, most importantly, appropriate conduct towards villagers* c) *Severe penalties/disciplinary action should be taken against any security personnel involved in theft or abuse* d) *A code of conduct must be developed and enforced for the security personnel* e) *The code of conduct must be consistent with the UN Code of Conduct for Law Enforcement Officials, the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, and Voluntary Principles on Security and Human Rights (VPSHRs);* 3. *All workers are to be informed about the roles and responsibilities of the security personnel;* 4. *Liaise with local law enforcement, police and/or other security entities on their strategies for managing ASM activities in the area;* 5. *Provide employment opportunities for unskilled labour from the PACs as far as possible;* 6. *Conduct stakeholder engagement prior to site establishment to ensure that there is widespread awareness of the land that is in RNT's possession and that will be used for the transmission line (or the*								

National Electricity Distribution Company's (ENDE's) land for the distribution network) to discourage ASM; and *7. Ensure that the CHSS plan is included in contract documents of the main contractor and implemented by them and the transmission and distribution line operators.*								
After Management	*Moderate*	*Short-term*	*Local*	***Low***	*Possible*	***Low***	-	*Medium*

3.18.4 Impact SE4.11: Restriction of traditional agricultural practices

Agricultural resources or the use thereof, such as the clearing of land and burning of vegetation, could be prohibited or restricted within the operational safety zones. Access to surface water resources for agriculture could also be restricted (either during construction or operation). This could cause grievances among community members.

The impact rating before and after mitigation measures are applied, is described in Table 3-19.

Table 3-19: Restriction of traditional agricultural practices

Activity: Traditional agricultural activities and resource restrictions								
Project phase: Construction and Operation								
SE4.11 - Impact Summary: Restrictions on traditional agricultural practices and resources								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Moderate*	*Long-term*	*Regional*	***High***	*Possible*	***High***	-	*Medium*
Management Measures:								
1. Communicate the IFC-compliant grievance mechanism in the PACs; *2. Implement an IFC-compliant RAP/LRP. The process should not only meet national legislation, but also comply with GIIP requirements, such as IFC PS5 if economic displacement is caused by the Project;* *3. Provide alternative land or resources (e.g. water) if access is restricted;* *4. If replacement land and livelihood restoration support are provided, the land should be of better quality and potential assistance or support for agricultural resources provided. PAPs or project affected households should be upskilled on alternative farming methods if current practices such as vegetation clearing and burning cause safety risks to the project;* *5. Any livelihood restoration and transitional support must be accompanied by education and awareness-raising on responsible and sustainable farming practices. There might be other cost-effective, waterwise and sustainable farming practices based on new technologies or research; and* *6. Visuals and simple text in Umbundu, Nganguela and Portuguese should be used in awareness and education sessions on sustainable farming and financial literacy as part of transitional support and livelihood restoration. Communicating in Umbundu and Nganguela is very important to ensure that women and the elderly (who are identified as vulnerable groups in this Project) who do not understand Portuguese are also empowered to undertake sustainable farming.*								
After Management	*Moderate*	*Long-term*	*Local*	***Medium***	*Possible*	***Medium***	-	*Medium*

3.19 PS6 – BD1: Changes to ancillary facilities

As the Project progresses, the location of ancillary facilities such as construction laydown areas, may still undergo minor or moderate adjustments. Any necessary updates to the AoI related to these components will be managed through PAK Yatirim's Management of Change Procedure (PY-ANG-MOC-PRO-00001). This procedure ensures that any modifications to project components are evaluated for potential environmental and social impacts, including habitat loss, the presence of critical or natural habitats, and threatened species, in compliance with PS6 requirements.

This adaptive management approach maintains flexibility without necessitating immediate ESIA updates, ensuring that all national regulatory requirements and lender standards are fully addressed before construction begins. Where such changes are located outside of the assessed areas, specialists will need to be consulted in order to provide suitable opinion as to the potential impacts and risks associated with the highlighted changes. Where necessary, additional site visits may be required to ground truth conditions on site, with impact assessments being updated accordingly.

Habitat loss calculations have been provided for in the floral report (Volume 4, Appendix H of the ESIA – refer to Part B Section 7.3). These calculated losses are, however, noted to be estimates based on the current layout provided. Should there be any changes in the laydown areas, roads or other ancillary infrastructures, the habitat loss calculation may need to be updated in line with the Management of Change Procedure.

3.20 PS6 – BD2: Sensitive receptors

When considering sensitive receptors associated with the Project area, a number of methods were used to screen for fauna and flora. These are elaborated on below.

3.20.1 Faunal

Red Data List (RDL) listed species (excluding Least Concern) as per the International Union for Conservation of Nature (IUCN) database were downloaded for Angola and are presented in the faunal report in Section 4.2. The Red List of Animal Species of Angola (Executive Decree No. 252/18, 2018) was also considered in terms of RDL species. Each RDL species was subsequently cross-referenced with the study area in terms of known distributions and suitable habitat known to occur on site. Only species that are considered to have a medium or high probability of occurrence were discussed further in the report in terms of the Critical Habitat Assessment (including confirmed SCC).

Volume 4, Appendix I of the ESIA (refer to Part C: Section 4) lists the expected threatened species that may be associated with the study area and the habitats therein.

3.20.2 Floral

Threatened floral species that have the potential to be present within the AoI are listed in Volume 4, Appendix H (refer to Part B: Section 4.5 and Part B: Appendix D).

All RDL global (IUCN database was downloaded for Angola) and national (Executive Decree No. 252/18, 2018) floral species were considered (with emphasis on national species as often these populations are at greater risk than global populations). Each RDL species was assessed in terms of habitat requirements, distribution ranges and the most recent observation data. Where species distribution or habitat ranges did not overlap with the study area, or where habitat was not suitable/threats to species were too high, they were excluded from the report. Within the flora report, only species that are considered to have a medium or high probability of occurrence were discussed (including confirmed SCC). Species with a low Probability of Occurrence (POC) were not included as they did not meet the above criteria, nor will a low POC species result in a different outcome in terms of the decision-making process for the project.

