



AMEA POWER AYSHA ONE WIND PROJECT SUPPLEMENTARY LENDERS INFORMATION PACKAGE

AYSHA | 300MW WIND POWER PROJECT, ETHIOPIA

RESPONSIBILITIES

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
°C	Degrees Celsius
AfDB	African Development Bank
APAWOPLC	AMEA Power Aysha Wind One PLC
ARCCH	Authority for Research and Conservation of Cultural Heritage
BAP	Biodiversity Action Plan
BAU	Business-as-usual
CAT	Climate Action Tracker
CCRA	Climate Change Risk Assessment
CITES	Convention on International Trade in Endangered Species
CHA	Critical Habitat Assessment
CLC	Community Liaison Committee
CLO	Community Liaison Officer
CMIP6	Coupled Model Inter-Comparison Project No. 6
CR	Critically Endangered
CRGE	Climate Resilient Green Economy
CSP	Concentrating Solar Power
DEC	Dongfang Electric
DFO	Dust Fallout
DGM	Digital Ground Model
E&S	Environmental and Social
EAAA	Ecologically Appropriate Area of Analysis
EBA	Ethiopian Broadcasting Authority
EBRD	European Bank for Reconstruction and Development
EEP	Ethiopian Electronic Power
EFCCC	Environment, Forest and Climate Change Commission
EHS	Environmental Health and Safety

Acronym	Description
EMIPRO	Ethiopian Minority and Indigenous Peoples Rights Organisation
EN	Endangered
EPA	Environmental Protection Authority
EPAP	Equator Principles Action Plan
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
EPRP	Emergency Preparedness and Response Plan
ESG	Environmental Social Governance
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ETSU	Energy Technology Support Unit
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Groups Discussions
FPIC	Free, Prior and Informed Consent
GBIF	Global Biodiversity Information Facility
GBV	Gender Based Violence
GBVH	Gender-based Violence and Harassment
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GPS	Global Positioning System
GRA	Gender Risk Assessment
GTP II	Growth and Transformation Plan II
GM	Grievance Mechanism
GN	Guidance Note
GW	Gigawatts
HHRA	Human Rights Risk Assessment
HSE	Health, Safety and Environment

Acronym	Description
HV	High Voltage
HVRM	Highly Vulnerable Rural Minorities
IBHR	International Bill of Human Rights
ICP	Informed Consultation and Participation
IEMA	Institute of Environmental Management & Assessment
IFC	International Finance Corporation
IFI	International Financial Institution
ILO	International Labour Organisation
IP	Indigenous People
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IUCN	International Union for Conservation of Nature
km	Kilometres
kV	Kilovolts
kWh	Kilowatts per hour
LC	Least Concern
LCGM	Local Community Grievance Mechanism
LRP	Livelihood Restoration Plan
LT-LEDS	Long-Term Low Emission and Climate Resilient Development Strategy
M	Meters
MDI	Mid-Day International Consulting Engineers
MoLS	Ministry of Labour and Skills
MoTL	Ministry of Transport and Logistics
MOEFCC	Ministry of Environment, Forest and Climate Change
MoU	Memorandum of Understanding
MoWE	Ministry of Water and Energy
MtCO ₂ e	Million Tonnes of Carbon Dioxide Equivalent
MV	Medium Voltage

Acronym	Description
MW	Megawatt
NA	Not Applicable
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NEPAD	New Partnership for Africa's Development
NGO	Non-Government Organisation
NT	Near Threatened
NTS	Non-Technical Summary
OHS	Occupational Health & Safety
OHTL	Overhead Transmission Line
O&M	Operations and Maintenance
OS	Operational Safeguard
PAOI	Project's Area of Influence
PFE	Pastoralist Forum Ethiopia
PIF	Purchaser Interconnection Facilities
PM	Particulate Matter
POP	Persistent Organic Pollutant
PPE	Personal Protective Equipment
PPS	Planning Policy Statement
PR	Performance Requirement
PS	Performance Standard
PSNP	Productive Safety Net Programme
PV	Photovoltaic
QHSE	Quality Health, Safety and Environment
RAP	Resettlement Action Plan
RD	Rotor Diameter
REA	Regional Environmental Agency
SCADA	Supervisory Control and Data Acquisition

Acronym	Description
SDG	Sustainable Development Goals
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SLIP	Supplementary Lender Information Pack
SLR	SLR Consulting (Africa) (Pty) Ltd.
SR	Sensitive Receptor
SSP	Socio-economic Pathway
TCFD	Task Force on Climate-related Financial Disclosures
TSP	Total suspended particulates
UN	United Nations
UNCG	United Nation Compact Global
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNGP	UN Guiding Principles
VEC	Valued Environmental Component
VP	Vantage Point
VU	Vulnerable
WBG	World Bank Group
WEF	Wind Energy Facility
WGM	Worker's Grievance Mechanism
WTG	Wind Turbine Generator
WHO	World Health Organisation
WWTP	Wastewater Treatment Plant

Glossary

Term	Definition
Activity	An action either planned or existing that may result in environmental impacts through pollution or resource use. For the purpose of this report, the terms ‘activity’ and ‘development’ are freely interchanged.
Alternative	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
Avifauna	The birdlife of a particular region or habitat.
Biodiversity	The diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.
Construction	The building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.
Critical Habitat	Any area with high biodiversity conservation significance based on the existence of habitat of significant importance to critically endangered or endangered species, restricted range or endemic species, globally significant concentrations of migratory and/or congregators species, highly threatened and/or unique ecosystems and key evolutionary processes.
Cumulative Impact	The impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	Decommissioning means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.
Ecosystem	A dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit.
Environmental Assessment	The generic term for all forms of environmental assessment for projects, plans, programmes, or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.
Environmental Impact	Change to the environment (biophysical, social and/or economic), whether adverse or beneficial, wholly, or partially, resulting from an organisation’s activities, products or services.
Environmental and Social Impact Assessment	Environmental and social impact assessment is a process for predicting and assessing the potential environmental and social impacts of a proposed project, evaluating alternatives and designing appropriate mitigation, management and monitoring measures.
Environmental and Social Management Plan	An Environmental and Social Management Plan outlines measures to mitigate potential negative impacts and enhance positive impacts identified in an Environmental and Social Impact Assessment.

Term	Definition
Environmental and Social Management System Manual	A document that describes the Project's E&S Management System comprising the Environmental and Social principles, the institutional and organisational arrangements, the control framework and the requirements for monitoring, reporting and auditing.
Environmental and Social Requirements	Means the stricter of (i) Environmental Law, (ii) Social Law, (iii) E&S Permits, (iv) Basic Terms and Conditions of Employment, (v) Core Labor Standards, (vi) other requirements set by the Fund's E&S Management System, and (vi) all applicable IFC Performance Standards. Note that the requirements applicable to and which must be adhered to by the Project and the Project Company and include: ▪ Project ESIA Report, the ESMP and related plans. ▪ The Project's ESAP. ▪ National regulatory framework. ▪ Applicable permits and licences. ▪ Contractual agreements and covenants. ▪ IFC Performance Standards (2012). Good International Industry Practice as set out in the World Bank Group Environmental, Health, and Safety General Guidelines (2007), the Sectors specific World Bank Group Environmental, Health, and Safety Guidelines, etc. ILO Core Labour Standards, the ILO Basic Terms and Conditions of Work, and the UN Guiding Principles on Business and Human Rights. The requirements described in AMEA POWER's ESMS.
Environmental Management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Equator Principles	A risk management framework is used by financial institutions to assess and manage environmental and social risks in project finance. Projects that follow the Equator Principles must meet international standards for environmental and social performance, including transparency, stakeholder engagement, and impact mitigation.
Gender Based Violence and Harassment	Umbrella term for violence and harassment directed at persons because of their sex or gender or affecting persons of a particular sex or gender disproportionately and includes sexual harassment.
Good International Industry Practice	In the context of ESG means the exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally with the outcome being the employment of the most appropriate risk controls, impact mitigation measures, and technologies relevant to the ESG context (adapted from IFC PS1).
Grievance Mechanism	A process for receiving, evaluating, and addressing Project-related grievances from affected persons at the level of the company, or Project and for these to be received and resolved appropriately and in accordance with Principle 31 of the UN Guiding Principles on Business and Human Rights. An internal grievance mechanism is a process implemented for responding to grievances raised by employees or members or the Project Workforce. An external mechanism should be established as a separate process for dealing with grievances raised by communities and other external stakeholders.
Groundwater	Water in the ground that is in the zone of saturation from which wells, springs, and groundwater run-off are supplied.

Term	Definition
Hydrology	Science encompassing the behaviour of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Human Rights	Human rights are inherent in all human beings, whatever their nationality, place of residence, sex, national or ethnic origin, colour, religion, language, or any other status. Every individual is entitled to enjoy human rights without discrimination. These rights are all interrelated, interdependent and indivisible. Human rights are often expressed and guaranteed by law, in the form of treaties, customary international law, general principles and other sources of international law. International human rights law sets out obligations on States to act in certain ways or to refrain from certain acts, so as to promote and protect the human rights and fundamental freedoms of individuals or groups. Business can impact all human rights both positively and negatively.
IFC Performance Standard	The IFC Performance Standards are an international benchmark for identifying and managing environmental and social risk and has been adopted by many organisations as a key component of their environmental and social risk management.
Impact	A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.
Indigenous	Originating or occurring naturally in a particular place - native.
Indigenous Peoples	A distinct social and cultural group possessing the following characteristics in varying degrees (i) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (ii) collective attachment to geographically distinct habitats or ancestral territories in the Project area of influence and to the natural resources in these habitats and territories; (iii) customary cultural, economic, social, or political institutions that are separate from those of the mainstream society or culture; or (iv) a distinct language or dialect, often different from the official language or languages of the country or region in which they reside (source: IFC PS 7).
Interested and Affected Party	Any individual, group, organisation, or authority that has an interest in a proposed project or may be directly or indirectly affected by its implementation. This includes local communities, landowners, government agencies, NGOs, businesses, and other stakeholders who may experience environmental, social, economic, or health-related impacts. Engaging I&APs is a key part of the environmental and social assessment process to ensure transparency, inclusivity, and informed decision-making.
Mitigate	The implementation of practical measures designed to avoid, reduce, or remedy adverse impacts or enhance beneficial impacts of an action.
No-Go Option	In this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.
Operational Phase	The stage of the works following the Construction Phase, during which the development will function or be used as anticipated in the Environmental Clearance.
Project Area of Influence	The area likely to be affected by: (i) the Project (examples include the Project's sites, the immediate airshed and watershed, or transport corridors) and the activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the Project; (ii) impacts from unplanned but predictable developments caused by the Project that may occur later or at a different location; or (iii) indirect Project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent (source: IFC PS1). (iv) off-site transport corridors, worker-movement pathways, and potential material-sourcing locations.

Term	Definition
Project Affected Person	A Project-Affected Person is any individual, household, or community that experiences direct or indirect adverse impacts (social, economic, or environmental) as a result of a project's development or operations. This may include physical displacement (loss of shelter), economic displacement (loss of assets or access to livelihood sources), or other disruptions such as restricted access to natural resources, services, or cultural sites.
Proponent	The Project Developer is responsible for submitting an environmental application to the relevant environmental authority for environmental clearance.
Re-use	To utilise articles from the waste stream again for a similar or a different purpose without changing the form of properties of the articles.
Rehabilitation	A measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.
Sensitive Environments	Any environment identified as being sensitive to the impacts of the development.
Shadow Flicker	A visual disturbance caused when rotating turbine blades cast intermittent shadows on nearby structures.
Significance	Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).
Stakeholder Engagement	The process of engagement between stakeholders during the planning, assessment, implementation and/or management of proposals or activities.
Sustainable Development	Development which meets the needs of current generations without hindering future generations from meeting their own needs.
Turbine Layout	The spatial arrangement of wind turbines on site to maximise energy production and minimise environmental and social impacts.
Vulnerable Groups	Populations that may be disproportionately affected by development projects due to social, economic, or physical conditions. This includes women, children, the elderly, people with disabilities, low-income households, Indigenous peoples, and displaced persons. Special measures are often required to ensure their rights, access, and participation.
Wind Energy Facility	A site developed for the generation of electricity from wind power, typically consisting of multiple wind turbines, electrical infrastructure, access roads, and control systems. It may also be referred to as a wind farm.
Wind Turbine Generator	A mechanical device that converts the kinetic energy of wind into electrical energy. It generally consists of rotor blades, a nacelle (housing the generator and other components), a tower, and associated control systems.

REFERENCE DOCUMENTS

Title	Description
Policy and Governance	
Code of Conduct	Describes the responsibility placed on all AMEA Power staff to uphold the goals and values to which AMEA Power aspires and to conduct business for AMEA Power and AMEA Power project companies in accordance with applicable laws and regulations. It provides an overview of the responsibility that AMEA Power Staff have in respect of upholding AMEA Power's commitment to the highest standard of business conduct and provides a set of expected behaviours that AMEA Power Staff exhibit in their dealing towards others and AMEA Power.
Environmental Policy	It guides AMEA Power's actions and decisions on environmental matters, reflecting our commitment to sustainability. It includes goals for minimizing impact, conserving resources, complying with laws, and promoting stewardship.
Social Sustainability Policy	AMEA Power understands its leading role in contributing to the sustainable development of the communities in the countries where it operates and to the improvement of the quality of life of the people that live there. To achieve this goal, it seeks to align social collaboration with its business activities, through sustainable medium and long-term projects where it is present, reinforcing the trust between the company and the societies in which it operates and increasing its positive contributions to respect human rights and freedoms recognised by the Universal Declaration of the Human Rights as underpinned in the Sustainable Development Goals (SDGs) and the United Nation Compact Global (UNCG), and the ILO.
Occupational Health and Safety Policy	It's AMEA Power's commitment to ensuring a safe workplace for employees, contractors, and visitors. It includes goals for preventing injuries and illnesses, promoting safety culture, complying with laws, and continuously improving safety performance.
Security Policy	AMEA Power strives to create and maintain a secure, safe and welcoming environment for its employees and assets without adversely affecting the human rights of its employees, contractors or stakeholders to include local communities. On conducting its business, it aims to ensure compliance with the applicable national and local laws and regulations on security issues, as well as with international standards including, IFC Performance Standards PS4 on Community, Health, Safety and Security, and by the Voluntary Principles on Security and Human Rights, the UN Code of Conduct for Law Enforcement Officials, and the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, and to lead by example in the application of international good practices.
Gender Equality Policy	Provides governance framework for gender to be incorporated into investment and fund management activities as well as in the AMEA Power workplace.
Human Resources Policy	Describes the arrangements relating to all aspects of the AMEA Power workforce.
Human Rights Position Statement	Establishes AMEA Power's position regarding the respect for human rights during its business activities and in the investments of AMEA Power.
Community Investment and Development Program	Describes the process for developing, responsibly investing and implementing community development activities
Quality Policy	AMEA Power pledges to create value for its stakeholders through excellence in process management, being responsible for overseeing compliance with the international standard ISO 9001:2015 and all applicable requirements, and to lead by example in the application of good practices, prioritising the demand for continuous quality improvement of its work as well as in the different management systems implemented.

Title	Description
Policy and Governance	
	This culture of quality and efficiency in operations extends to all divisions and countries where it operates.

1 INTRODUCTION

1.1 Project Context

The Aysha I Wind Power Project (hereafter referred to as the “Project”) is a proposed 300 Megawatt (MW) Independent Power Producer (IPP) Wind Energy Facility (WEF) in Ethiopia, led by AMEA Power L.L.C. (hereafter referred to as the “Developer”) through its local entity, AMEA Power Aysha Wind One PLC (APAWOPLC) (hereafter referred to as the “Project Company”). The Project Company is seeking financing for the Project from International Financial Institutions (IFIs) and, therefore, wishes to design and manage the Project in accordance with Good International Industry Practice (GIIP) and international lender standards.

1.2 Project ESIA Process to Date

The Project has already carried out an Environmental and Social Impact Assessment (ESIA) in line with the Ethiopian “Environmental Impact Assessment Proclamation No. 299-2002”. The initial ESIA (dated 2020) was compiled by ECO Consult and Mid-Day International Consulting Engineers (MDI), a local Ethiopian consultancy, and was submitted to the former Ministry of Water, Irrigation and Energy (MoWIE) in 2020 (now referred to as Ministry of Water and Energy, MoWE), and received Environmental Clearance in January 2021, Ref No MWIE /126/707. The ESIA was subsequently updated by ECO Consult and MDI in 2021 and 2022. The ESIA was required to be updated again as the Environmental Clearance is now more than two years old, thus, the Project Developer appointed MDI in March 2025 to review and update the local / national ESIA report to fulfil local requirements and obtain a new Environmental Clearance License. The updated ESIA Report (MDI, 2025) was submitted to the MoWE and received Environmental Clearance on 07 November 2025.