3.21 PS6 – BD3: Impact assessment and potential gaps

The impact assessments were based on the assessed habitats and RDL species data collected from the wet and dry season site visits. The impact assessments were undertaken in terms of the known impacts to the various habitat units (loss of habitat) and the known and likely species therein and have been presented in both the floral and faunal reports (refer to Volume 4, Appendix H and Appendix I of the ESIA). Impact outcomes and mitigation measures were presented in line with the

mitigation hierarchy, with specific mitigation measures being provided in terms of collision and electrocution risks for volant species. Additional stipulations were provided in terms of bird diverters/flappers, which should be fitted along the entire length of the OHL. Should the pre-construction avifaunal monitoring however indicate that certain areas are not high frequency avifaunal areas/ flight paths, then the placement of such bird flappers in areas can be reconsidered based on the additional monitoring data. Provision has been made in the avifuanal monitoring plan/report that the layout/location of bird diverters be refined based on further data monitoring data from the site.

As indicated in the specialist reports and Environmental and Social Management Plan (ESMP), it is important that the proponent undertake environmental audits at key stages of the project to ensure that the mitigation measures as stipulated are being implemented and adhered to. These measures can be undertaken by an environmental control officer (ECO), with audits being carried out more frequently in the construction phase to ensure compliance, as this phase is likely to have higher site-specific impacts than that of the operational phase. Where issues / gaps are identified by the ECO during the audits, these must be immediately addressed either via actions suggested by the ECO or by consultation with external specialists.

3.22 PS6 – BD4: Mitigation hierarchy

The ESIA and associated management plans are considered adequate at this stage to meet current Project requirements. The ESMP, including development of an on-site Biodiversity Management Plan (BMP), should undergo further development prior to construction by PAK Yatirim/RNT to fully align with IFC PS6 requirements and comprehensively address biodiversity mitigation needs identified in the ESIA.

As a living document, the ESMP should integrate all relevant mitigation measures, including specific roles, responsibilities, compliance verification methods, and adaptive management triggers. Pre-construction procedures—such as a Vegetation Clearance Procedure, Pre-Construction Check Procedure, Fauna/Flora Translocation Procedure, and Restoration Procedure—should be incorporated to ensure adherence to GIIP, along with enhanced biodiversity sensitivity training for staff.

For avifauna, the ESMP should include detailed monitoring protocols following ESDD-recommended guidelines to safeguard avian species. Specific protections for riparian areas and wetlands should also be strengthened, with targeted erosion and sedimentation control measures and restricted vehicular access near water bodies, particularly during the wet season. All infrstructure must be kept out of the freshwater systems as well as the defined buffers. The avifaunal monitoring report developed as part of the biodiversity studies must be implemented and regularly updated based on site changes and observations.

To address collision and electrocution risks, the BMP should specify bird marker coverage areas (as indicated in the faunal report and avifaunal monitoring report), supported by mapping, and, if necessary, the placement of pylons may be adjusted in response to additional surveys that identify high bird or bat activity near critical areas like large water bodies. Additional stipulations were provided in terms of bird diverters/flappers, which should be fitted along the entire length of the OHL. Should the pre-construction avifaunal monitoring however indicate that certain areas are not high frequency avifaunal areas/ flight paths, then the placement of such bird flappers in areas can be reconsidered based on the additional monitoring data. Provision has been made in the avifuanal monitoring plan/report that the layout/location of bird diverters be refined based on further data monitoring data from the site. Collision mitigation measures should follow industry standards and incorporate recognised guidance to protect avian and bat species. By maintaining the ESMP as a living document, these protections should remain adaptable and responsive to evolving project

needs, ensuring the Project's biodiversity commitments are met in a practical, evidence-based manner.

Pre-construction avifaunal and bat monitoring activities should provide further insights to reassess and confirm the placement of the proposed bird flappers/diverters, ensuring their optimal positioning for effective mitigation.. The avifaunal monitoring plan developed as part of the ESIA should be updated based on new data records and project changes. Mitigation measures to reduce/minimise collision and electrocution risks to avifauna and bat species have been provided in the faunal report. It is further noted that during monitoring activities in the operational phase of the Project, these mitigation measures can be updated / amended in line with newly observed risks relating to bats and avifauna stemming from the OHL.

3.23 PS6 – BD5: No Net Loss (NNL)

A No Net Loss Strategy (NNL) Framework is included in Appendix A. The ESIA and biodiversity assessments provides a preliminary assessment of habitat types impacted by the Project and includes initial mapping of these areas. Prior to construction, this assessment should be refined by PAK Yatirim/RNT to ensure full alignment with IFC PS6's NNL requirements. Specifically, a detailed review of habitat areas affected by both core and ancillary structures, once final designs are available, should be conducted to confirm anticipated residual losses. The mapping should be validated using updated satellite imagery or other reliable data sources.

Following this, a Habitat Compensation and No Net Loss Strategy should be developed in accordance with the NNL Framework and integrated into the ESMP, incorporating compensatory measures such as habitat restoration, preservation, and enhancement to achieve NNL objectives for Natural Habitat. This ensures comprehensive habitat management and biodiversity conservation before any construction activities begin.

3.24 PS6 – BD6: Critical Habitat Assessment

Critical Habitat assessments were undertaken for both floral and faunal aspects and are discussed within the respective reports (Volume 4, Appendix H and I of the ESIA – refer to Part B and C). The CH Assessment acknowledges that while definitive CH presence cannot be confirmed at this stage, the Miombo, Secondary Miombo Woodland and Freshwater Habitats are precautionarily listed as Critical Habitat due to limited site-specific data and the region being largely unstudied. As a result, a Biodiversity Action Plan (BAP) is not required at this stage; however, future pre-construction monitoring studies and walkdowns will be undertaken to gather additional data and reassess CH status. In line with IFC PS6 requirements, the Project has implemented a Biodiversity Management Plan (BMP) and a No Net Loss (NNL) Strategy Framework to mitigate biodiversity risks, guide conservation actions, and ensure appropriate habitat management and potential offsetting, if required.

A high-level Biodiversity Management Plan (BMP) was developed in order to guide PAK Yatirim/RNT in terms of best practice biodiversity management during the various phases of the Project. This BMP is considered to be a living document and will require updating following the pre-site walk downs of the final route, whilst also incorporating any layout changes should they be made.

3.25 PS6 – BD7: Alien Invasive Species

During both the wet and dry season site assessments, Alien Invasive Species (AIS) were recorded. The floral report (Volume 4, Appendix H – refer to Part B: Section 4.7) discusses the AIS observed on site as well as optional control methods for the species observed.

The ESIA further includes a framework for an AIS Management Plan, outlining preliminary strategies to prevent, control, and, where necessary, eradicate invasive species within the Project's AoI. This framework sets the foundation for a comprehensive AIS Management Plan to be finalised by PAK/RNT as part of the Construction ESMP before the commencement of pre-clearance work. The final AIS Management Plan should detail species-specific handling, disposal protocols, monitoring, and staff awareness measures, ensuring alignment with general industry recommendations, such as those in the Invasive Species Compendium. Additionally, measures such as equipment washdowns, Personal Protective Equipment (PPE) requirements, and transportation protocols should be implemented to prevent the spread of invasive species across work areas. This phased approach ensures compliance with IFC PS6 while allowing the plan's finalisation to incorporate up-to-date site-specific data as gathered through pre-clearance surveys.

3.26 PS6 – BD8: Priority Ecosystem Services

The ESIA addresses ecosystem services relevant to the Project's AoI. A more detailed assessment should be developed by PAK/RNT before pre-clearance activities begin. This assessment should confirm the classification of Type I and Type II priority ecosystem services based on IFC PS6 Guidance Note 6 definitions, ensuring any services on which affected communities rely are fully considered and mitigated. The Project does not rely on Type II services, such as surface water, for its operations, which minimises the potential for dependency-related impacts on local resources.

All mitigation measures for ecosystem services, particularly compensatory replanting for plant species of local importance, should be incorporated into the ESMP and tailored to community needs while strictly avoiding the use of alien invasive species. This phased approach allows for any refinements based on updated community consultations and further ecological data to ensure comprehensive management of ecosystem services.

3.27 PS 7 – IP1: Indigenous peoples (IPs) in the immediate area of the Project

In the initial stages of the ESIA, the Cuvango and Jamba Municipal Administrations stated that IPs occur in the Cuvango and Jamba municipal areas. The Municipalities indicated their exact locations, as shown in Figure 3-3. The figure indicates that the IPs (San people) are located more than 70 km south of the Project. Two San groups were identified in Cuvango:

- The first group consists of four families making up 20 people in the town of Kassindi, where two people are in the boarding school of the Catholic Mission of Cuvango; and
- The second group occurs in the town of Vilombelo and comprises 18 families, totalling 56 people.

Subsequently, a small group of San was identified 20 km south of the Project, which falls outside of the immediate Project area.

Although the movements of the San are monitored by the Jamba and Cuvango Municipal Administrations, the San in Angola are currently far less nomadic than they traditionally were due to increased pressures associated with urbanisation and systematic discrimination (IDL-FAS, 2022).

There is a possibility that the Project may indirectly result in activities that could impact general community land and resources, which are used by various local communities, including the San. Additionally, socio-cultural context and project circumstances may evolve, potentially influencing the locations and movements of the San people. PAK/RNT should therefore continue to track the presence of San people through ongoing Project monitoring and engagement with key stakeholders (such as the Cuvango and Jamba Municipal Administrations) to ensure that any new findings are addressed timeously.

The Project social receptors, including San peoples, are presented in Figure 3-3 below. An assessment of the Project's potential indirect impacts on IPs is also provided.

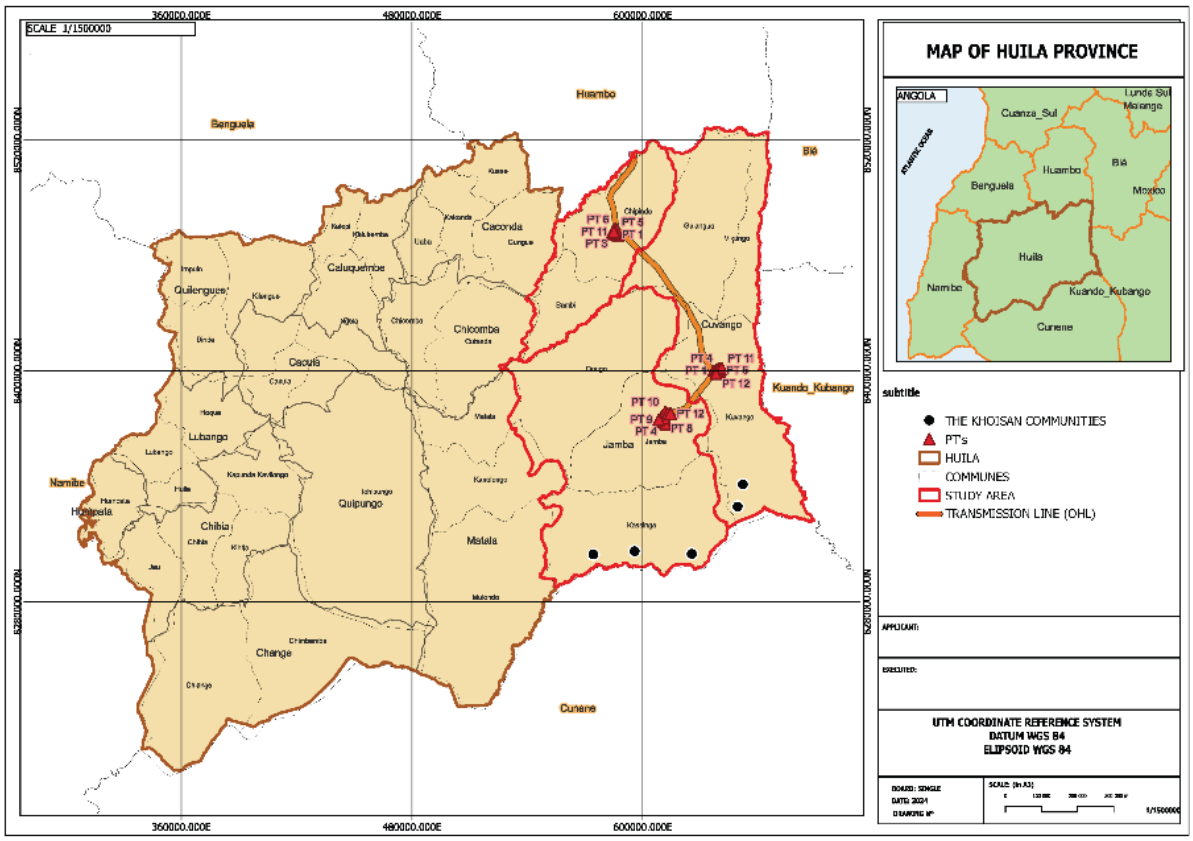

Figure 3-3: Map showing the location of the San community in the municipalities of Jamba and Cuvango.