1.3 Project Rationale

The Developer appointed an independent consultant (SLR African Holdings (Proprietary) Limited (hereafter referred to as “SLR”) to review the updated ESIA Report (MDI, 2025) and identify any gaps required in terms of the International Finance Corporation (IFC) Performance Standards (PS) and the African Development Bank (AfDB) Environmental and Social (E&S) Operational Safeguards (OS). To achieve this, SLR compiled this Supplementary Lender Information Pack (SLIP) to address the identified gaps in the ESIA report to ensure the Project aligns with international lender standards and requirements (IFC and AfDB).

In July 2025, SLR undertook a review and gap analysis (SLR, 2025) of the updated ESIA report (MDI, 2025) to identify any gaps in relation to the several international lender standards and requirements, including but not limited to the following:

- IFC PS (2012)
- AfDB E&S OS (2023)
- IFC Cumulative Impact Assessment and management: Guidance for the Private Sector in Emerging Markets (2013)
- Equator Principles (2020)
- World Bank Group's (WBG) Environmental, Health, and Safety (EHS) Guidelines (2007)
- WBG EHS Guidelines Wind Energy (2015)

Several gaps were identified, including:

- Various additional specialist assessments were required to be undertaken, including the following:
- Climate Change Risk Assessment, (including the Project’s greenhouse gas (GHG) emissions)
- Noise Modelling and Impact Assessment
- Shadow Flicker Assessment

- Updated Biodiversity Assessment, including additional survey periods, collision risk modelling for birds, critical habitat assessment and biodiversity management plan
- Livelihood Restoration Plan (LRP), including the identification of additional tangible cultural heritage resources, the identification of intangible cultural heritage practices, an updated socio-economic baseline and a framework for the implementation of livelihood restoration measures for the customary owners of the land leased to the Project
- Indigenous Peoples Social Assessment, including the consideration of vulnerable groups and to conclude if a Free, Prior and Informed Consent (FPIC) is required or not
- Human Rights and Gender Risk Assessment.
- Further stakeholder consultation and engagement have been undertaken (August to October 2025) which must be incorporated into the impact assessment.
- Potential impacts on Ecosystem Services were not considered.
- No impact significance rating or impact scoring was applied to the impacts assessed in the updated ESIA report (MDI, 2025). Additional impacts were also identified for the Project from the above-mentioned specialist assessments. The Environmental and Social Management Plan (ESMP) is, therefore, required to be updated to reflect all additional mitigation and monitoring measures.
- The assessment of cumulative impacts for the Project was not undertaken in line with the IFC's good practice handbook "Cumulative Impact Assessment and management: Guidance for the Private Sector in Emerging Markets (2013)".
- Potential residual impacts for the Project were not considered or assessed.

1.4 Purpose of the SLIP

This SLIP has been developed to complement the updated ESIA report (MDI, 2025), which has been prepared in accordance with the aforementioned Ethiopian legislative requirements. While the local ESIA provides an assessment of Project impacts within the national legislative framework, it does not fully address certain requirements typically expected by international lenders and development finance institutions.

As such, the primary purpose of this SLIP is to:

- Bridge identified gaps between the ESIA report and the IFC PS and the AfDB E&S OS.
- Support informed decision-making by international lenders and stakeholders through clear articulation of how gaps have been addressed and overall risk mitigated.

It must be noted that this SLIP does not replace the ESIA report; rather, it serves as an enhancement to ensure that the Project meets both local regulatory obligations and the expectations of international financing institutions.

This manual outlines the ESMS to be implemented by the Aysha 1 Wind Project during construction and operational phases. Its objectives include:

- Mainstreaming environmental and social considerations into all business activities to safeguard investments from E&S risks (PS1/OS1).
- Assisting the project company in systematically managing environmental and social impacts across construction and operations.
- Improving overall project performance using defined E&S indicators and KPIs.
- Providing a clear structure and outline for ESMS implementation during construction and operation.
- Identifying key procedures and management plans to handle E&S risks and impacts, to be developed and updated as needed (PS1/OS1).
- Establishing an institutional framework to ensure effective implementation, including roles, responsibilities, training, monitoring, and reporting.

- Ensuring labour management and worker welfare comply with IFC PS2 and AfDB OS2, including fair treatment, working conditions, and grievance mechanisms.
- Defining an approach for periodic auditing of contractors, subcontractors, and suppliers to ensure compliance with HSSE, labour, and social requirements.
- Providing a high-level framework for biodiversity management, community engagement, resettlement, and cultural heritage where applicable (PS5–PS8 / OS5–OS8).

1.5 SLIP Report Structure

The key gaps identified in the Gap Analysis report (SLR, 2025) are summarised in Table 1-1 along with the relevant sections of the SLIP addressing each gap.

TABLE 1-1: SLIP REPORT STRUCTURE

SLIP Section	Content
Section 1 – Introduction	Overview of the Project context, rationale, purpose of the SLIP, report structure as well as the Project team responsible for compiling the SLIP.
Section 2 – Project Description Update	Brief description of the Project motivation, objectives, location, the key Project components, an overview of the proposed activities, the Project Area of Influence and the Project timelines. The Project description and layout plan have been revised since the initial ESIA report (dated 2020). Although these changes were incorporated into the updated ESIA report (MDI, 2025), further minor amendments have since been made. The Project Description Update provided in section 2 of this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 3 – Analysis of Alternatives Update	Project and technology alternatives that have been considered and assessed in the ESIA phase, as well as the “No-Project” alternative. The alternatives analysis and alternatives layout plan have been revised since the initial ESIA report (dated 2020). Although these changes were incorporated into the updated ESIA report (MDI, 2025), further minor amendments have since been made. The Alternatives Analysis Update provided in section 3 of this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 4 – Regulatory and Policy Framework	The updated ESIA report (MDI, 2025) addressed both local and international regulations and requirements. The SLIP outlines the relevant and applicable International Standards, Guidelines and Practices for the Project. In addition, section 4.2 demonstrates how the Project complies with each IFC PS and each AfDB OS.
Section 5 – Assessment of Environmental and Social Baseline Conditions Update	Aims at supplementing the updated ESIA report (MDI, 2025) environmental and social baseline of the receiving environment for the Project in line with IFC PS and AfDB E&S OS The additional specialist studies resulted in updates to the receiving environment. The Baseline Update provided in section 5 of this SLIP aims to compliment the updated ESIA report (MDI, 2025).
Section 6 – Stakeholder Consultation and Engagement	Overview of all the stakeholder engagement undertaken for the Project to date. Further stakeholder consultation and engagement have been undertaken (August to October 2025) since the 2020 surveys included in the updated ESIA report (MDI, 2025). The Stakeholder Engagement Plan (SEP) was also revised, with a specific focus on vulnerable groups, seasonal dwellers and intangible heritage.

SLIP Section	Content
	The Stakeholder Consultation and Engagement provided in section 6 of this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 7 – Assessment of Environmental and Social Impacts	Aims at supplementing the ESIA report (MDI, 2025) environmental and social impact assessment for the Project in line with IFC PS and AfDB E&S OS. Impacts were identified for the Project in the updated ESIA report (MDI, 2025). However, no impact significance rating or impact scoring was applied to the impacts assessed. To ensure alignment with IFC and AfDB standards and requirements, the SLR impact assessment matrix was therefore applied to all impacts, including both the previously assessed and newly identified impact, including the assessment of residual impacts. Additional impacts were also identified from the additional specialist studies that were undertaken for the Project. Accordingly, the Assessment of Environmental and Social Impacts provided in this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 8 – Human Rights	Aims at supplementing the updated ESIA report (MDI, 2025) with an assessment of human rights and gender risk for the Project in line with IFC PS and AfDB E&S OS. Potential impacts on human rights and gender risk were not considered in the initial ESIA report (dated 2020) or the updated ESIA report (MDI, 2025). The assessment of Human Rights and Gender Risk provided in section 8 of this SLIP is an additional component and supplements the updated ESIA report (MDI, 2025).
Section 9 – Ecosystem Services	Aims at supplementing the updated ESIA report (MDI, 2025) with an assessment of ecosystem services for the Project in line with IFC PS and AfDB E&S OS. Potential impacts on ecosystem services were not considered in the initial ESIA report (dated 2020) or the updated ESIA report (MDI, 2025). The assessment of Ecosystem Services provided in section 9 of this SLIP is an additional component and supplements the updated ESIA report (MDI, 2025).
Section 10 – Assessment of Cumulative Impacts	Aims at supplementing the updated ESIA report (MDI, 2025) assessment of cumulative impacts for the Project in line with IFC PS and AfDB E&S OS. The updated ESIA report (MDI, 2025) included and assessed cumulative impacts for the Project. However, the assessment of cumulative impacts was not undertaken in line with the IFC's good practice handbook "Cumulative Impact Assessment and management: Guidance for the Private Sector in Emerging Markets (2013)". Accordingly, the Assessment of Cumulative Impacts provided in section 10 of this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 11 – Updated Environmental and Social Management Plan (ESMP)	Aims at supplementing the ESIA report (MDI, 2025) environmental and social management plan for the Project in line with IFC PS and AfDB E&S OS. Additional impacts were identified from the additional specialist studies that were undertaken for the Project. The ESMP is, therefore, required to be updated to reflect all additional mitigation and monitoring measures. Accordingly, the Updated ESMP provided in section 11 of this SLIP, and attached as in the Annex should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).
Section 12 - Conclusion	Provides a conclusion summary of the outcome of the SLIP.
Section 13 – References	Provides a list of references to support the information provided in the SLIP.

2 PROJECT DESCRIPTION UPDATE

This section provides a brief description of the Project motivation, objectives, location, the key Project components, an overview of the proposed activities, the Project Area of Influence and the Project timelines.

The Project description and layout plan have been revised since the initial ESIA report (dated 2020). Although these changes were incorporated into the updated ESIA report (MDI, 2025), further minor amendments have since been made.

The Project Description Update provided in this section should, therefore, be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).

2.1 Project Background

The Project aligns with Ethiopia's Growth and Transformation Plan II, which targets a substantial expansion in renewable energy capacity to support the country's transition to middle-income status by 2025. With only 57% household connectivity and ambitious goals to increase national generation capacity to 25,000 MW by 2030, including 2,000 MW from wind, the Ethiopian government has prioritised private sector investment to meet these targets.

Following a 2019 Memorandum of Understanding (MoU) with the MoWE, the Project Company conducted a Feasibility Study, as well as an ESIA process and associated amendments in accordance with Ethiopian legal requirements and international lender standards. As discussed in the previous section, the ESIA was initially completed in 2020 and secured the ESIA Environmental Clearance from MoWE with Ref No MWIE /126/707 dated 05/01/2021. Following the enactment of the 2025 Environmental and Social Impact Assessment Proclamation and updated requirements from the Ethiopian Environmental Protection Authority, the ESIA was updated to remain compliant with both national regulations and international lender standards. The update of the local ESIA report to national regulations has been undertaken by MDI, dated May 2025.

The Project Company will be seeking financing for the Project from IFIs. Due to several gaps identified in the 2025 ESIA report in terms of the international lender standards and requirements, the Project Developer appointed the Environmental Consultant to undertake this SLIP to address these gaps.

The environmental clearance process in Ethiopia is mainly administered through the Ethiopian Environmental and Social Impact Assessment Proclamation No. 1317/2025 (the "New Proclamation"), which has replaced the Environmental Impact Assessment Proclamation No. 299/2002 (the "Previous Proclamation")¹. The Proclamation outlines the process for implementation and licensing as follows:

- Implementation of any project is subject to an authorisation process from the Environmental Protection Authority (EPA) or from the Regional Environmental Agency (REA)².
- Any licensing agency, prior to issuing an investment permit for a developer or an operating license for any project, must ensure that the EPA or the relevant REA has authorised its implementation.

In 2025, the Project Company made the decision to upgrade the turbine technical specifications, which are larger in size to meet the requirements of the MoU with the MoWE to supply the 300 MW and reducing the number of turbines on site. This has necessitated an update to the Project Design and as such, a need to update the previously approved ESIA.

¹ Proclamation No. 299/2002 has now been repealed and replaced by Proclamation No. 1317/2025. Earlier legislation, such as Proclamation No. 09/1995, has been superseded and is not applicable to the Project.

² Note: based on a federal restructuring process, the EPA was transformed to Ministry of Environment, Forest and Climate Change (MOEFCC), Environment Forest and Climate Change Commission (EFCCC) and recently restructured back to EPA once again

2.2 Project Motivation and Objectives

2.2.1 Project Motivation

The Government of Ethiopia, under its latest Growth and Transformation Plan II (GTP II), envisions transitioning from a developing country to a middle-income country. The ability to achieve such an ambitious goal is significantly constrained by current challenges in the power sector. Although Ethiopia has extensive renewable energy potential (such as hydroelectric, wind, solar and geothermal), it has a limited electrical generation capacity installed to serve its population, with around 57% household connectivity only (MDI, 2025).

The current GTP II targets a total generation capacity of 25,000 MW by 2030 including 2,000 MW from wind power. Earlier interim targets (e.g. 17,000 MW by 2020) were not fully achieved, underscoring the urgency of expanding private sector investment. This would help sustain Ethiopia's continued economic growth and enable it to become a regional renewable energy hub in East Africa (EcoConsult, 2020).

The Government of Ethiopia has determined that private sector investment is critical to achieve such aggressive power generation targets and, therefore, aims to roll out a sustainable framework that will enable and stimulate investments by IPP in the renewable energy sector in Ethiopia (EcoConsult, 2020).

Wind power is widely used in both developing and developed countries. Unlike coal or gas-fired power plants, wind power generation does not rely on fossil fuels and, therefore, emits significantly fewer greenhouse gases and pollutants compared to conventional thermal power technologies. Unlike other power generation technologies, local communities can continue daily activities within the Project's Area of Influence (PAOI) once construction is complete. Power produced by this Project will be delivered to the national grid (EcoConsult, 2020).

2.2.2 Project Objectives

The main objective of the Project is to develop wind power capacity, sell and export electricity to the national grid to meet existing and future demands. Other objectives include:

- Diversifying energy sources in Ethiopia;
- Improving electricity supply distribution locally and nationally;
- Creating local employment and business opportunities; and
- Improving the local economy

2.3 Project Location and Administrative Set-up

The Project is located within Ethiopia's Somali Regional State in Aysha Woreda. The Woreda is situated in the northern part of Sitti Zone and is bordered by Dembel in the south and Shinile Woreda on the southwest. It also borders on Djibouti in the north and Somaliland to the east. The main road that connects Ethiopia with Djibouti crosses this Woreda, as does the Ethio-Djibouti railway line.

Aysha town is the administrative town of the Woreda and is located around 5 km to the northeast of the boundary of the lease area and 630 km by roads from the capital of Addis Ababa. The Lasarat town is located approximately 3 km to the west of the boundary of the Project. Figure 2-1 illustrates the locality of the Project and Figure 2-2 illustrates the administrative context of the Project.