3.28 PS7 – IP2: Indirect impacts on IPs

3.28.1 Impact SE1.10: Reduced resource accessibility by IPs

Land clearing and increased vehicular movement associated with the Project development could decrease the availability of wildlife for hunting by San if they were to venture very close to the project site. It could also hamper their practices of gathering wild fruit, extracting honey for consumption and collecting medicinal plants. Construction workers might engage in hunting and fishing, which could result in fewer of these resources being available to the San.

Access to natural resources used by the San may be affected by the Project. Construction activities could disrupt the San peoples' ability to reach their resources necessitating additional time and effort to find other paths.

The quality of ecosystem services could also be impacted by Project activity, such as hydrocarbon spillages during the construction phase, which could impact soil and water quality. Any groundwater abstraction for concrete batching could also reduce groundwater availability from wells or boreholes should they need to access surface or groundwater from sources downstream of the Project site.

The impact rating before and after mitigation measures are applied, is described in Table 3-20.

Table 3-20: Reduced resource accessibility by Indigenous Peoples

Activity: Construction activities
Project phase: Construction

SE1.10 - Impact Summary: Resources customarily used by San could be impacted if they venture close to site or collect water resources downstream from site

	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+/-	Confidence
Before Management	*Major*	*Medium-term*	*Local*	***Medium***	*Possible*	***Medium***	-	*Medium*

Management Measures:

1. *Establish and monitor conservation corridors;*
2. *Establish safe access routes to natural resource-use areas;*
3. *All site establishment and vegetation clearing activities should be preceded by an opportunity given to IPs to harvest natural resources or materials they could use;*
4. *No recreational hunting or fishing should take place by construction workers on- or off-duty;*
5. *Vegetation clearing should be limited to the absolute minimum;*
6. *Hydrocarbon spills should be prevented as prescribed in the ESMP;*
7. *Any construction activities should be restricted to the established and demarcated construction sites;*
8. *Vehicle movement should be restricted to existing roads and contractor personnel required to drive at appropriate speed limits;*
9. *Locations of medicinal plants, wild fruit or beehives should be identified prior to site establishment to ensure that they can be avoided, harvested or replanted;*
10. *Conduct stakeholder engagement prior to site establishment to ensure that there is widespread awareness of the land that is in RNT's possession and that will be used for the substations and transmission line (or ENDE's land for the distribution network);*
11. *Construction and no-entry areas should be clearly marked prior to site establishment and maintained once substations are constructed, to ensure that no unauthorised entry takes place which can lead to safety risks;*
12. *Construct new roads which could be used safely (i.e., with fenced walking side paths) outside of any buffer areas required by the biodiversity-related mitigation measures;*
13. *Consult the local municipalities shortly before the commencement of construction to ensure that no IPs are expected to move through the Project area;*
14. *Ensure that the siting of the substations is as far as possible from forested areas and within the land in RNT's possession.*
15. *Liaise with the local municipal administration of Cuvango on the engagement structures to be followed if any consultations are required with San people, since it cannot be assumed that San people will attend or have access to such awareness-raising. They must be consulted separately as they might not feel comfortable joining a "normal" community meeting, might not understand the language used, and might be nomadic.*
16. *Visuals and simple text in !Kung should be used in any engagements with San;*
17. *Ensure that honey collection sites are not destroyed, disturbed, or access thereto denied during construction activities; and*
18. *The grievance mechanism must be publicised, implemented and evaluated by the contractor, and must be accessible by Khoi San. They must be able to raise grievances through a variety of platforms to ensure that it is widely accessible, but all grievances must be recorded by the Community Liaison Officer (CLO) or similar role player. This might include visits to the villages to hear and record any complaints or grievances.*

After Management	*Moderate*	*Medium-term*	*Site*	***Medium***	*Unlikely*	***Low***	-	*Medium*

3.28.2 Impact SE5.4: Opportunity for economic participation by Indigenous Peoples

Although San people are not currently located in the immediate Project area, some might be interested in participating in the development through employment, direct or indirect business (such as the sale of crafts) or skills development. If community or socio-economic development initiatives (such as support for pupils of schooling age or assistance to clinics) are planned as part of the Project, the San people could obtain new skills, actively participate in the economy and benefit from

the project. Employing those who are interested could also offer an opportunity to create awareness among local employees about their culture and to start conversations around integration.

The impact rating before and after mitigation measures are applied, is described in Table 3-21.

Table 3-21: Opportunity for economic participation by Indigenous Peoples

Activity: Socio-economic / community development, business creation and job opportunities								
Project phase: Construction and operation								
SE5.4 - Impact Summary: Opportunity for economic participation by San people								
	Magnitude	**Duration**	**Scale**	**Consequence**	**Probability**	**SIGNIFICANCE**	**+/-**	**Confidence**
Before Management	*Moderate*	*Medium-term*	*Local*	***Medium***	*Unlikely*	***Low***	+	*Medium*
Management Measures:								
1. Any assistance that is provided to local communities should not be assumed to also benefit the San groups, as they face widespread discrimination and exclusion. Any such benefits should be provided in a separate forum (e.g., mobile); *2. Where employment opportunities are advertised, especially local employment of unskilled labour, care should be taken not to discriminate against San applicants. Consider informing San people of potential temporary employment opportunities in a separate forum as above and in the !Kung language spoken by them;* *3. Where San applicants are successful in obtaining even temporary employment, the occurrence of workplace discrimination and harassment should be monitored closely;* *4. When establishing which households receive electricity connections as a result of the Project, care should be taken to connect San households as well;* *5. Ensure compliance with IFC PS 8 during ongoing engagements with San people in the Project AoI;* *6. Ensure compliance with IFC PS 2 (Labour and Working Conditions) and the relevant International Labour Organisation conventions where San people are recruited and employed in any component of the project.* *7. Create cultural awareness among contactors' employees around the presence of Khoi San in the Project area, since some of the workers might be migrant workers who are unfamiliar with the area, or who simply do not have any cultural awareness of the sensitivities around Khoi San peoples. This could be done through visual media and toolbox talks on site;* *8. Liaise with the local municipal administration of Cuvango on the engagement structures to be followed if any consultations are required with San people, since it cannot be assumed that San people will attend or have access to such awareness-raising. They must be consulted separately as they might not feel comfortable joining a "regular" community meeting, might not understand the language used, and might be nomadic; and* *9. Visuals and simple text in !Kung should be used in any engagements with IPs.*								
After Management	*Moderate*	*Medium-term*	*Local*	***Medium***	*Possible*	***Medium***	+	*Medium*

4 Conclusions and recommendations

The Gove-Chipindo-Cuvango-Jamba Transmission Line Project has been strengthened through additional impact assessments and enhanced environmental and social management measures to ensure compliance with national regulations and international standards. This Addendum provides updated strategies, targeted measures, and integration pathways for the ESMP.