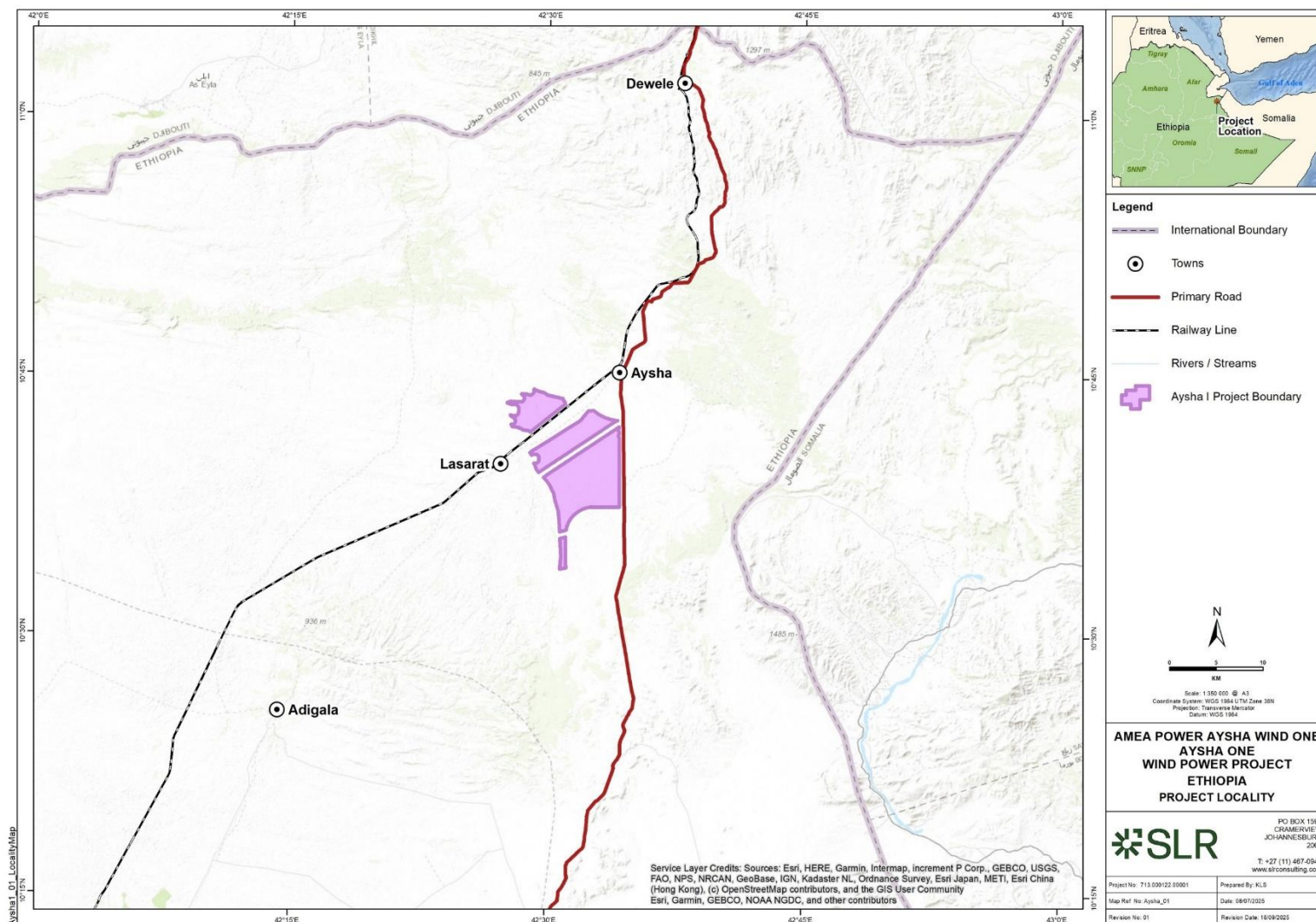


FIGURE 2-1: PROJECT LOCALITY MAP

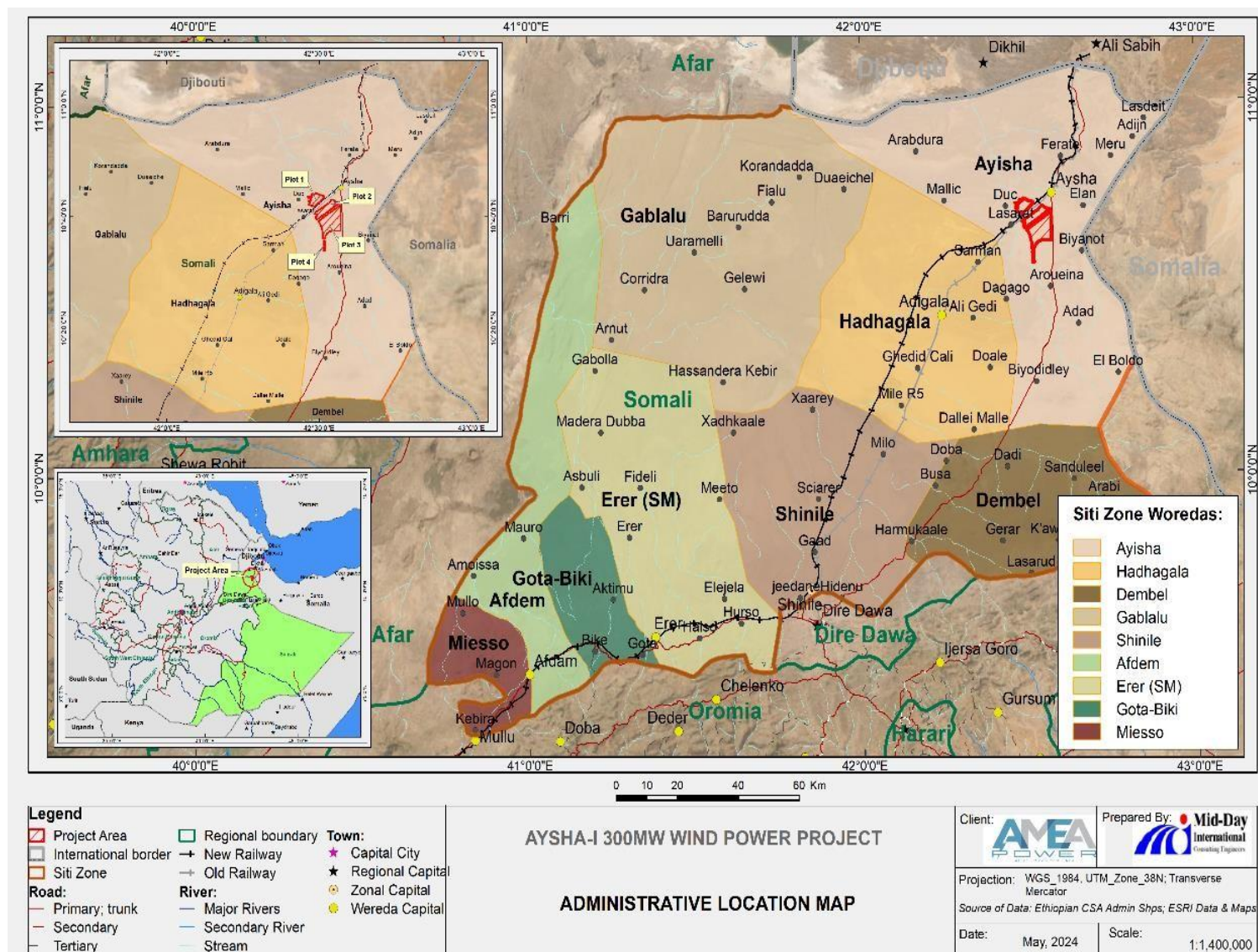


FIGURE 2-2: ADMINISTRATIVE LOCALITY MAP (MDI, 2025)

2.3.1 Site Layout

The site layout has been revised through several iterations, and the outcomes have guided the layout presented in Figure 2-3. The layout makes provision for the development of 39 potential wind turbine positions.

2.3.2 Ownership

The Project Company has secured the Land Holding Certificate for the Project issued by the Somali Regional State, Environmental Protection and Rural Land Administration Bureau (MDI, 2025). The Purchaser Interconnection Facilities (PIF) Land Agreement, required for the interconnection of the Aysha-I Wind Power Plant to the Aysha-II substation, was executed on 06 November 2025 by the Somali Regional State.

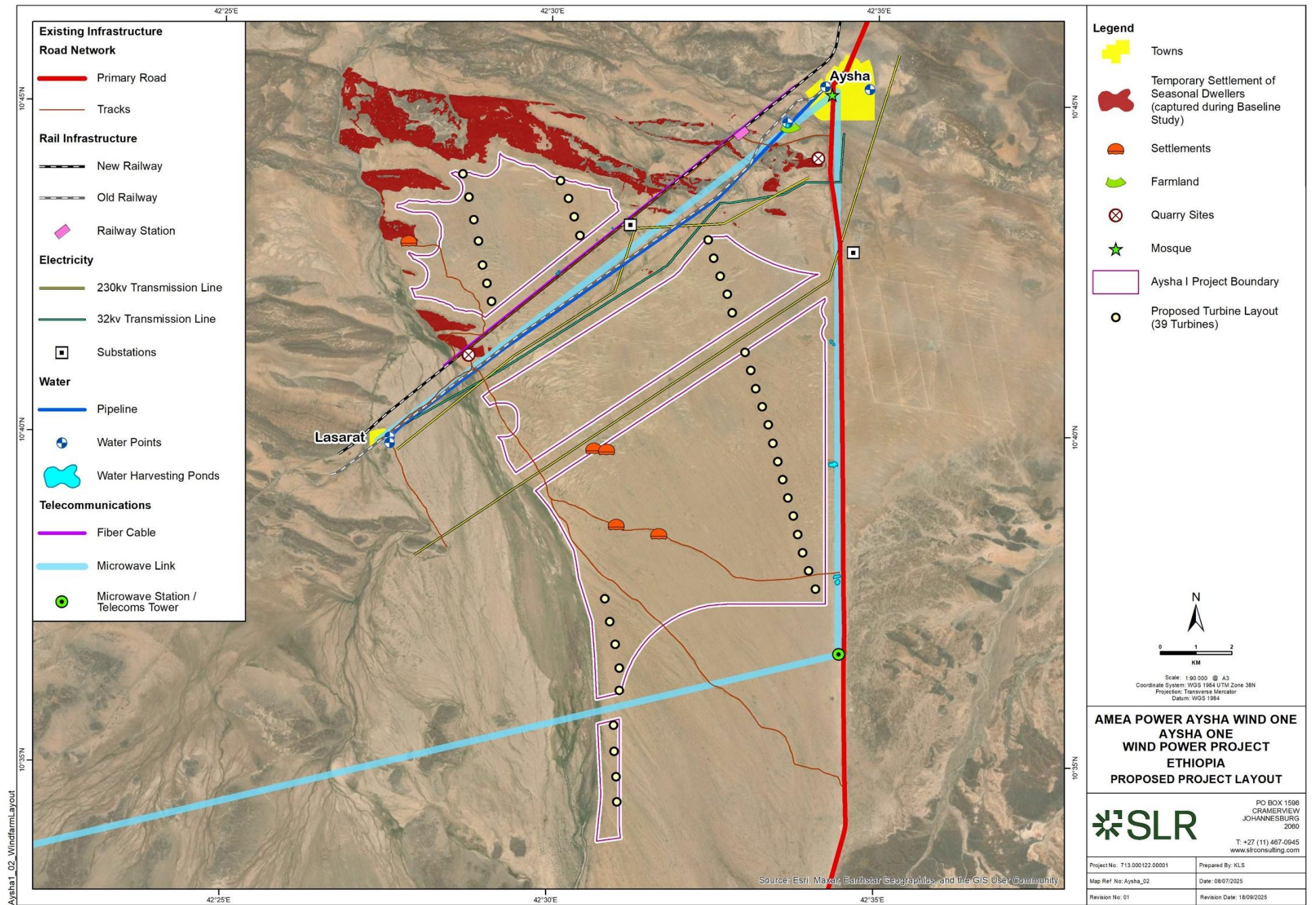


FIGURE 2-3: PROJECT LAYOUT

2.4 Project Components

Wind turbine technology relies on harnessing the kinetic energy of wind. It utilises wind turbines, which convert the kinetic energy of moving air into mechanical energy and then into electrical energy. The wind turbines capture the wind by means of rotor blades, which are elevated from the ground using towers to take advantage of faster and less turbulent wind. As the wind speed increases, the rotor blades begin to rotate, and this spins a shaft that is connected to a generator and converts wind energy to electricity.

The wind turbines generate electricity at a specific voltage that needs to be compatible with the grid to which they are connected. Consequently, transformers are utilised to increase the output to a higher voltage that aligns with the grid. Thus, the Project will increase the electricity from the wind turbines to a higher voltage and send it through to the existing nearby Aysha I substation (3 - 4 km away) so that it can be delivered to the national grid. The WEF requires several key components to facilitate the generation of electricity at a large scale, as indicated in Figure 2-4, including the following (See Table 2-2 below for details):

- Wind turbines (approximately 39);
- Roads to install the wind turbines;
- Medium-Voltage Collector System:
- Transformers that convert the output from the wind turbine to a higher voltage (step up from approximately 1140 V to 33 kV);
- Underground or overhead medium voltage cables (33 kV) that collect power from the wind turbines and send it to the step-up substation;
- A 33 kV / 230 kV step-up substation (step up from 33 kV to 230 kV for transmission);
- A switching station which routes and controls electricity (no change in voltage);
- A 230 kV transmission line which connects the step-up substation to the Aysha I substation to export electricity to the national grid.
- A Supervisory Control and Data Acquisition (SCADA) system which monitors and controls the electrical network remotely; and
- An operations and maintenance area for control, operation, workshop, storage buildings / areas.

The step-up substation and switching station will be ceded to Ethiopian Electronic Power (EEP) and form part of the national grid.

2.4.1 Wind Turbines

Generally, a wind turbine consists of a foundation, tower, nacelle, rotor blades, a rotor hub, and a transformer as indicated in Figure 2-4. Foundations will be constructed to bolt the tower of the turbine in place (one for each turbine). The foundation will be built with concrete that is reinforced with structural corrugated steel.

The tower contains the electrical conduits, supports the nacelle, and provides access to the nacelle for maintenance. Typically, three (3) blades are connected to the hub which then connects with the nacelle; the box-like component that sits atop the tower and which most importantly contains the gear box (which steps up the revolutions per minute to a speed suitable for the electrical generator) and the generator (which converts the kinetic energy into electricity).

In addition, each turbine is equipped with a transformer that converts / steps up the output from the turbine to a higher voltage (from approximately 1.14 kV to 33 kV) for the efficient transmission to the substation, minimising energy losses during transmission – refer to Section 2.4.3.

Next to each turbine will be a crane pad to accommodate cranes for the installation of the wind turbines and for maintenance activities during operation. The crane pads will be suitable to support loads required for the erection, assembly an operation and maintenance of the turbines.

The Engineering, Procurement and Construction (EPC) Contractor for the Project, who will be responsible for supplying the wind turbines and preparing the detailed design of the Project, has not been selected at this stage. However, the Project Company has prepared a preliminary design for the Project (refer to Table 2-2).

It is important to note that the preliminary design takes into account technical criteria (wind resources in the PAOI, spacing between the turbines to minimise wake effects which could lead to a decreased wind energy production, accessibility to the turbines, etc.) as well as E&S constraints as identified throughout the MDI 2025 ESIA document.

In addition, such E&S constraints will also be taken into account as part of the detailed design that will be prepared by the EPC Contractor at a later stage.

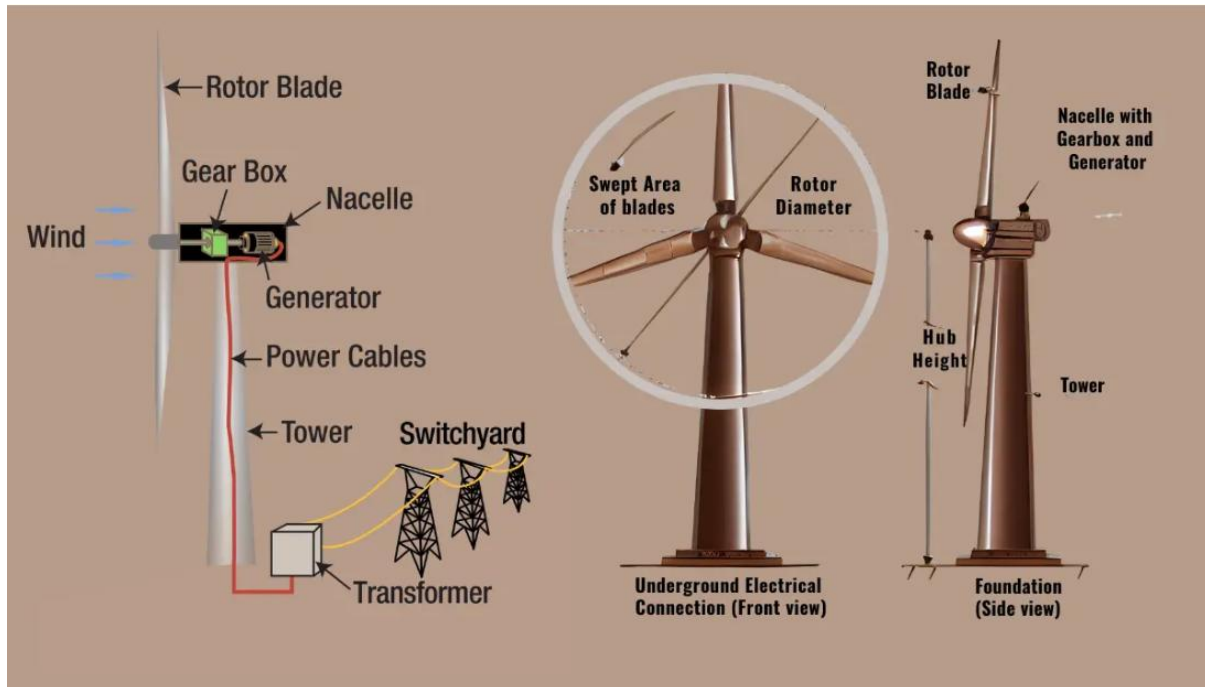


FIGURE 2-4: TYPICAL STRUCTURAL COMPONENTS OF A WIND TURBINE³

2.4.2 Road Access

A road network will be required for the installation of the turbines during the construction process and for ease of access to the turbines for maintenance purposes during operation. Additionally, the roads may require side drains on one or both sides depending on the topography. Many roads will have underground cables running alongside.

A road corridor may be temporarily required during construction and later rehabilitated. Underground cabling will be installed within this road reserve, where roads run internal to the WEF.

2.4.3 Medium-Voltage Collector System

The wind turbines will be connected through medium voltage (MV) 33 kV cables, which are laid in trenches or on Overhead Transmission Lines (OHTLs), to a new step-up substation. If OHTLs are used, they will be supported by either steel or concrete monopoles, or wooden pole structures of up to 32 m in height.

The Project will have a step-up substation from 33 kV, collected from the wind turbines to 230 kV. The step-up substation is connected to Aysha I substation, located 3-4 km away, to export the power to the national

³ <https://windmillstech.com/schematic-diagram-of-wind-turbine/> (accessed, 13 August 2025)

grid. The step-up substation houses high voltage transformer units that collect and convert the output from the collection system to a higher voltage (from 33 kV to 230 kV) that is appropriate for connection with the high voltage (HV) 230 kV National Grid. There will also be a switching station which routes and controls electricity (no change in voltage).

The substation will include administrative buildings (offices) used for normal daily operational related work, switchgear room, control room and a warehouse for storage of equipment and machinery such as spare parts, oil cartridges, fuel, lubricants and HV Gantries. A typical substation is shown in Figure 2-5.



FIGURE 2-5: TYPICAL SUBSTATION (MDI, 2025)

2.4.4 Communications Network

The Project will have a SCADA system for the remote operation of the facilities. A communication network will be installed which will consist of fibre optic cables connecting the turbines to the SCADA system at substation.

2.4.5 Onsite Building Infrastructure

Onsite building infrastructure will be required for the daily operation of the Project. Such buildings could include an administrative building (offices) used for normal daily operational related work, switchgear room, control room and a warehouse for storage of equipment and machinery such as spare parts, oil cartridges, fuel and lubricants, etc.

2.4.6 Waste and Wastewater Facilities

The Project will require waste and wastewater disposal facilities. During the site visit, it was determined that there were no nearby waste or wastewater treatment facilities within the Project Area. The Project EPC will be required by the Project Company to install a waste and wastewater treatment solution which will be used during the construction and operation of the Project.

2.4.6.1 Waste Management Facility

Non-hazardous waste will be managed through segregation at source across construction and camp facilities, with organic waste treated on site using composting methods. Recyclable materials will be compacted prior to off-site transportation. Hazardous waste will be stored temporarily in a bunded storage area compliant with international standards and periodically transported to licensed disposal facilities in Addis Ababa, Dire Dawa, or Djibouti, depending on the most feasible logistics solution.

2.4.6.2 Wastewater Facility

It is expected that wastewater will be collected and stored in fully contained septic tanks and then collected and transported by transportation tankers to be disposed at the closest Wastewater Treatment Plant (WWTP) (MDI, 2025). Another option to be considered is installation of a waste and wastewater treatment solution.

Non-potable water harnessed from the onsite treatment plant, if deemed clean, can be reused for other purposes within the Project Area for industrial processes. The following are the basic specifications for the wastewater treatment plant. Please note that further details shall be provided by the EPC Contractor.

- Pretreatment units: The units installed should have the capacity to remove large debris, sand and grit from the wastewater to prevent clogging and damage to subsequent treatment modules.
- Biological Treatment Modules: These modules utilize microbial processes to break down organic contaminants.
- Chemical Treatment Units: For the removal of specific contaminants, such as heavy metals or phosphorus, chemical treatment units can be incorporated.
- Membrane Bioreactors (MBRs): MBRs combine biological treatment and membrane filtration to achieve high-quality effluent. They are highly efficient in removing pathogens and suspended solids, making them suitable for reuse applications.
- Sludge Handling and Disposal: WWTPs include modules for sludge thickening, dewatering, and stabilization to ensure safe and efficient handling of the by-products of the treatment process.

2.4.7 Water Infrastructure

The Project has several options for water supply for the Project, which need to be investigated further, and relevant permits will be obtained. They include:

- Development of a well for groundwater extraction;
- Delivery of water through water tankers to the site; and
- Connection to the Ethio-Djibouti groundwater supply pipeline which runs within the PAOI.

The following table provides an analysis of the advantages and disadvantages of the three options:

TABLE 2-1: ANALYSIS OF THE WATER OPTIONS

Water Source	Advantage	Disadvantage
Well for groundwater extraction	▪ Reliable on-site supply. ▪ Lower long-term operating cost. ▪ Reduced logistics and traffic. ▪ Operational resilience: Particularly beneficial during	▪ Groundwater sustainability risk: Over-abstraction may affect local community water sources, pastoralist wells, or seasonal groundwater recharge. ▪ Uncertain yield and quality: Borehole success is not guaranteed; water may be saline or unsuitable without treatment.

Water Source	Advantage	Disadvantage
	peak construction activities or emergencies.	Permitting and approvals: Requires hydrogeological studies, abstraction permits, and potentially community consent, which can delay mobilisation.
Delivery of water through water tankers	- Immediate availability. - High flexibility: Volumes can be scaled up or down depending on construction phase needs. - No direct impact on local aquifers. - Low permitting burden on site.	- High operating cost: Fuel, vehicle maintenance, and contractor fees make this expensive for sustained use. - Traffic and safety risks. - Carbon footprint: Increased GHG emissions from transport. - Supply reliability risk: Disruptions due to road conditions, fuel availability, or regional water shortages can affect construction schedules.
Connection to the Ethio-Djibouti groundwater supply pipeline	- High reliability and capacity. - Centralised management: Water quality control and abstraction impacts are managed at a system level rather than by the Project. - Reduced local environmental impact. - Lower long-term risk profile.	- Dependence on third-party infrastructure. - Connection and tariff costs. - Limited control: The Project has less operational control over supply continuity and quality compared to an on-site source. - Approval complexity: Requires agreements with pipeline operators and relevant authorities, which can be time-consuming.

2.4.8 Summary of Key Project Components

Table 2-2 provides a summary of the key Project components.

TABLE 2-2: SUMMARY OF THE KEY PROJECT COMPONENTS

Component	Description
Project Generation Capacity	300 MW
Technology Type	Wind Power
Number of Wind Turbines	39 (worst case scenario), each with a shortlisted Wind Turbine Generator (WTG) power range of 7.7 to 9.00 MW in rated power
Specification of Wind Turbines	Minimum Hub Height = 120 m
	Maximum Hub Height = 130 m (worst case scenario)
	Minimum Blade Length = 89.73 m
	Maximum Blade Length = 103.1 m
	Maximum Blade Width = 3.72 m
	Minimum Rotor Diameter (RD) = 182 m

Component	Description
	Maximum RD = 210 m Minimum Rotor Top Tip Height = 211 m (120 m hub + 91m (½ of RD)) Maximum Rotor Top Tip Height = 235 m (130 m hub + 105 m (½ of RD)) Minimum Rotor Bottom Tip Height = 15 m (120 m hub – 105 m ½ of RD) Maximum Rotor Bottom Tip Height = 39 m (130 m hub – 91 m (½ of RD))
Turbine Foundations and Crane Pad	Each turbine will have a circular foundation with a diameter of around 20 m, and a depth of ±2.5 – 5 m, within a permanent crane pad of 1,500 m². <i>Note: This is a general estimation; the exact footing diameter and depth will be determined once the final turbine is selected for the Project.</i> A temporary crane boom assembly area and a temporary blade laydown area will also be required at each turbine hardstand Footprint of the turbines = crane pad area + foundation area. Generally, crane pads have an area of 1,500 m², while foundations have a diameter of 20 and, therefore, the area of the foundation for each turbine is ($\pi \times \text{radius}^2$) = $3.142 \times 10 \text{ m} \times 10 \text{ m} = 314 \text{ m}^2$. Therefore, approximately the total footprint of each turbine = $1,500 \text{ m}^2 + 314 \text{ m}^2 = 1,814 \text{ m}^2$ and footprint should all 39 turbines be constructed, would be $70,746 \text{ m}^2$ (0.071 km²).
Site Roads	Roads will be around 6m to 8 m wide and over above this may require side drains up to 2 m wide on one or both sides depending on the topography. Many (most) roads will have underground cables running next to them. An up to 20 m wide road corridor may be impacted during construction and partly rehabilitated to retain a permanent 8 m road surface with 2 m drain after construction and underground cabling. Approximately 55 km of roads are required. The footprint of the roads will be approximately 0.55 km².
Internal Reticulation (Overhead Lines and/or Underground Cables)	Turbines will be connected to an on-site substation via up to 33 kV cables. Cables will be laid underground in trenches or OHTL (less likely). mainly adjacent to proposed wind farm roads but in some instances the cables will deviate from the wind farm roads. Where deviation is required, this could be underground or overhead.
WEF Substation	The wind farm will have a 33 kV / 230 kV substation. The substation will include the Power transformers and Switching Station, an administrative building (offices) used for normal daily operational related work, switchgear room, control room, workshop and a warehouse for storage of equipment and machinery such as spare parts, oil cartridges, fuel, lubricants, etc. The switching station area will include all the standard switching station electrical equipment / components, such as bus bars, metering equipment and switchgear. Typically, the footprint for the substation and building facilities is around 0.02 km².
Overhead Transmission Line (OHTL)	The OHTL will be approximately 3- 4 km in length and connect with the HV 230 kV National Grid. These lines will be supported by monopole or lattice pylons.
Temporary Structures and Facilities	During the construction phase, a number of temporary structures and facilities will be required by the EPC Contractor. These may include batching plants, laydown areas, construction camp, site offices, ablutions, waste management facility, wastewater facilities etc. The exact location and extent of these facilities will be determined by the EPC Contractor but will be within the boundary of the site and not within any defined sensitive areas or no-go areas.

2.5 Project Activities

The construction of the 300MW WEF Project will be carried out in the following phases:

- Planning and Preparation Phase.

- Construction Activities.
- Commissioning.
- Site Rehabilitation.
- Operational Activities.
- Decommissioning Activities.

2.5.1 Planning and Preparation Phase

During the planning phase, the key parameters required for the construction and operation of the Project will be considered. This phase includes:

- Detailed engineering to inform the design and layout of the WEF;
- An ESIA which investigates the impacts on the surrounding biophysical environment and on the local communities (MDI, 2025);
- Specialist investigations to inform the ESIA, ESMP and layout of the Project (MDI, 2025);
- Engagement with the traditional leadership, communities and key government authorities (MDI, 2025);
- Issuing and awarding contracts for construction, equipment supply, and engineering services;
- Developing the design and layout of the WEF and access roads; and
- Identification of material resources (as required).

Planning activities, therefore, enable the preparation of the detailed design and layout of wind turbines within the PAOI, in addition to various other infrastructure/utility elements (buildings, roads, substation, etc.) (MDI, 2025).

2.5.2 Construction Activities

Construction phase will be approximately 24 months to complete. The construction phase will broadly include the activities described in the following sections. This phase will include any clearance of vegetation within the footprint of each turbine and excavations for foundations. These activities will require the stripping of topsoil, which will need to be stockpiled for rehabilitation at a later stage. Site preparation will be undertaken in a systematic manner to reduce the risk of erosion. Topsoil stripping and stockpiling will be carried out where soils have agricultural or ecological value to support future rehabilitation. If soils in the area are of poor quality (e.g. rocky, saline, or lacking organic content), this requirement may be reconsidered, and alternative rehabilitation measures will be defined instead. General best practice housekeeping will also be implemented on site to ensure the construction area remains neat and clean.

2.5.2.1 Construction Camp

A construction camp may be required, which includes a general laydown area and a site compound for all contractors. A generic construction camp and general laydown area are illustrated in Figure 2-6.



FIGURE 2-6: EXAMPLE OF A GENERAL LAYDOWN AREA AND CONSTRUCTION CAMP

2.5.2.2 Establishment of Access Roads

Main access roads and a few internal access roads within the PAOI already exist, however, construction of any additional access roads will need to be undertaken prior to the commencement of construction. The site can be accessed from the Dire Dawa-Aysha-Dewele-Djibouti express highway, which runs on the eastern border of the PAOI and links Aysha town to the Djibouti Port for the transportation of the wind turbines.

Within the site itself, access will be required between the turbines for construction purposes (and later for maintenance access). Lay-bys and turnarounds will need to be constructed along the access roads to accommodate heavy vehicle access and movement.

The access roads will have to be constructed in advance of any components being delivered to site and will remain in place after completion for future access (and possibly access for replacement of parts where necessary).

2.5.2.3 Transport of Turbine Components and Equipment to Site

The wind turbine components are expected to be transported to the closest marine port and then transported by road to the PAOI. The wind turbine, including tower sections and blades, will be brought on-site by the supplier in sections. Turbine units, which must be transported to the site consist of:

- Tower (comprised of segments, the heaviest section is approximately 140 metric tons);
- Complete Nacelle (weighing approximately 245 metric tons);
- Rotor blades (each of up to a maximum of 103.1 m in length); and
- Hub and Spinner (approximately 92 metric tons).

Components of various specialised construction equipment, lifting equipment and counterweights are required on site to erect the wind turbines, which also need to be transported to the site. In addition to the specialised lifting equipment, the normal civil engineering construction equipment will need to be brought

to the site for the civil works (e.g. cranes, excavators, trucks, graders, compaction equipment, cement mixers, etc.).

The components required for the establishment of the substation (including step-up transformers) will also need to be transported to the site, as required. The large equipment to be transported to the site during the construction phase may require alterations to the existing road infrastructure (widening on corners, removal of traffic islands, etc.), accommodation of street furniture (electricity, street lighting, traffic signals, telephone lines, etc.) and protection of road-related structures (bridges, culverts, portal culverts, retaining walls, etc.) as a result of the abnormal loads. This will need to be determined prior to the construction phase commencing.

2.5.2.4 Foundation Construction

Concrete foundations will be constructed at each turbine location. The foundation will be mechanically excavated to a depth of between 2.5 m and 5 m with a diameter of at least 20 m. Concrete will be batched at an appropriate location on-site. The reinforced concrete foundations will be poured and will support the mounting rings for the wind turbines. An example of a foundation under construction is provided in Figure 2-7.



FIGURE 2-7: EXAMPLE OF A FOUNDATION UNDER CONSTRUCTION⁴

2.5.2.5 Establishment of Hardstand Areas

Hardstand areas will need to be established at each wind turbine generator position for the laydown and assembly of the wind turbine generator components. The hardstand area will include a blade laydown area, crane pad and area to assemble the crane boom. This area would be required to be compacted and levelled to accommodate the assembly crane which would need to access the crawler crane from all sides. The crane pad will be constructed with compacted soil.

⁴ Source: Mainstream Renewable Power – Perdekraal WEF, South Africa

Laydown and storage areas will be required for the civil engineering construction equipment which will be used on site.

2.5.2.6 Construction / Assembly of the Turbines

Large lifting cranes will be required on site as tower sections need to be lifted into place. The nacelle, which contains the gearbox, generator and yawing mechanism, will then be placed on top of the assembled tower. The next step will be to assemble the rotor (i.e. the blades of the turbine). The blades will be lifted one by one and bolted to the previously installed hub. A large crane will be needed to assemble the rotors.

The lifting cranes will be required to move or will need to be transported between the WTG sites. An example of a wind turbine under construction is presented in Figure 2-8.



FIGURE 2-8: EXAMPLE OF WIND TURBINE UNDER CONSTRUCTION⁵

2.5.2.7 Construction of an On-Site Substation

A new electrical substation is proposed. It will be constructed within the PAOI.

2.5.2.8 Ancillary Infrastructure

Any ancillary infrastructure required, such as an operations and maintenance building, switchgear room, control room, warehouse / workspace, office, telecoms, security and ablution facilities, will be constructed on the PAOI. The establishment of these buildings would require the clearing of vegetation and levelling of the site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with the construction will be required.

2.5.3 Commissioning

Prior to energising a wind turbine, it is essential to conduct thorough pre-energisation inspections and tests to guarantee safety and optimal functionality. This includes examining for any blade damage, validating the operation of safety mechanisms such as brakes and lightning protection, ensuring rotor balance and

⁵ Source: <https://www.sa.aveva.com/news-aveva-wind-showcased-new-single-blade-installation-sbi-system-at-husum-windenergy-trade-fair>, accessed 05 September 2025

generator efficiency, evaluating the main transformer and SCADA system, and confirming that all documentation and interface protection measures are in order.