4.1 Key conclusions

The Addendum addresses the IESC requirements and aligns with good international industry practice (GIIP). The following conclusions are drawn per applicable PS.

4.1.1 IFC PS1 updates: Assessment and management of environmental and social risks and impacts

Key updates include:

- Expanded assessments for cumulative impacts, environmental, and social risks provide a comprehensive understanding of the Project's direct and indirect impacts. These assessments include the Major Accident Risk Assessment (MARA), waste management impacts, natural resource consumption impacts, in-migration trends, and analysis of alternatives;
- The Cumulative Impact Assessment (CIA) identifies pressures on Valued Environmental and Social Components (VECs), such as freshwater systems, Miombo woodlands, and socio-economic infrastructure, emphasising the need for shared management approaches with stakeholders; and
- Strengthened ties to the Stakeholder Engagement Plan (SEP) ensure clear communication of impacts and management measures to affected communities, while integrating feedback mechanisms for continuous improvement.

4.1.2 IFC PS2 updates: Labour and working conditions

Key updates include:

- Strengthened measures to monitor the welfare of workers, including those employed by subcontractors, through regular audits and inspections;
- The Labour Management Plan (LMP) improvements to ensure compliance with PS2 requirements for fair treatment, non-discrimination, and grievance management;
- Enhanced Occupational Health and Safety (OHS) measures, including specific training programs, provision of Personal Protective Equipment (PPE), and monitoring of worker health and safety compliance; and
- Measures to prevent forced and child labour across all Project phases have been reinforced, with clear obligations placed on contractors and subcontractors.

4.1.3 IFC PS3 updates: Resource efficiency and pollution prevention

Key updates include:

- Clarification on groundwater risks. Although detailed groundwater studies were not conducted within the scope of the ESIA, measures have been proposed to prevent impacts on community boreholes. These include implementing groundwater monitoring programs, conducting a hydrocensus to identify sensitive receptors, and adopting spill prevention and emergency response protocols;
- Waste Management Plan (WMP) updates that address -
    - Proactive waste minimisation strategies, including waste segregation, recycling, and responsible disposal;
    - Enhanced oversight for hazardous waste transport and disposal, ensuring compliance with certified facilities;

    - Collaboration with local authorities to explore upgrading formalised waste facilities to accommodate Project wastes where feasible;
- Inclusion of resource efficiency strategies for -
    - Water recycling and reuse during construction and operations;
    - Predefined, measurable benchmarks and Key Performance Indicators (KPIs) to evaluate resource efficiency, such as water savings, waste reduction, and energy efficiency performance; and
- Inclusion of measures for Greenhouse Gas (GHG) emissions that promote -:
    - Adherence to Euro VI-equivalent standards for construction machinery;
    - Implementation of fuel-efficient practices, including reducing idling time and optimising equipment use;
    - Use of low-VOC materials to address both direct and indirect GHG emissions.

4.1.4 IFC PS4 updates: Community health, safety and security

Key updates include:

- Measures to manage risks associated with natural disasters (e.g., flooding, landslides) and major accidents have been incorporated, aligning with the MARA findings;
- Enhanced protocols to address hazardous material spills and emergency preparedness and response, ensuring risks to nearby communities are minimised;
- Strategies to avoid disruptions to community water sources, particularly boreholes, through regular monitoring and engagement with affected communities; and
- Provisions to ensure that construction activities do not increase public safety risks, including traffic safety management and community awareness programs.

4.1.5 IFC PS6 updates: Biodiversity conservation and sustainable management of living natural resources

Key updates include:

- Avoidance of critical habitats and mitigation of impacts on biodiversity through targeted measures, including habitat restoration and protection;
- Assessment of threatened floral and faunal species with a high probability of occurrence (POC), with measures incorporated into the Biodiversity Management Plan (BMP) to manage risks effectively; and
- Measures to address ecological degradation from resource extraction activities, including monitoring and restoration plans for borrow pits and quarrying areas.

4.1.6 IFC PS7 updates: Indigenous Peoples

Key updates include:

- Enhanced consultation strategies ensure the active participation of Indigenous Peoples (IPs) in decision-making processes, addressing potential impacts on IP livelihoods, natural resources, and cultural heritage;
- Specific protocols for the identification, protection, and mitigation of impacts on cultural heritage sites have been clarified, ensuring compliance with national regulations and international safeguards; and
- Measures to address resource-use conflicts with Indigenous Peoples have been included, with emphasis on equitable access to water and other critical resources.

4.2 Recommended strategy to implement additional findings and management measures

To ensure the successful implementation of the additional findings and management measures outlined in the Addendum, it is essential that PAK/RNT adopt a systematic, phased, and integrated

approach. This strategy aligns with the commitments in the ESMP and ensures consistency with the IFC PSs and GIIP.

4.2.1 Pre-construction phase

Familiarisation and training:

- Conduct targeted training sessions for Project personnel, contractors, and subcontractors to familiarise them with the commitments in the Addendum and the ESMP; and
- Emphasise key updates, including the WMP, LMP, MARA, and strategies for resource efficiency and pollution prevention.

Integration into Project design and planning:

- Incorporate measures outlined in the Addendum (e.g., water recycling, spill prevention, biodiversity safeguards) into the detailed design and engineering plans.
- Ensure all undefined components (e.g., borrow pits, temporary laydown areas) align with the management measures outlined in PS1, PS3, and PS6.

4.2.2 Construction phase

Integrated ESMP and Addendum cross-referencing:

- Implement explicit cross-referencing between the ESMP and Addendum to ensure that all measures, particularly those related to groundwater risks, waste management, and cumulative impacts, are fully applied during construction.

Management of Change:

- Apply the Management of Change (MoC) Procedure to address any unforeseen environmental or social risks during construction, ensuring measures such as groundwater monitoring, ecological protection, and community safety remain relevant and up to date.