Grid connection and unit synchronisation will also need to be undertaken to confirm the turbine and unit performance. Physical adjustments may be needed, such as changing the pitch of the blades. The schedule for these activities will be subject to site and weather conditions.

2.5.4 Site Rehabilitation

Progressive rehabilitation will be undertaken wherever construction in a given area is completed (e.g. around WTG pads). Final rehabilitation of temporary access roads and laydown areas will occur after commissioning.

2.5.5 Operational Activities

Once the construction of the Project is completed and becomes operational, it will generate electricity and is expected to have a minimum life span of up to 25 years. Regular maintenance will be required to ensure the WTGs are kept in optimal working order.

The Project will be operated on a 24 hour, 7 days a week basis, with the operational phase of the Project mainly comprising of the following activities:

- Vegetation management (as and when required) for under and around the wind turbine generators to allow maintenance and operation at full capacity;
- Monitoring and maintenance of all components, including wind turbine generators, substation and ancillary equipment;
- Bird and bat monitoring;
- Office management;
- Supervision of the electricity production; and
- Site security monitoring.

Each WTG will be operational except under circumstances of mechanical breakdown, extreme weather conditions, extremely low wind speeds, curtailment or maintenance activities.

The WTG will be subject to periodic maintenance and inspection, and periodic oil changes will be required (mostly from gearboxes and electrical transformers). Any waste products (e.g. waste oil, damaged turbine equipment, damaged electrical equipment, etc.) would need to be disposed of at appropriately licenced disposal sites (where they cannot be recycled). Minimal waste is expected to be generated during the operational phase. All waste will be managed as per the requirements of the WBG EHS guidelines on waste⁶. These guidelines provide sector-specific recommendations for managing waste generated for a WEF by utilising the principles of the Waste Management Hierarchy (Prevention, re-use, recycling and finally disposal).

Limited employment opportunities are anticipated during the operational phase, as maintenance activities are typically carried out by a specialised team of technicians.

2.5.6 Decommissioning Activities

At the end of the 25-year Operational Phase, the lifespan of the Project may be extended (subject to the necessary authorisations and agreements with the landowners), in which case the turbines may be refurbished / upgraded or replaced with the latest turbine technology at that time.

⁶ World Bank Environmental, Health and Safety (EHS) Guidelines Waste Management (2007).
<https://documents1.worldbank.org/curated/en/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf>

Alternatively, they may be refurbished or replaced to continue operations. The Project may also be closed and decommissioned. If decommissioning is undertaken, Project Company shall be required to prepare a specific Decommissioning Management Plan at that time. Therefore, the decommissioning procedure shall include site-specific rehabilitation plans for the footprint of the Project (EcoConsult, 2020). If decommissioned, all components (excluding the wind turbine generators, foundations and some of the access roads) would need to be removed and the site rehabilitated. Materials would need to be recycled or disposed of in accordance with local regulations and international best practice. The typical recyclability rate of a modern wind turbine is around 88% (excluding foundations)⁷.

Large cranes will be required again to disassemble the WTGs. These components will be re-used, recycled (where possible and practical) or disposed of in accordance with regulatory requirements. This phase will have similar activities as described for the construction phase above.

The other infrastructure such as the substation, etc. will either be removed from site, or re-used as deemed fit and approved by the relevant authorities.

Some access roads may remain. The extent and number of the roads to remain on site is currently unknown. All other access roads would need to be closed and rehabilitated.

2.6 Materials and Resources

2.6.1 Water Use and Supply

Approximately 40 m³ of potable and non-potable water will be required per day during construction of the Project for:

- Domestic use (ablutions, drinking);
- Civil works (road construction, foundations, earthworks, etc); and
- Dust suppression on roads, as and when needed, depending on conditions.

Approximately 0.6 m³ of water per day will be required during the operational phase for potable and non-potable use.

The Project has several options for water supply for the Project, which need to be investigated further to include: (i) development of a well for groundwater extraction; (ii) delivery of water through water tankers to the site; and (iii) connection to the Ethio-Djibouti groundwater supply pipeline which runs within the PAOI. All options must be discussed and agreed with the appropriate authorities to ensure that water requirements of the Project can be supplied in a sustainable manner that does not affect local community resources and requirements (MDI, 2025).

2.6.2 Power Supply

Power for construction purposes will be from diesel generators. Fuel storage and handling will follow international good practice to prevent spills and leaks. Generators will be operated efficiently to minimise emissions and noise and removed from site once construction is complete.

2.6.3 Fuel

Diesel will be used to power generators, heavy civil works such as crane operations, concrete works, earthworks and roads and use by on-site vehicles and light equipment. Based on industry benchmarks for large onshore wind projects and the Project's scale, duration, and remote location, total diesel consumption during construction is estimated at approximately 3,500 litres per day.

⁷ Bošnjaković, M., Katinić, M., Santra, R. and Marić, D. Wind Turbine Technology Trends, *Appl. Sci.* 2022, 12(17), 8653; <https://doi.org/10.3390/app12178653>

2.6.4 Waste Management

Solid waste will be generated for the duration of the Project's construction activities and will comprise of general (approximately 2,300-4,000 t) and hazardous (approximately 20-40 t) waste components.

General waste components will comprise packaging material (i.e., paper, cardboard, plastic and wooden pallets), building rubble (i.e., bricks, wood and concrete), domestic waste and organic waste (i.e., food waste, vegetation cleared from site). Hazardous materials used on site will include fuels, oils and lubricants.

Minimal waste is expected to be generated during the operational phase (approximately 160 t general waste and 50-100 t hazardous waste).

The generated waste will be managed in accordance with the requirements of IFC PS 3 (Resource Efficiency and Pollution Prevention) and the applicable World Bank Group Environmental, Health and Safety (EHS) Guidelines. An integrated waste management approach will be implemented based on waste minimisation and will incorporate the waste hierarchy (i.e. reduction, re-use, recycling, treatment, with disposal only as a last resort). A Waste and Wastewater Management Plan will be developed prior to the commencement of construction, which will define waste streams, storage, handling, transport, treatment and final disposal, aligned with IFC requirements and GIIP.

2.6.5 Wastewater

Wastewater is mainly expected to include black water (sewage water from toilets and sanitation facilities), as well as grey water (from sinks, showers, etc.) generated from workers during the construction and operation phase. Wastewater generation will be approximately 18,6m³ during construction and 13,5 m³ during operation. Wastewater quantities are expected to be minimal. It is expected that wastewater will be collected and stored in fully contained septic tanks and then collected and transported by transportation tankers to be disposed at the closest Wastewater Treatment Plant (WWTP) (MDI, 2025).

2.6.6 Labour and Workforce

During the construction phase, the Project will require both skilled labour (including engineers, technicians, and surveyors) and unskilled labour (primarily general labourers). The number of semi-skilled and unskilled workers, including the workers for supporting services, is estimated at 1000 job opportunities at peak during the construction phase for a duration of approximately 24 months. However, the workforce will be reduced to nearly 25 during the operation phase for a duration of 25 years (MDI, 2025).

The total population based on the latest data obtained from Aysha Woreda administration office indicate that the total population of the Aysha Woreda was 90,244 in 2024 with male constituting 51.6% of the population while female accounted for 48.4%. During the ESIA study phase, it was established that there was high unemployment rate in project impacted Kebeles and many households depend on external food aid for survival. Majority (61.3%) of the surveyed household population reported that they were unemployed or have no occupation and the unemployment rate is disproportionately higher in Dhagago Kebele where 67.2% of the total sample household population reported to be unemployed. With these statistics, the Project is aiming provide local employment opportunities for both skilled and unskilled labour. Due to the limited accommodation and house rental services in Aysha, workers accommodation will be provided on site through the EPC Contractor. International Standards and guidelines will be applied during the planning and construction of the workers' accommodation. The following accommodation standards will be included by the Contractor during the construction of the workers' accommodation:

- Minimum space allocated per person.
- A separate bed for each worker.
- Separate gender accommodation.
- Adequate sanitary convenience.
- Common dining rooms, canteens, rest and recreational rooms and health facilities.

- Supply of safe water in the workers' dwelling in such quantities as to provide for all personal and household uses.
- adequate sewage and garbage disposal systems.
- appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals, and insects.
- Adequate sanitary and washing facilities.
- Ventilation, cooking and storage facilities and natural and artificial lighting.
- A minimum degree of privacy both between individual persons within the household and for the members of the household against undue disturbance by external factors

2.6.7 Fill Material

The turbine and substation foundations, main access roads and internal service roads would be constructed or upgraded using fill or aggregate material sourced from quarries or borrow pits within and around the area. Bedding material may also be required for trenched cables if the *in-situ* material is found to be unsuitable. The quantity of the fill material will be determined once the EPC contractor is appointed. An assessment of the potential impacts of sourcing aggregate from the nearby quarry site has been provided in Chapter 7.2.1.

2.7 Project's Area of Influence

According to the IFC's PS 1 (IFC, 2012), the PAOI encompasses the following:

- The area likely to be affected by (i) the Project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the Project; (ii) impacts from unplanned but predictable developments caused by the Project that may occur later or at a different location; or (iii) indirect Project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the Project, and that would not have been constructed or expanded if the Project did not exist and without which the Project would not be viable.
- Cumulative impacts that result from the incremental impact on areas or resources used or directly impacted by the Project from which other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

2.7.1 Defining the Core PAOI

A total area of 84.46 km² has been leased to the Project by the Environmental Protection and Rural Land Administration Bureau of the Somali Regional State in 2025. The lease will expire in 2049. Only a small portion of the lease area will be used for the development of the Project infrastructure. According to the updated ESIA report (MDI, 2025), the total footprint of Project infrastructure is estimated to be 0.751 km², taking up only 1.0% of the total lease area. Besides the confirmed location of the 39 wind turbines (as per the layout plan in Figure 2-3), the exact location of the associated Project components described in section 2.4 within the lease area are yet to be determined at this stage of the Project.

The core PAOI (84.46 km²), also referred to as the Project lease area, was confirmed at the commencement of the ESIA phase in line with the IFC's PS 1 criteria noted above. The core PAOI includes the footprint of Project disturbance and is defined by the Project boundary as indicated in Figure 2-9. This will include all Project components as described in section 2.4. This was the focus area for the specialist's scope of work. Additionally, the PAOI entails off-site transport corridors, worker-movement pathways, and potential material-sourcing locations.

2.7.2 Defining the PAOI for the Additional Specialist Assessments

Some of the environmental and socio-economic impacts and risks of the Project are anticipated to extend beyond the boundary of the PAOI. The environmental impacts that areas beyond the core PAOI include climate change, GHG emissions, noise, shadow flicker, biodiversity and social.

The cumulative PAOI for noise has been defined based on the predicted 35 dBA contour, which represents the lowest relevant IFC WEF threshold for residential receptors. This PAOI has been determined based on the cumulative (project-related and baseline noise) model, as the Project will not operate in isolation.

Table 2-3 and Figure 2-9 below presents the PAOI for each of the additional Specialist Assessments.

TABLE 2-3: PAOI FOR THE ADDITIONAL SPECIALIST ASSESSMENTS

Environmental Aspect	PAOI		Type of Assessment			Approach in Defining the PAOI
	Spatial Boundaries	Temporal Boundaries	Qualitative	Quantitative	Modelling	
Climate Change	As climate hazards operate at catchment and regional scales, the AOI extends beyond the core PAOI.	Construction Operation Decommissioning	✓			The PAOI for the Climate Change Risk Assessment (CCRA) is defined in accordance with the Equator Principles Guidance Note on CCRA by the spatial extent of the Project's physical footprint, climate hazards, areas of dependency on external systems, and areas downstream potentially affected by climate-related Project failures.
GHG Emissions	Core PAOI - Scope 1 emissions Beyond the extent of the core PAOI - Scope 2 emissions	Construction Operation	✓	✓		The PAOI is defined in accordance with the Equator Principles Guidance Note on CCRA by the emissions boundary rather than a geographic boundary. The emissions boundary includes all direct emissions from sources owned or controlled by the Project (Scope 1) and indirect emissions from purchased electricity (Scope 2). This boundary encompasses construction and operational emissions.
Noise	Core PAOI – Direct impacts 35 dB(A) buffer – Cumulative impacts	Operation	✓	✓	✓	The PAOI for the Noise Modelling and Impact Assessment was determined with input from the WBG EHS Guidelines for Wind Energy, which indicate that noise propagation modelling should focus on receptors within 2 km of the core PAOI. However, this distance may extend further where sources contain low-frequency components, although best practice generally emphasises assessment at the nearest receptors, as these are typically the most affected. In this case, the spatial extent of the project has also been considered: a collection of wind turbines does not behave as a single point source, but rather as a widely distributed array of sources across a broad footprint. The noise modelling results showed that the direct noise impacts are confined to the core PAOI. However, to ensure that cumulative impacts from adjacent wind farms are fully captured, a 15 km buffer was applied from the centre of the study site. The noise modelling results showed that the cumulative impacts are confined to the

Environmental Aspect	PAOI		Type of Assessment			Approach in Defining the PAOI
	Spatial Boundaries	Temporal Boundaries	Qualitative	Quantitative	Modeling	
						predicted 35 dBA contour, which represents the lowest relevant IFC WEF threshold for residential receptors.
Biodiversity	Core PAOI – Direct impacts 3 km around core PAOI – Non Project activities in the surrounding area 15 km around core PAOI – Wildlife displacement impacts into adjacent territories 75 km around core PAOI – Impacts of introduced and proliferation of species	Construction Operation Decommissioning	✓	✓	✓	The PAOI for the Biodiversity Assessment was determined in accordance with the Good Practices for the Collection of Biodiversity Baseline Data (Gullison <i>et al.</i> 2015), as follows: The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project. This area was used to screen for the species that occur in the PAOI and for critical habitat qualifying features. This includes a 3 km buffer around the core PAOI. The area for wildlife displacement impacts into adjacent territories, that extends beyond the core PAOI, which includes a 15 km buffer. The area for impacts of introduced and proliferation of species extends beyond the core PAOI, encompassing a 75 km buffer, to account for (1) potential major invasive spread and (2) secondary impacts resulting from the displacement of less competitive fauna into adjacent areas.
Livelihood Restoration Plan	Core PAOI - Land acquisition	Construction Operation	✓			Total area leased from the Environmental Protection and Rural Land Administration Bureau of the Somali Regional State to the Project Company.
	200 m around key Project infrastructure and machinery operations – Safety buffer	Construction	✓			Of the 84.46 km ² of land acquired by the Project (the core PAOI), approximately 21.70 km ² (about 26%) will be subject to access restrictions at some point, including construction and operation phases. Approximately 6.49 km ² (8% of the lease) will be affected during construction, while 15.21 km ² (18% of the total leased area) will be affected during operation. However, safety areas around Project infrastructure will be defined to ensure communities' safety. These areas are defined as follows:
	352.5 m around each wind turbine location – Safety buffer	Operation				

Environmental Aspect	PAOI		Type of Assessment			Approach in Defining the PAOI
	Spatial Boundaries	Temporal Boundaries	Qualitative	Quantitative	Modeling	
						During construction, safety areas which people are not allowed to access will be visually demarcated and communicated to communities within the following distances from key activities: A radius of 200 meters around key infrastructure and machinery operations. A buffer of 5 meters on each side of roads and traffic areas. A radius of approximately 15 meters around small-scale machinery and general construction activities. During operation, safety areas will be maintained around turbines. These areas will consist of 1.5 times the top tip height of the wind turbine, corresponding to an area of 0.39 km² per turbine. The placement of shelters and graves will not be permitted within these areas, to protect communities from blade throw and tower collapse.
Shadow Flicker	2.1 km around the proposed wind turbine locations	Operation	✓	✓	✓	The PAOI for the Shadow Flicker Assessment was determined in accordance with the Best Practice Guidance to Northern Ireland Planning Policy Statement (PPS). This results in a combined area of 2.1 km (10 x rotor diameter) from each of the 39 turbine positions, refer to Figure 2-9.

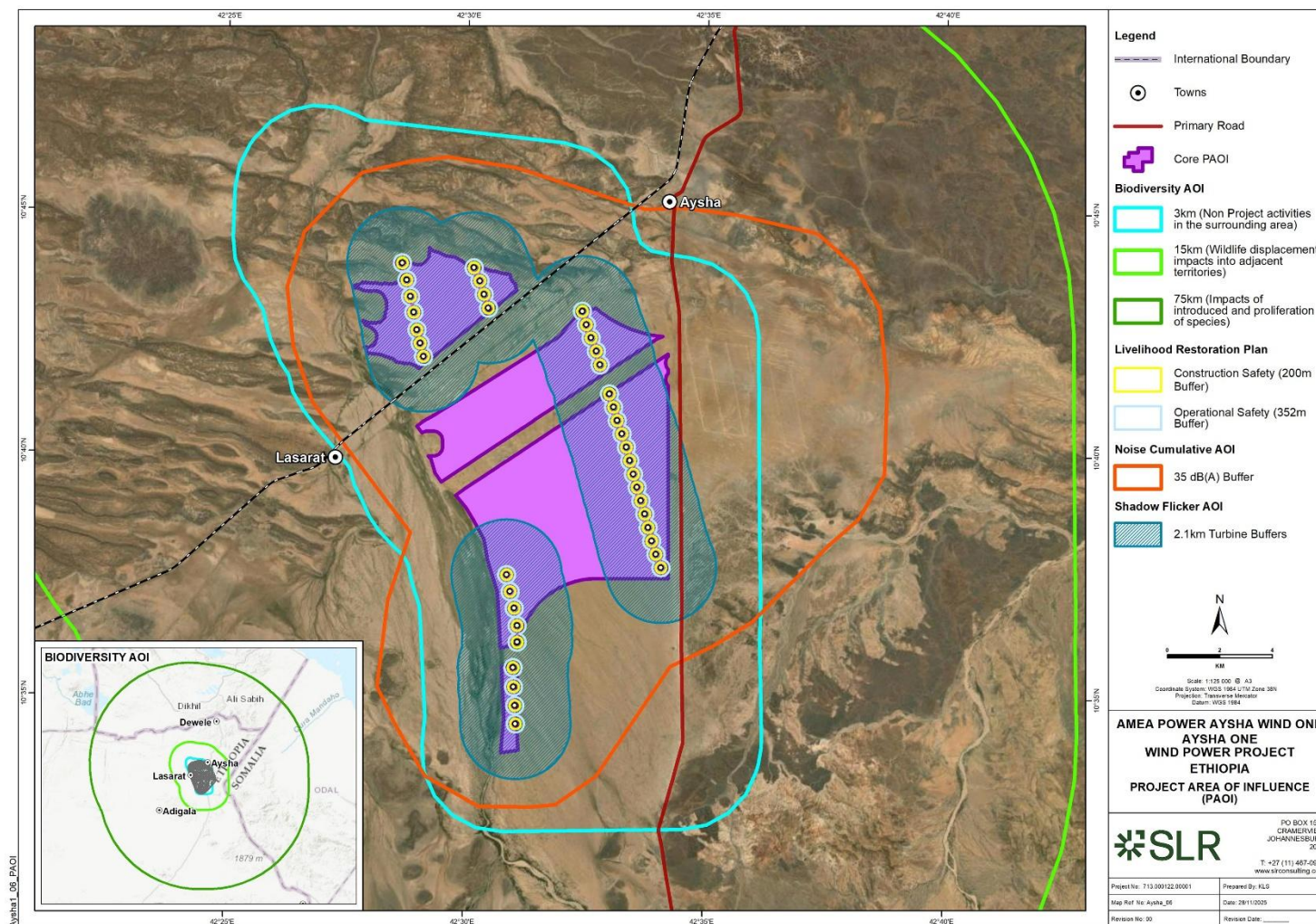


FIGURE 2-9: PROJECT AREA OF INFLUENCE

2.8 Project Timelines

2.8.1 Construction

Construction of the Project is planned to commence from October 2026 over a period of approximately 24 months (MDI, 2025).

2.8.2 Life of the Project

It is anticipated that the Project will be operational for a period of 25 years (MDI, 2025).

3 ANALYSIS OF ALTERNATIVES UPDATE

This section describes the Project and technology alternatives that have been considered and assessed in the ESIA phase, as well as the “No-Project” alternative.

The alternatives analysis and alternatives layout plan have been revised since the initial ESIA report (dated 2020). Although these changes were incorporated into the updated ESIA report (MDI, 2025), further minor amendments have since been made.

The Alternatives Analysis Update provided in this section should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).

3.1 Project Alternatives

The assessment of alternatives is also considered a key element of the ESIA process under GIIP. An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- the location where the activity is proposed;
- the technology to be used in the activity;
- the design or layout of the activity; and
- the option of not implementing the activity.

According to the Guidance Note (GN). 25 of the IFC PS GN1 (IFC, 2012), for greenfield developments, an ESIA should include an examination of technically and financially feasible alternatives to the source of potential impacts and document the rationale for selecting the particular course of action proposed. The purpose of the alternatives analysis is to improve decisions on Project design, construction, and operation based on feasible alternatives to the proposed Project. This analysis may facilitate the consideration of E&S criteria at the early stages of development and decision-making based on the differences between real choices.

MDI (MDI, 2025) undertook an alternative analysis for the Project in 2025. This section includes a summary of the alternative analysis as assessed by MDI (MDI, 2025).

3.2 Site Selection Alternatives

The Project Developer signed a MoU with the former MoWE on 14 July 2019 for the potential development of the Project. In terms of the MoU, the land area for the development was assigned and allocated by MoWE to the Project Company to perform and undertake a resource assessment and feasibility study for the Project for further appraisal. The selection of the site by MoWE was based on several technical considerations, including:

- The demand for electricity in the Somali Region to support industrial development and growth;
- The availability of existing grid networks and capacity in the area;
- The presence of feasible wind resources at the site compared to other areas in Ethiopia;
- Access to quality road transportation infrastructure, with relatively close proximity to the Port of Djibouti for the transport of wind turbines; and
- The relatively flat topography of the site, which would require minimal earthworks.

Following completion of the resource assessment and feasibility study, the Project Company prepared a site layout design and applied for a land use permit. The Somali Regional State Environmental Protection and Rural Land Administration Bureau subsequently issued the permit, including site coordinates, for the current site illustrated in Figure 1, as assessed in the ESIA study (MDI, 2025).

No alternative sites were considered, as the MoWE allocated the PAOI under the 2019 MoU with the Project Company. The Project Company, therefore, had no flexibility to change the location.

Following the resource assessment and feasibility study, the Project Company prepared a layout design and applied for a land use permit. The land use permit (with site coordinates) was issued by the Somali Regional State, Environmental Protection and Rural Land Administration Bureau, which is the current PAOI illustrated in Figure 2-1, as investigated in the ESIA study (MDI, 2025).

3.3 Technology Alternatives

Ethiopia currently has a total installed capacity for electricity production of 4,244 MW that includes the following technologies: hydropower (3,809MW – around 90%), wind (324 MW - around 8%), geothermal (7MW – around 0.2%) and diesel thermal (104MW – around 2%) (MDI, 2025). The Government of Ethiopia, under its latest GTP II, has decided to diversify and increase electricity generation potential through hydroelectric, wind, solar photovoltaic (PV) and geothermal. The Government of Ethiopia has determined that private sector investment is critical to achieve these aggressive power generation targets. Technological alternatives that are considered suitable for Ethiopia are discussed further hereunder.

3.3.1 Hydropower

Ethiopia's hydropower potential is estimated at 45,000 MW, making it the second highest in Africa. The country has 10 river basins and hundreds of streams, each covering massive catchment areas with adequate rainfall. However, the PAOI is unsuitable for hydropower development due to the absence of perennial rivers, low rainfall, and predominantly arid, flat terrain (Figure 3-1) (MDI, 2025). Therefore, hydropower is not a viable alternative for the Project.

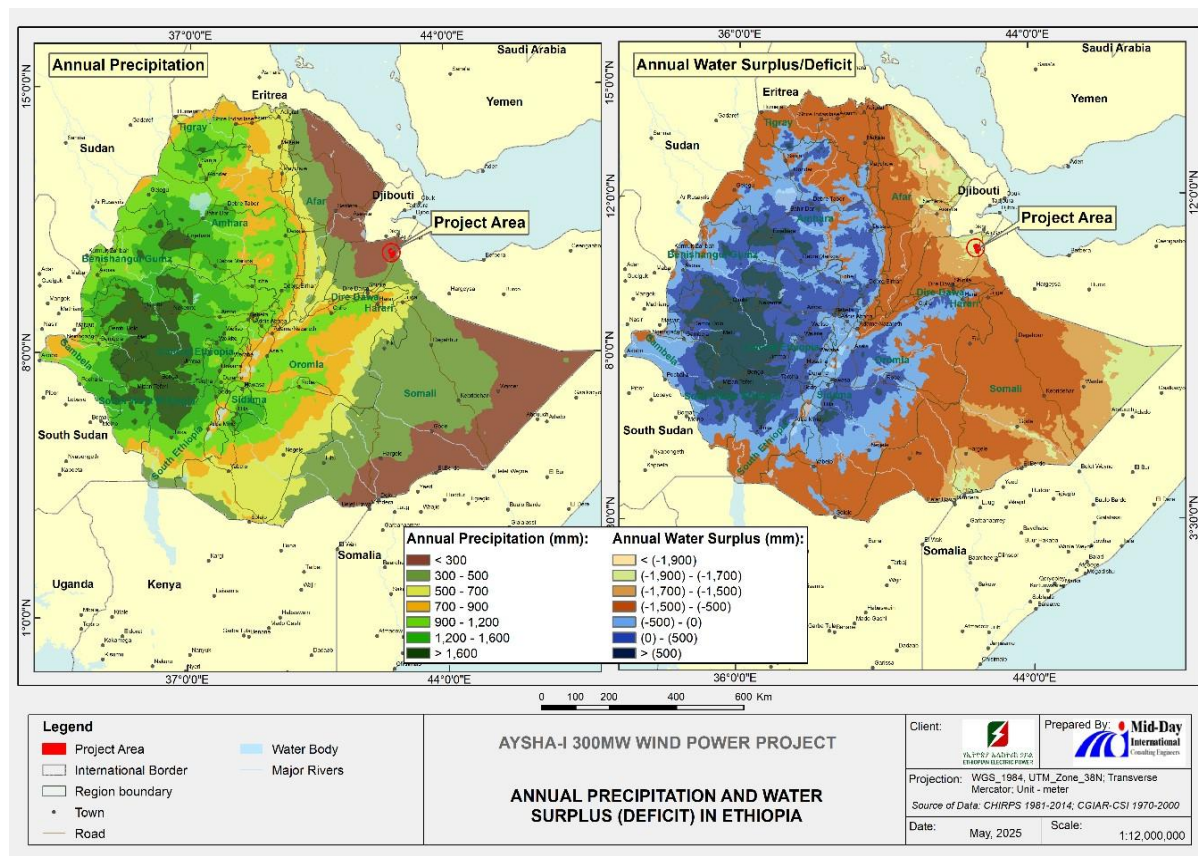


FIGURE 3-1: MEAN ANNUAL WATER SURPLUS IN ETHIOPIA (MDI, 2025)

3.3.2 Geothermal

Ethiopia's exploitable geothermal resources that is suitable for electrical power generation, is estimated at around 10,000 MW, of which less than 1% is currently exploited. Geothermal resources are primarily located in the Rift Valley area, where temperatures of 50 - 300°C prevail in a depth of 1,300 - 2,500 m. Given the PAOI's geology and distance from geothermal resources in the Rift Valley, it is not suitable for geothermal development (MDI, 2025). Therefore, geothermal energy is not a viable alternative for the Project.

3.3.3 Solar Energy

Ethiopia's exploitable solar resources - defined as areas with solar irradiation levels between 4 and 6 Kilowatts per hour (kWh)/m² - offer significant potential for electricity generation. Currently, less than 1% of this potential is being utilised. The PAOI lies within an optimal solar resource zone, with irradiation levels of 5.5–6 kWh/m², as illustrated in Figure 3-2.

However, although the site has good solar potential, the MoU between the Project Developer and the MoWE formally designated the area for wind development. This designation restricted the developer from pursuing a solar PV option at Aysha, as the Government had already prioritised diversification by allocating the site specifically for wind energy (MDI, 2025).

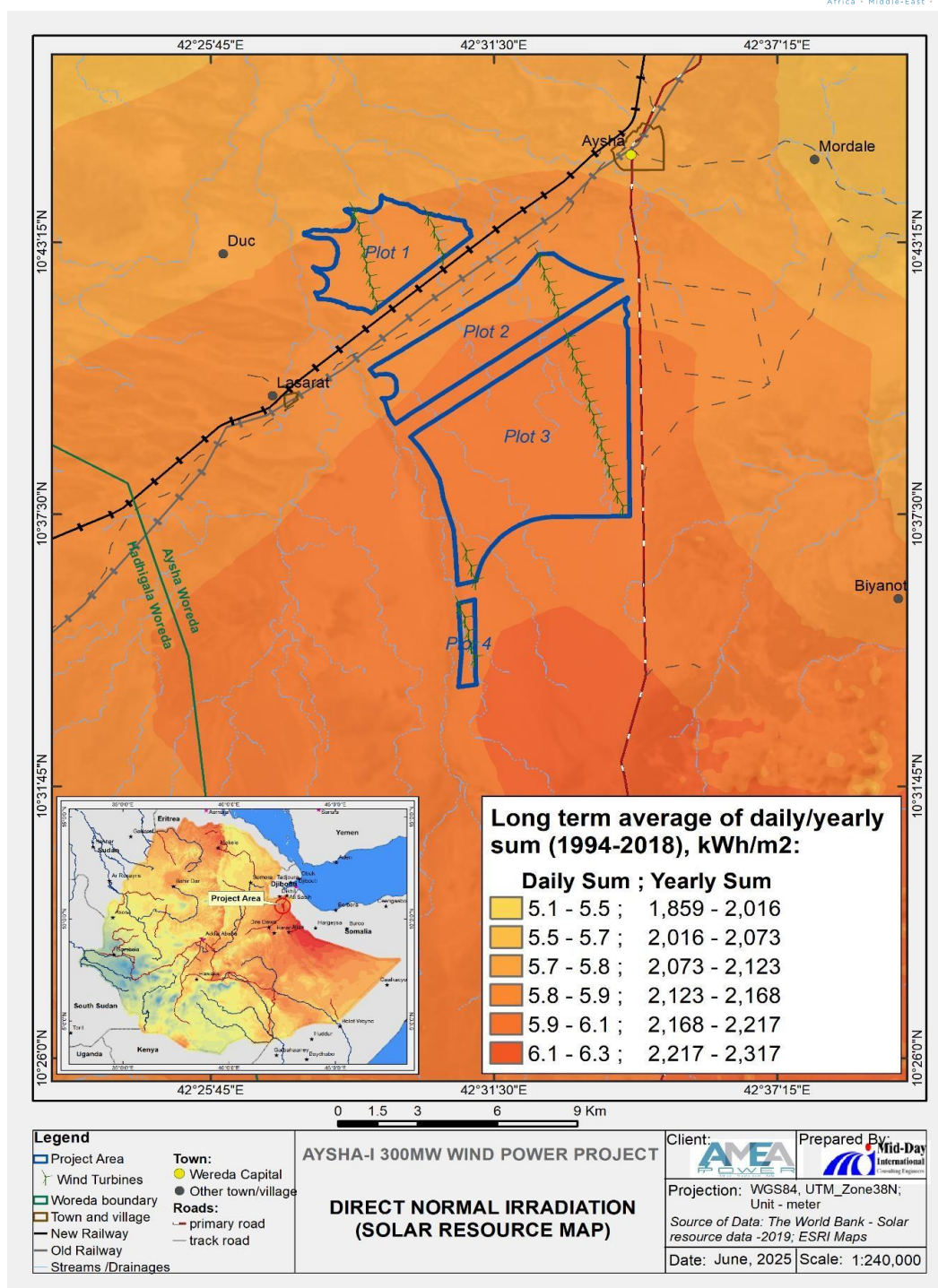


FIGURE 3-2: SOLAR IRRADIATION IN ETHIOPIA (MDI, 2025)

3.3.4 Wind Energy

Ethiopia's exploitable wind resources are estimated at around 100 Gigawatts (GW) in areas where average wind speed at 50 m height exceeds 7 m/s, of which less than 1% has been developed.

The PAOI is located within an area that is considered to have high wind potential and, therefore, considered optimal and feasible for wind project development for electricity generation. The PAOI is located within an optimal area with an average wind speed that is higher than 7m/s (at around 9-10 m/s) as illustrated in Figure 3-3 (MDI, 2025).

As detailed, the MoU between the Project Developer and the MoWE requires that a WEF is developed within this area.