Implementation of management measures:

- Apply mitigation measures outlined in the Addendum, including -
    - Proactive waste management and upgrading of existing formal waste facilities (PS3);
    - Groundwater protection and monitoring (PS3),
    - Occupational Health and Safety (OHS) measures for workers and subcontractors (PS2), and
    - Emergency Preparedness and Response Plan (EPRP) for major accident scenarios and hazardous material risks (PS4).

Monitoring and reporting:

- Implement the updated Key Performance Indicators (KPIs) to track resource efficiency, waste minimisation, and compliance with management plans, ensuring regular reporting to stakeholders.

4.2.3 Operation phase

Monitor the performance of environmental and social management measures, including:

- Water abstraction and recycling efficiency (PS3);
- GHG emissions reduction measures and fuel efficiency (PS3);
- Community safety protocols, particularly for hazardous material transport and spill prevention (PS4); and
- Worker welfare monitoring for both PAK and subcontractor employees (PS2).

Promote engagement and feedback by:

- Continuing to engage with stakeholders and Indigenous Peoples to address any operational impacts on natural resources, biodiversity, and cultural heritage (PS6 and PS7); and
- Implementing the SEP to communicate progress, gather feedback, and foster transparency.

4.2.4 Periodic reviews and updates

To ensure the long-term success and relevance of the Addendum and ESMP:

- Regularly review the ESMP and Addendum to assess their effectiveness and adapt to any changes in project design, risks, or regulatory requirements; and
- Conduct independent audits and integrate findings to ensure continuous improvement in resource efficiency, pollution prevention, worker safety, and community engagement.

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Appendix A: No Net Loss Strategy Framework

No Net Loss Strategy Framework

FOR THE PROPOSED CASSINGA POWERLINE SUPPLY PROJECT IN ANGOLA

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SCIENTIFIC TERRESTRIAL SERVICES

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1 INTRODUCTION

Scientific Terrestrial Services (STS) was appointed to conduct faunal and floral ecological assessments as part of the Environmental and Social Impact Assessment (ESIA) process for the proposed Overhead Powerline (OHL) with a 200m buffer (100m either side of the OHL) and associated substations, henceforth referred to as the "study area". As part of these studies, a No Net Loss (NNL) strategy is required to guide the proponent in terms of catering for/dealing with residual impacts stemming from the proposed project.

The study area is located south of the centre of Angola, namely, in the provinces of Huila and Huambo (Figure 1 and 2). The Project powerline extends for about 170 km, crossing six municipalities which include Jamba, Kuvango, Dongo, Galangue, Chipindo and Kalima.

1.1 Scope of Work

'No Net Loss' is the goal in which the impacts on biodiversity resulting from the proposed activities are balanced or outweighed by the measures taken to avoid and minimise the impacts, to restore affected areas and finally to offset the residual impacts, so that no net loss of biodiversity and ecological goods and services remains. Where such gains exceed the initial calculated loss, the term 'Net Gain' may be used instead.

The purpose of this document, in reference to the Cassinga OHL project, is to provide a NNL strategy framework to ensure that the residual losses to biodiversity stemming from the construction and operational activities of the OHL, can be minimised and where necessary, offset.

1.2. Assumptions and Limitations

The following assumptions and limitations are applicable to this report:

- This report presents only the overarching framework for the NNL strategy. It is the responsibility of the proponent / implementing authority to expand upon and further develop the overall NNL plan based on this framework; and
- As the project is still in the initial stages of authorisation and execution, there may be changes to the layouts/designs of the OHL, laydown area etc. As such, when changes are made to the overall layout, the NNL strategy must be updated accordingly as needed.