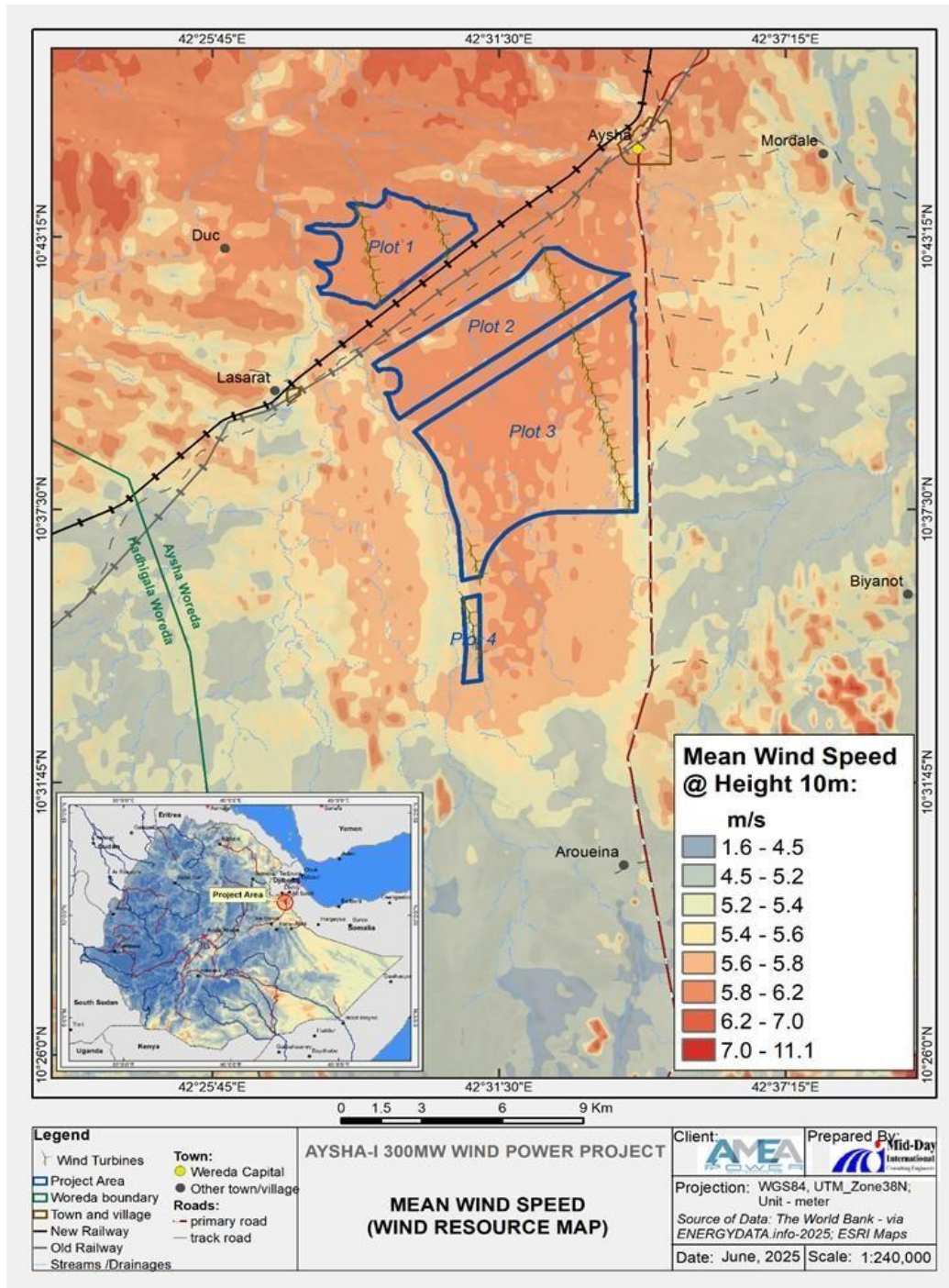


FIGURE 3-3: WIND RESOURCES IN ETHIOPIA (MDI, 2025)

3.4 Design Alternative

From the onset of the Project, the Project Company considered two (2) preliminary layouts for the turbines, which only took into account technical factors onsite. The preliminary turbine layouts are presented in Figure 3-4 and Figure 3-5 below, while the turbine specification (similar for both layouts) is summarised in Table 3-1.

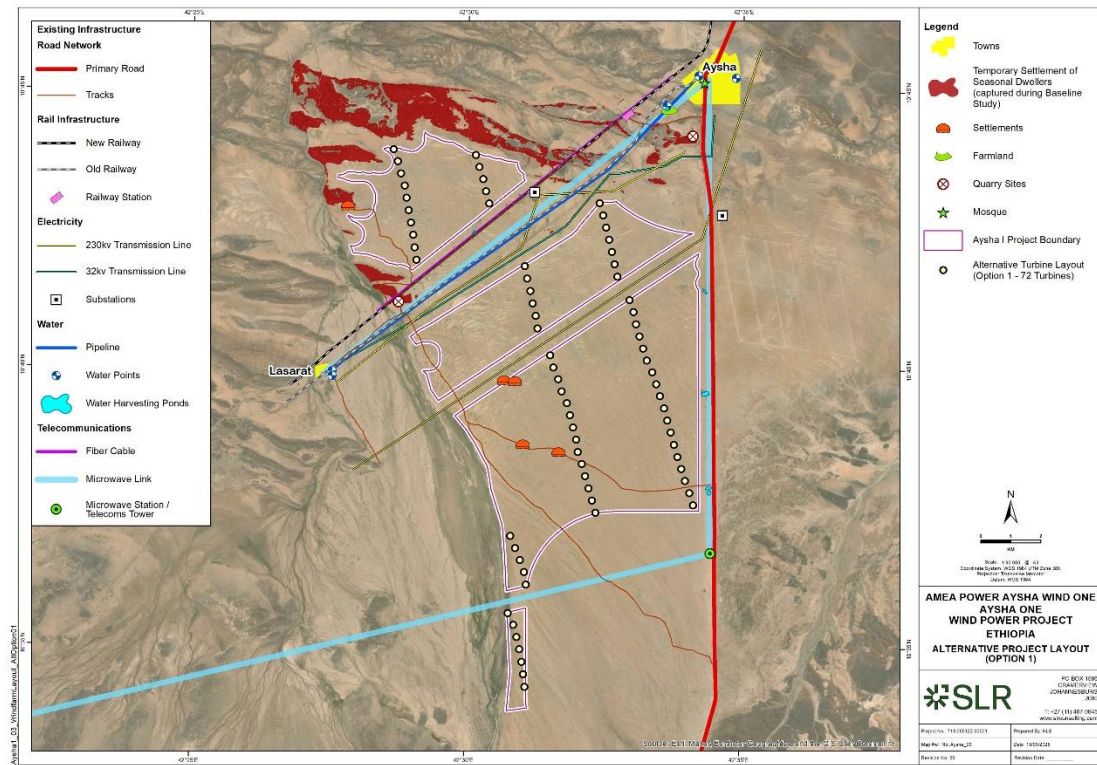


FIGURE 3-4: PRELIMINARY TURBINE LAYOUT OPTION 1

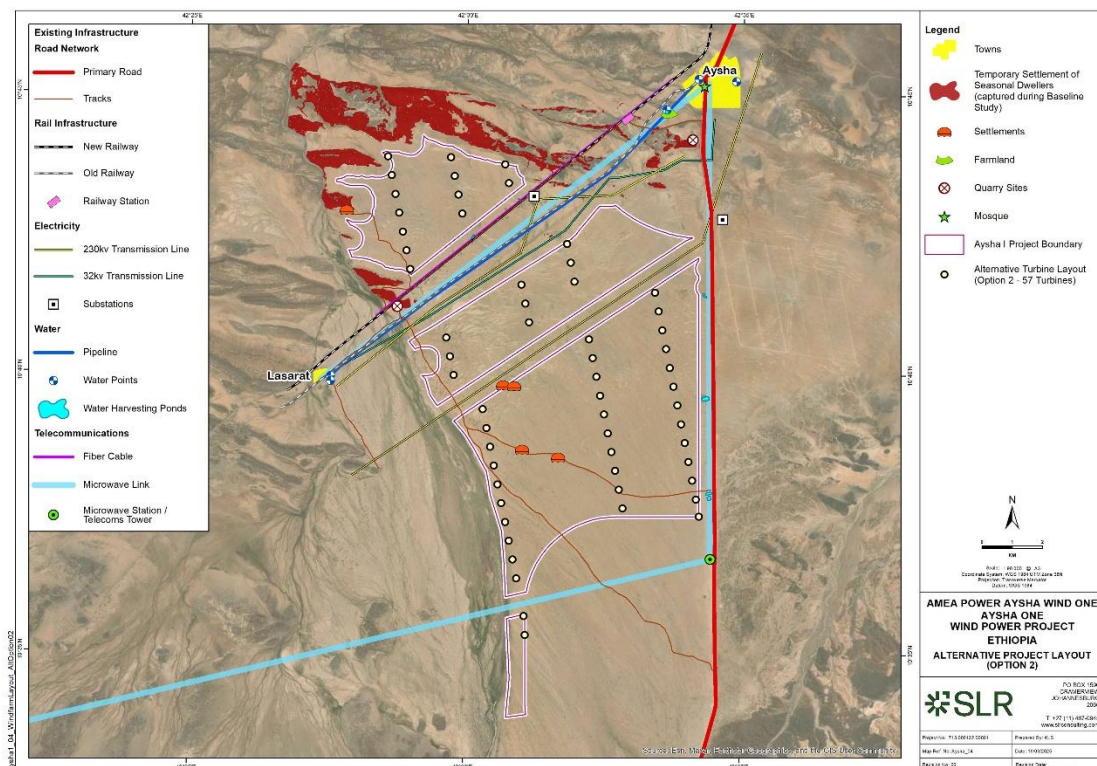


FIGURE 3-5: PRELIMINARY TURBINE LAYOUT OPTION 2

TABLE 3-1: TURBINE ALTERNATIVES CONSIDERED FOR THE PROJECT

Specifications	Option 1	Option 2	Option 3
No. of Turbines	72	57	39
Rated Power (MW)	4.5	5.5	9.0
Hub-Height (m)	90	121	130
Rotor Diameter (m)	145	158	210
Rotor Tip Height (m)	163	200	235

The ESIA consultants, namely EcoConsult (2020) and MDI (2025) had undertaken various E&S baseline assessments for the PAOI and provided the Project Company with an *E&S Constraint Analysis* Report, which identified areas of constraints that should be avoided as part of the design of the turbines and various Project components. These constraints included the following:

- Land Use: Scattered seasonal land users move around the Aysha area in general, as well as into neighbouring countries in search of grazing lands and water. The highest density and numbers of such seasonal land users are located within the northern parts of the PAOI which includes surface stones and rock outcrops, which they utilise for fencing their livestock. It was recommended that such areas are avoided as part of the design to reduce impacts.
- Archaeology and cultural heritage: Several burial sites were recorded within the PAOI and these must be avoided as part of the design.
- Infrastructure and utilities: Several infrastructure and utility elements were recorded onsite and which must be avoided as part of the design. This includes a railway, water pipeline and water harvesting ponds, an electricity transmission line and other infrastructure.

Figure 3-6 illustrates the constraints identified for the PAOI.

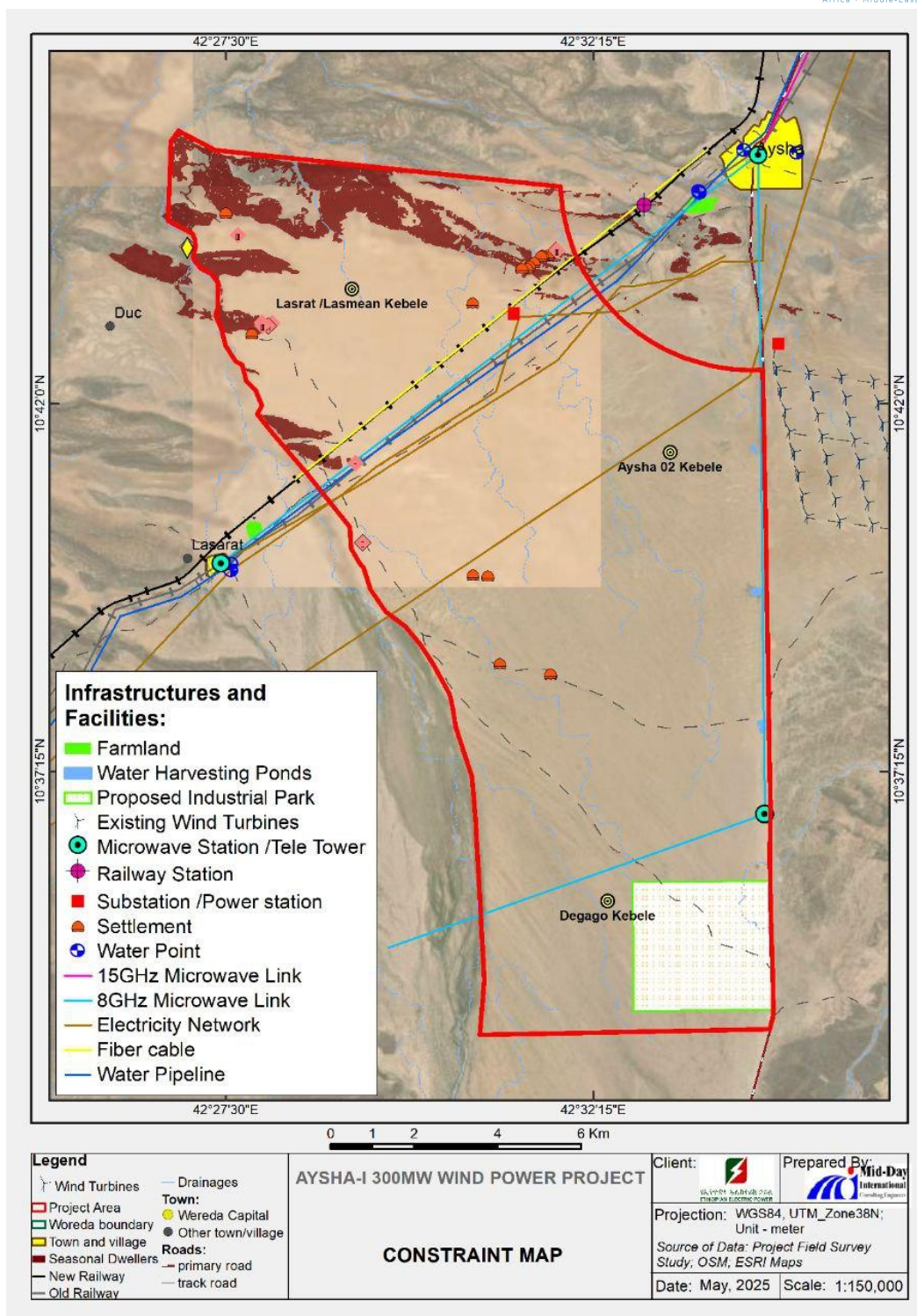


FIGURE 3-6: CONSTRAINTS IDENTIFIED FOR THE PAOI

Subsequently, a third layout option as illustrated in Figure 2-3 was provided by the Project Company, which considers the E&S constraints that were identified, as well as technical factors, including a lower number of wind turbines. In addition, option 3 is considered to be the most feasible option and includes up-to-date turbine technology.

Table 3-2 provides a summary of the alternative analysis for options 1 to 3 that have been considered for the Project.

TABLE 3-2: A SUMMARY OF THE ALTERNATIVE ANALYSIS FOR OPTIONS 1, 2 AND 3 FOR THE PROJECT

Criteria	Option 1 - Preliminary Technical Layout	Option 2 - Preliminary Technical Layout	Option 3 - Preferred Layout with E&S Constraints
# of turbines	72	57	39
Rated Power (MW)	4.5	5.5	9.0
Maximum Hub-Height (m)	90	121	130
Maximum Rotor Diameter (m)	145	158	210
Maximum Rotor Tip Height (m)	163	200	235
Technical Considerations	Based solely on wind resource and spacing requirements; no E&S factors considered	Based solely on wind resource and spacing requirements; no E&S factors considered	Incorporates latest turbine technology; optimised for reduced turbine count with higher output; considers both technical performance and E&S constraints.
Land Use Impacts	Does not avoid high-density seasonal grazing areas and rocky outcrops used by pastoralists.	Same as Option 1.	Avoids high-density seasonal grazing areas and rocky outcrops, reducing potential land use conflicts.
Archaeology and Cultural Heritage	Risk of affecting recorded burial sites.	Risk of affecting recorded burial sites.	Avoids all recorded burial sites.
Infrastructure and Utilities	Potential conflicts with existing railway, water pipeline, ponds and transmission lines.	Potential conflicts with existing infrastructure.	Avoids all identified infrastructure and utility corridors.
Environmental and Social Suitability	Low - no avoidance of sensitive receptors.	Low- no avoidance of sensitive receptors	High – integrates E&S constraint analysis into the final layout.
Overall Feasibility	Technically feasible, but high E&S risk.	Technically feasible, but high E&S risk.	Technically feasible, with minimal E&S risk and optimised energy yield.