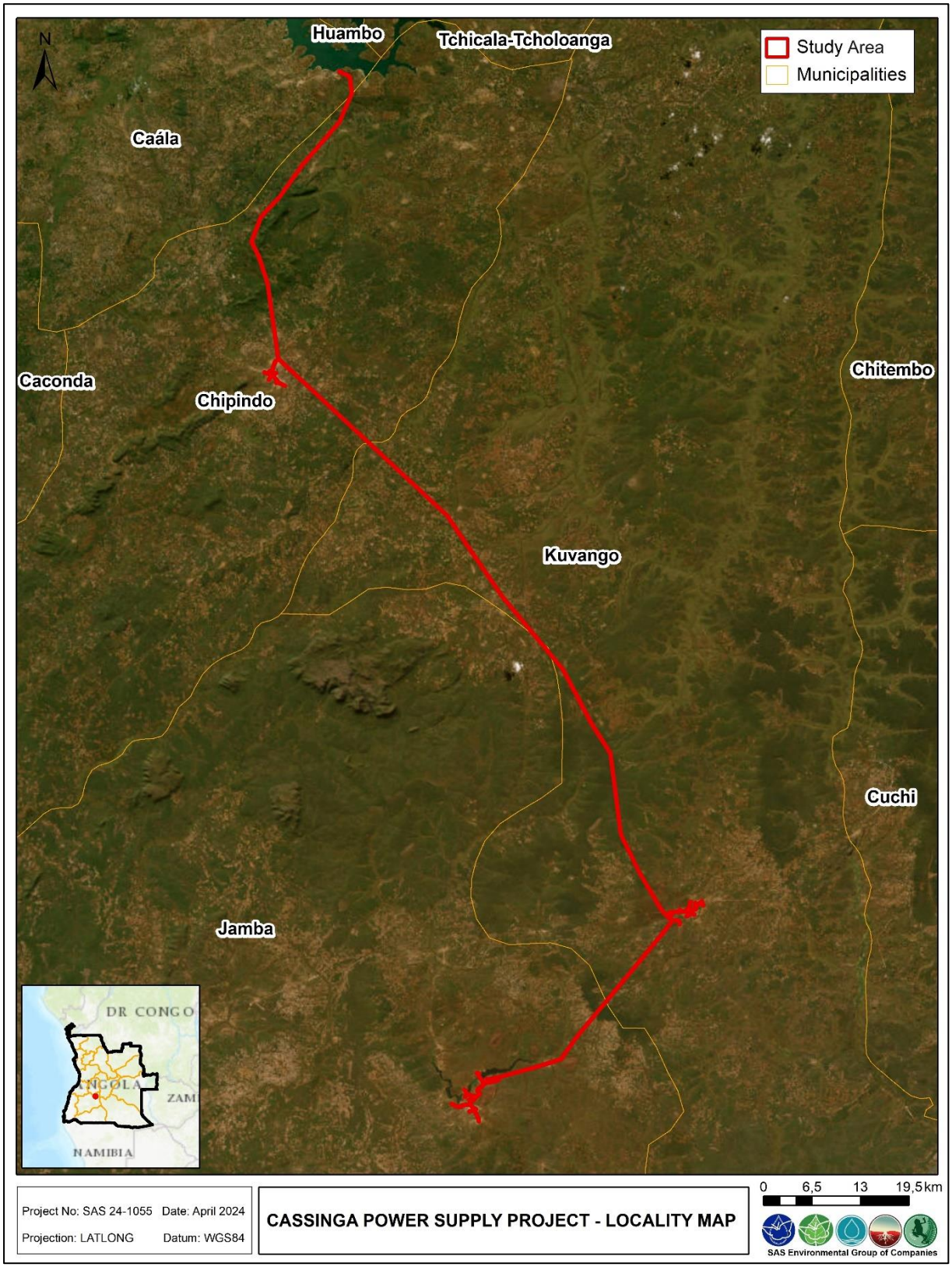

Figure 1: Digital satellite imagery depicting the location of the study area associated with the proposed Cassinga OHL.

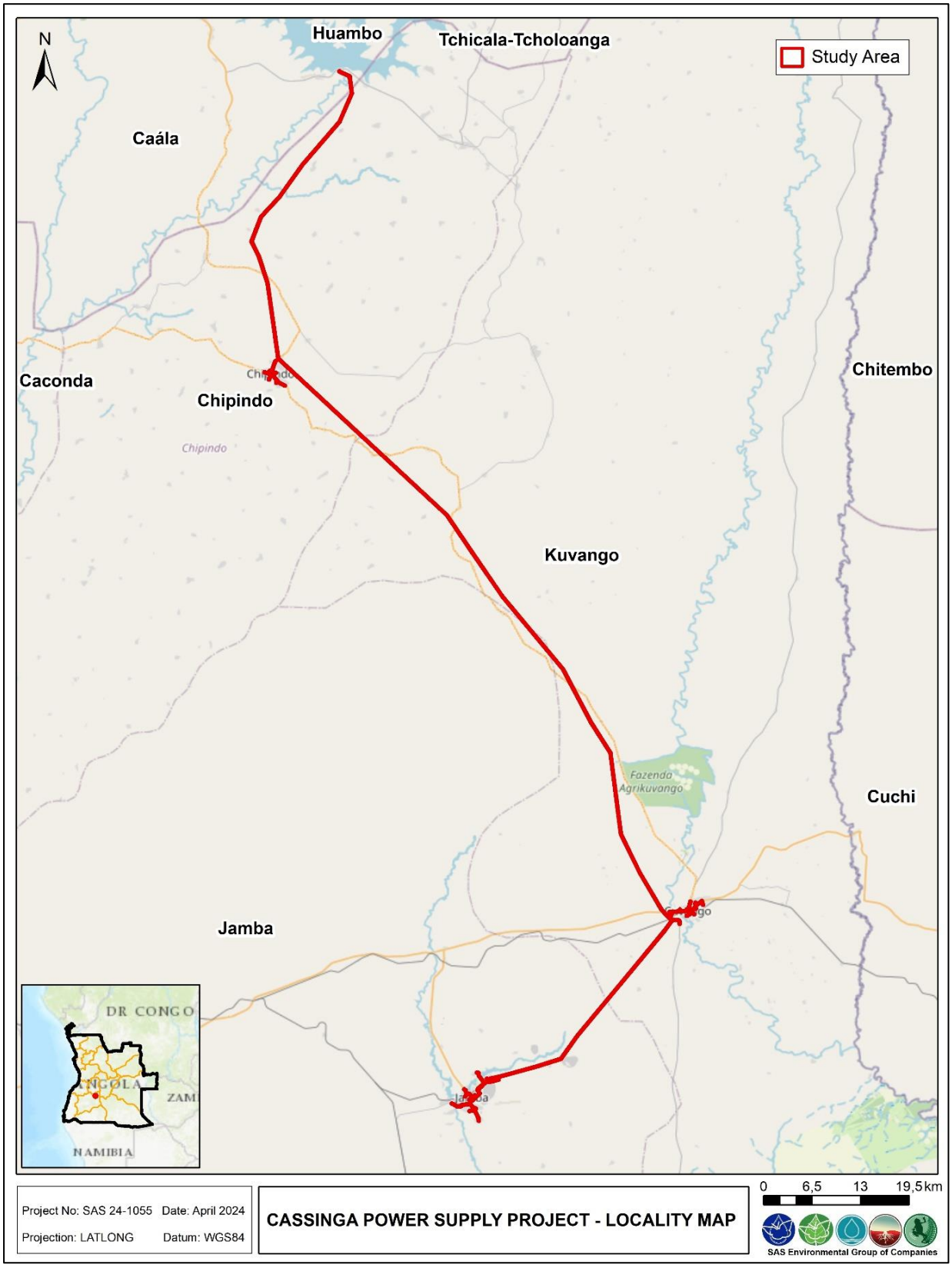

Figure 2: Topography map depicting the location of the study area associated with the proposed Cassinga OHL.

2 PROJECT RELATED IMPACTS

The proposed OHL and ancillary infrastructures will result in the clearance and loss of habitat within the proposed footprint areas. It is noted that as far as possible, laydown areas and contractor camps have been placed in existing disturbed/transformed habitats, in order to minimise additional impacts. Roads required for the project will, as far as possible, making use of existing road networks. In some areas, new roads will need to be developed where no road access is currently available.

At present, the calculated habitat loss relating to the proposed project is:

- Miombo Woodland (+- 45 ha);
- Secondary Woodland (+- 23 ha);
- Freshwater Habitat (+- 4 ha); and
- Transformed Habitat (+- 11 ha).

To achieve NNL, the proponent will need to meet the above estimates through a combination of restoration work and potentially offsets. It is however advised that the proponent strives to achieve a net gain (NG) scenario, where restoration activities exceed that which will be lost. All restoration activities must be carefully planned to ensure that ecosystem functioning and habitat connectivity is maintained/reinstated.

3 NO NET LOSS STRATEGY

The main purposed of the NNL strategy is to ensure that the negative biodiversity impacts caused by the project are either balanced or outweighed by biodiversity gains through implemented compensation measures in the region in which the project is located. The biodiversity gains must be evaluated against a baseline of the relevant biodiversity values being impacted by the project.

3.1 Objectives and Actions

The proposed OHL project should aim to achieve an NNL goal whereby the project ultimately results in no net reduction of the following:

- The Miombo Woodland and Freshwater Systems;
- Diversity within and among species and vegetation types;
- Long–term viability of species and vegetation types; and
- Functioning of species assemblages and ecosystems.

The above goals can be achieved through the implementation of the mitigation hierarchy. This involves a step-by-step approach starting with avoiding impacts as far as possible, followed by impact minimization. Restoration efforts are the next step in the hierarchy, and finally, biodiversity offsets for any residual negative impacts through conservation actions elsewhere.

The NNL plan needs to consider the following studies and outcomes:

- **Baseline assessment:** Establishing the current state of biodiversity in the project area;
- **Impact analysis**: Identifying potential negative impacts on biodiversity from the development project;
- **Avoidance and minimization strategies:** Implementing design changes and practices to minimise environmental impacts;
- **Restoration plan:** Strategies to restore degraded habitats affected by the project; and
- **Offset:** Identifying and implementing conservation actions to compensate for unavoidable losses.

The first three elements listed above have been assessed and discussed in the biodiversity and freshwater specialist reports. Notably, mitigation measures have been provided for avoidance and minimisation of impacts on the receiving environment and potentially sensitive receptors. It is imperative that these mitigation measures are implemented and where necessary, further expanded upon during the course of the construction and operational phase. Micro-siting of the pylons will be imperative to minimise impacts to the receiving environment as far as possible.

It is noted however that in terms of the mitigation hierarchy, avoidance and minimisation are unlikely to completely negate impacts. Given this, it is imperative that the proponent implement the final two elements to best achieve NNL in relation to the project.

<u>Restoration Plan</u>

Restoration / rehabilitation must be undertaken within all footprints of the proposed project, during both the construction phase and the operational phase. The degree and extent of the restoration work needed will however be commensurate with each footprint area, and the intended future use thereof. Where laydown areas are to be kept for future use, this will need to be factored in, to ensure that additional areas are restored to compensate for the residual losses of pre-development land cover.

In order to appropriately undertake restoration work, it will be imperative for the proponent to develop a site specific rehabilitation plan, which will provide specific guidance on strategies and activities needed to suitably restore disturbed habitats in order to meet the NNL goals. Reference sites must be selected to which the rehabilitated sites can be compared to on an annual basis, to ensure that rehabilitation activities are on track to meet the NNL goals.

During the construction phase, restoration activities must be undertaken concurrently with construction, to limit further habitat degradation and residual loss at any given time, whilst suitably managing soil erosion risks. Table 1 below provides a brief outline of restoration works to be undertaken as they relate to the various activities and habitat units.

Table 1: Restoration Requirements: Footprints vs Habitat Units

	Miombo Woodland	Secondary Miombo Woodland	Transformed	Freshwater
Pylons	Rehabilitate footprint areas as far as possible using indigenous vegetation whilst being cognisant of health and safety requirements associated with the pylon structure. Likely only an herbaceous layer may be allowed in these footprint areas. Restoration must focus on retaining habitat connectivity and cover while minimising the risk of erosion guided by a prescribed rehabilitation plan.			
Laydown areas	Where laydown areas are to be temporary, the footprint areas must be rehabilitated using indigenous vegetation commensurate with the vegetation type for the area. Rehabilitation work must follow a prescribed rehabilitation plan.			
Roads	Temporary roads are to be closed off from the public and rehabilitated in accordance with a rehabilitation plan. Soils must be restored and ameliorated appropriately to support indigenous vegetation commensurate with the vegetation for the area. Permanent/service roads are to be maintained accordingly whilst ensuring that edge effects are mitigated, with specific mention of alien invasive vegetation control. Disturbed areas are to be rehabilitated where necessary.			

Restoration work undertaken in transformed or highly degraded areas will further minimise the net loss and will assist the project to potentially achieve a net gain in biodiversity support and ecological processes. Subsequently, it is highly recommended that where degraded footprints are to be rehabilitated, that the restoration works extend beyond that of the disturbance footprints, with the aim of achieving increased habitat connectivity.

Offset Strategy

Where restoration work fails to meet the needs of NNL and offset strategy will need to be investigated. This will involve identifying areas of increased and important biodiversity value that can be secured and restored. These areas must not be isolated pockets but be connected to other ecologically important and intact areas, as far as possible. The goal will be to manage these areas, and if need be, restore habitat connectivity, so as to offset the residual impacts associated with the project. Such offsets are generally aimed at a net gain scenario, with a ration of disturbed areas to offset areas being agreed upon prior to offset plans finalised. The

areas to be offset should always be of greater significance and/or extent than that of the areas that will be impacted.

3.2 Monitoring and Evaluation

Monitoring and evaluation (M&E) is the process of assessing the effectiveness of the restoration and/or offset program relating to the project. It will involve the collection and analysis of data to determine if the desired outcomes were achieved.

- **Monitoring Program**: Establish a robust biodiversity monitoring program to track the effectiveness of mitigation measures and biodiversity offset actions. This should include both short-term and long-term monitoring; and
- **Adjustment Mechanisms:** Outline how the project will adaptively manage any unforeseen negative impacts, adjusting practices or offsets as needed based on monitoring results.

To remain transparent, the proponent should report back on restoration and offset progress.

- **Annual Reporting**: Develop a framework for reporting progress on NNL commitments to stakeholders, ensuring transparency concerning biodiversity impacts, mitigation measures, as well as restoration and offset successes or failures so as to allow for adaptive management; and
- **External Audits**: Consider having the NNL strategy and its implementation reviewed by an independent third party (e.g., an external auditor) to ensure compliance with IUCN principles as well as lender requirements.

4 CONCLUSION

This document serves to provide a high level No Net Loss strategy framework for the proposed project. This framework and strategy is to be further explored, refined and expanded upon following the finalisation of the footprint areas and as part of detailed design. The finalised No Net Loss strategy should be completed before construction commences.

The Cassinga OHL project is committed to ensuring that the NNL goals are achieved through the strict implementation of the mitigation hierarchy so as to ensure that

biodiversity is maintained or enhanced through the implementation of this NNL strategy.

Overall, the project will impact on approximately 83 ha of habitat associated within the project. Restoration activities and if needed, offsets must ensure that they meet and exceed the 83 ha, whilst promoting biodiversity and ecological connectivity as well as goods and services provision in the region