3.5 “No-Project” Alternative

The ‘no Project’ alternative assumes that the 300 MW Project will not be developed. Should this be the case, then the PAOI area would remain the same. Under this scenario, no additional E&S impacts would occur. However, the potential socio-economic and environmental benefits associated with the Project would also not be realised.

These benefits include the following:

- This development allows for more sustainable development and shows the commitment of the Government of Ethiopia to realising its energy plan and strategy;

Contribute to increasing energy security through the development of local energy resources and reducing dependency on external energy sources;

- The clean energy produced from renewable energy resources is expected to reduce consumption of alternative fuels for electricity generation, and will thus help in reducing GHG emissions, as well as air pollutant emissions; and
- The Project is expected during the construction and operation phase to generate local employment and procurement opportunities and commit to other social responsibilities. As such, this is expected, to a certain extent, to subsequently enhance the socio-economic conditions and standards of living of the local communities (MDI, 2025).

Ethiopia continues to face significant challenges in meeting its growing energy demands. With projections indicating a steady increase in energy consumption, and in light of global and national concerns regarding the environmental impacts of fossil fuel-based energy systems, the development of large-scale renewable energy projects has become a strategic priority. Such initiatives are essential for diversifying the country's energy mix, reducing dependence on imported fuels, and enhancing energy security.

Accordingly, the “No-Project” option is considered to be unsuitable and has not been considered further.

4 REGULATORY AND POLICY FRAMEWORK

This section outlines the relevant and applicable International Standards, Guidelines and Practices for the Project. In addition, this section demonstrates how the Project complies with each IFC PS and each AfDB OS.

The updated ESIA report (MDI, 2025) addressed both local and international regulations and requirements. This section outlines the relevant and applicable National legislation and International Standards, Guidelines and Practices for the Project. In addition, section 4.2 demonstrates how the Project complies with each IFC PS and each AfDB OS.

4.1 Key National Acts, Policies, Guidelines and Strategies Considered

To protect the environment and ensure that development is undertaken in an environmentally and socially responsible manner, a significant number of E&S-related statutes have been considered for the Project. The relevant Ethiopian acts, guidelines and policies are set out in the Table 4-1 below.

TABLE 4-1: APPLICABLE ETHIOPIAN LEGAL FRAMEWORK AND POLICIES

Acts / Policies / Guidelines and Strategies	Description
Acts and Legislation	
The Constitution of Federal Democratic Republic of Ethiopia (FDRE), 1995	The Constitution provides the basic and comprehensive principles and guidelines for E&S protection and management. Among other things, the constitution states that everyone has the right to live in a clean and healthy environment and the government will make every effort to provide such an environment. The Constitution has the following key E&S objectives that have relevance to the development projects. Development projects shall not damage or destroy the environment. People have the right to full consultation and the expression of their view in the planning and implementation projects that affect them directly. Government and citizens shall have the duty to protect the environment. The Ethiopian government has implemented a range of policies and strategies, including E&S sectoral policies, grounded in the provisions of the Ethiopian Constitution, to promote sustainable development. Furthermore, these policies have informed the creation of several E&S proclamations and regulations that reflect the Constitution's core principles. The following sections of the Constitution are applicable to the Project: - Article 40 (4) Indicates 'Ethiopian pastoralists have a right to free land for grazing and cultivation as well as a right not to be displaced from their own lands' - Articles 41(8) also affirms that "Ethiopian...pastoralists have the right to receive fair prices for their products, that would lead to improvement in their conditions of life and to enable them to obtain an equitable share of the national wealth commensurate with their contribution. - Article 43 (1) gives broad right to the peoples of Ethiopia to improved living standards and to sustainable development. - Article 43(2) acknowledges the rights of the people to be consulted with respect to policies and projects affecting their community.

Acts / Policies / Guidelines and Strategies	Description
	- Article 43(3) requires all international agreements and relations by the State to protect and ensure Ethiopia's right to sustainable development. - Article 44 (1) Environmental Rights stipulations that all citizens have the right to a clean and healthy environment - Article 90-Social Objectives - Article 91- Cultural Objective Article 92(1-4) Environmental objectives are identified as government would endeavour to ensure that all Ethiopians live in a clean and healthy environment. The design and implementation of programs would not damage nor destroy the environment. Citizens also have a right to full consultation and to expression of views in the planning and implementation of environmental policies and projects that directly affect them.
Council of Ministers Regulations No. 472/2020	This Regulation contains property valuation and compensation methods and formulae that should be used in calculating compensation for various properties. It also contains lump sum compensation to be paid for severed social relationships and moral damages. The regulation also sets the provision of land expropriation procedure, proprietary right to develop the land to be expropriated, and provision of substitute land, housing and resettlement, and shareholder rights of the displaced.
Investment Incentive Regulation No. 517/2022	The regulation expands the scope of incentives to boost investment in priority sectors and less developed areas of the country.
Ethio-Telecom Regulation No. 197/2010	The Ethiopian Broadcasting Authority (EBA) has the overall responsibility for planning, permitting and control of broadcasting services related to radio and TV. Due to the location of telecommunication towers in the PAOI, the EBA is considered to be a stakeholder and needs to be engaged with during the permitting process.
Ethiopian Environmental and Social Impact Assessment Proclamation No. 1317/2025	The Proclamation outlines the following process for implementation and licensing: Implementation of any project is subject to an authorisation process from the EPA or from the REA. Any licensing agency, before issuing an investment permit for a developer or an operating license for any project, must ensure that the EPA or the relevant REA has authorised its implementation.
Rural Land Administration and Use Proclamation No. 1324/2024	This proclamation establishes an improved land administration system in Ethiopia to enhance the land rights of farmers and pastoralists, promote sustainable land use, and reduce land-related disputes.
Urban Planning and Building Proclamation No. 574/2008	This is the core national law that governs construction permitting across Ethiopia, including all regional states. Establishes the legal requirement for construction permits before any building activity begins. It regulates: - Building design approval. - Structural safety and standards. - Land-use conformity with approved plans. - Supervision and inspection of construction works. Formally delegates implementation powers to regional states and city administrations, enabling regional construction bureaus to issue permits under this framework.

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Proclamation on Expropriation of Landholding (Amendment Proclamation No.1336/2024)	The proclamation addresses payment of compensation for property situated on landholdings expropriated for public purposes (if applicable). It contains provisions on assessment of compensation for various property types (including buildings, fences, crops, trees and protected grass), permanent improvement of rural land, relocation of property, and a formula for calculating the amount of compensation. In addition, it has provisions for replacement of urban land and rural land, displacement compensation for land used for crops, protected grass or grazing, and provisional expropriation of rural land.
Environmental Pollution Control Proclamation No. 3002002	The main objective of the proclamation is to provide a basis for the setting up of standards on the protection of the ambient environment in Ethiopia and to endorse the respect of these standards.
Solid Waste Management and Disposal Proclamation No.1383/2025	This proclamation sets the rules for sustainable management of wastes to achieve social and economic development through projects and preserve nature and protect the environment. It also establishes frameworks for the collection and disposal of solid waste including permits for: - Waste collection and transport. - Recycling and reuse facilities. - Treatment and disposal operations.
Investment Proclamation No1180/2020	This proclamation states that issuance, renewal, and cancellation of investment permits for power generation or transformation shall be carried out by Ethiopian Electric Agency. The primary law governing investment in Ethiopia, issued on April 2, 2020, to modernize the country's foreign investment regime. It aims to increase and diversify foreign investment by opening up new sectors, streamlining registration and incentive processes, and promoting a more competitive and transparent business environment. Key changes include allowing foreign investment in sectors like export, import, wholesale, and retail trade, and establishing a new investment council and dispute resolution mechanisms.
Public-Private Partnership (PPP) Proclamation No. 1076/2018	Proclamation No. 1076/2018 facilitating Public-Private Partnership (PPP), recognizes that the private sector is essential to support the country's economic growth and improve the quality of public services, particularly in infrastructure. A PPP Board is informed to grant approvals at key milestones in the project development process, especially, it has the responsibility of approval of PPP pipeline projects, approving a PPP project to tender and award. The Board consists of the Ministry of Finance (that chairs the Board), National Bank of Ethiopia, Ministry of Water, Irrigation and Electricity, Minister of Transport, Public Enterprises Holding and Administration Agency, National Planning Commission, Ministry of Peace, and two members from institutions representing the private sector.
Hazardous Waste Management and Disposal Control Proclamation (Pro. No.1090)	The proclamation establishes a system for managing and disposing of hazardous waste to protect public health and the environment. The proclamation aims to create a framework for the safe handling of these materials, which include substances like heavy metals from mining, as well as clinical waste.
Ethiopian Water Resources Management Proclamation No. 197/2000	This is the principal water law in Ethiopia. It declares all surface and groundwater public property and establishes integrated water resources management (IWRM). It also prioritizes domestic water use over all others and introduces a permit system for: - Water abstraction - Water transfer

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	- Construction of waterworks - Wastewater discharge - Regulates water users' associations - Provides for pollution prevention and harmful-effects control.
Council of Ministers Regulations No. 115/2005 Ethiopian Water Resources Management	Issued under Proclamation 197/2000, this regulation: - Sets procedural rules for water permits - Regulates: - Water abstraction quantities - Effluent discharge standards - Water quality protection - Permit fees and water charges - Establishes enforcement mechanisms and penalties
Ministry of Transport Proclamation No.1097/2018	This Proclamation allowed for the establishment of the Ministry of Transport and Logistics (MoTL). The MoTL is the federal institution for transport under which several relevant Institutions are accountable, including the Ethiopian Civil Aviation Authority, and Ethio-Djibouti Rail Enterprise. Due to the location of the Project, the MoTL is considered a stakeholder and needs to be engaged with during the ESIA process.
Ministry of Works and Urban Development. EBCS – 8. Proclamation No. 41/1993. Design of Structures for Earthquake Resistance.	This Proclamation ensures that all buildings and structures are compliant with the minimum requirements for design, construction and quality of materials as set down by the National Building Code. This ensures that during seismic activities, human lives are protected, damage is limited and important structures remain operational.
Labour Proclamation No.1156/2019	The proclamation provides overall requirements for labour and working conditions (leave, salary, women's employment, child labour, sexual harassment, discrimination etc.) as well as occupational health and safety requirements and conditions at the workplace. The Project, throughout all its phases, must adhere to the labour proclamation for occupational health and safety and labour and working conditions, as well as for public health and safety.
Right to Employment of Persons with Disability Proclamation (No. 568 of 2008)	This act promotes equal employment opportunities by prohibiting discrimination against qualified persons with disabilities, mandating reasonable accommodations from employers, and outlining specific responsibilities for the Ministry of Labour and Skills (MoLS) to ensure inclusivity in workplaces and training programs. The Project, throughout all its phases, must adhere to the right of employment for persons with disability.
Prevention and Suppression of Trafficking in Persons and Smuggling of Migrants Proclamation (No. 909 of 2015)	This law is designed to prevent, suppress, and punish trafficking in persons (TiP) and smuggling of migrants (SoM). It aligns with international standards like the United Nations (UN) Palermo Protocol. The proclamation criminalizes various forms of trafficking, establishes penalties including imprisonment and the death penalty for aggravated cases, and mandates victim protection, rehabilitation, and compensation. It will be applicable throughout the Project phases.
Ethiopia Energy (Amendment) Proclamation No. 1085/2018	The Policy is divided into five main sections, which include: - Section 1: provides an overview of the Ethiopian energy sector. - Section 2: discusses key issues identified in the energy sector.

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	- Section 3: sets the energy policy goals and objectives in more concise and general terms. - Section 4: sets out the Supply and Demand side policy objectives with available corresponding policy instruments; and - Section 5: identifies cross-cutting Energy Policy Issues. Section 4 sets out specific policy objectives and instruments for the supply and demand of electricity. Under the electricity sector, the Policy sets out 5 key objectives including: - Policy Objective 1: provide adequate, reliable and affordable electricity supply to meet growing power demand for socio-economic development. - Policy Objective 2: increase access to electricity services. - Policy Objective 3: ensure continuous improvements in electric power efficiency and conservation. - Policy Objective 4: improve power sector governance; and - Policy Objective 5: strengthen environmental and safety management practices. Policy instruments are also identified, including: - Diversify energy generation mix based on cost, efficiency, environmental considerations, appropriate technologies and competitiveness. - Encourage IPPs, small-scale private power producers and co-generators through creative incentive mechanisms; and - Integrate ESIA in all power system investment projects and environmental audits. In addition, Section 4 also sets out a specific policy objective for the renewable energy sector, which includes the promotion and enhancement of renewable energies such as solar, wind, small-scale hydro power and low-enthalpy geothermal for small-scale applications and identifies the following policy instruments: - Promote the wide application of solar, wind and small-scale hydro energy to meet decentralised electricity demands in rural areas. - Encourage the participation of the private sector and enhance investment for exploiting resources; and - Encourage wide participation of IPPs in renewable energy development.
Policies	
National Conservation Strategy Volume II; National Policy on Natural Resources and the Environment.	The National Policy on Natural Resources and the Environment is an overall comprehensive cross-sectoral and sectoral policy framework developed by the Transitional Government to guide natural resources and environmentally sustainable development, use and management. The overall policy goal is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. It recognises the need for development projects to undertake ESIA to address social, socio-economic, political and cultural impacts, in addition to physical and biological impacts.
Updated Nationally Determined Contribution (NDC) (Updated 2021)	The purpose of the Ethiopia's NDC is to outline the country's plans to mitigate greenhouse gas (GHG) emissions and to adapt to climate change. Ethiopia's first NDC, which was updated in July 2021, has committed to

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	reducing the country's GHG emissions by 68.8% against the business-as-usual (BAU) scenario by 2030. In the BAU scenario, the country's GHG emissions are projected to increase from 247 million tonnes of carbon dioxide equivalent (MtCO₂e) in 2010 to 403.5 MtCO₂e by 2030. The mitigation target encompasses all sectors. Approximately 20% of Ethiopia's mitigation and adaptation measures are unconditional (i.e., state-funded), while the remaining 80% are conditional (i.e., dependent of international or donor finance). In the BAU scenario, it is projected that the energy sector would contribute 20 MtCO₂e (or 5% of total emissions) by 2030. With the implementation of the unconditional mitigation measures only, the contribution of the energy sector could be reduced from 20 MtCO₂e to 14.9 MtCO₂e by 2030, whereas with the implementation of the condition mitigations measures, the contribution of the energy sector could be reduced further from 14.9 MtCO₂e to 9.5 tCO₂e by 2030. The potential contribution of the Project's GHG emissions on the country's modelled domestic pathways is assessed in this report and in the CCRA for the Project.
Pastoralist Development Policy and Strategy, 2019	The policy aims to improve livelihoods by increasing livestock and dryland agricultural productivity, diversifying income, and improving infrastructure and social services. The policy seeks to integrate pastoral communities into national development, address past neglect, and build resilience through better land management and disaster risk reduction. Its two main pillars are maximizing the commercial potential of the livestock sector and diversifying livelihoods to make them more resilient to shocks.
National Women Policy, 1993 Gender Equality and Women Empowerment Policy, 2025 (Under Revision)	The policy recognizes the persistent gaps between policy and practice. The Ethiopian government and its partners are in the process of developing and refining a new, more comprehensive policy framework for 2025 and beyond. Current Status: The policy is under revision or is being developed as part of ongoing national efforts and in collaboration with development partners like UN Women. Various reports and joint statements in early 2025 highlight the ongoing commitment to put in place and implement robust policy and legal frameworks. Focus Areas: The new policy is expected to build upon past efforts and address persistent challenges. The focus includes: ▪ Eliminating all forms of discrimination, violence, and harmful practices like Female Genital Mutilation and child marriage. ▪ Addressing the significant time women spend on unpaid care and domestic work. ▪ Ensuring equal pay and opportunities in the workplace. ▪ Improving women's access to education at higher levels, where disparities still exist. ▪ Strengthening institutional capacity and ensuring adequate, gender-responsive financing for implementation. ▪ Promoting women's meaningful participation in decision-making at all levels of government and society. ▪ The development of the 2025 policy demonstrates an ongoing commitment to achieving full gender equality and women's empowerment.
National Child Policy, 2017	The National Child Policy aims to create a supportive environment for children by protecting their rights and welfare and fostering responsible citizens. Key objectives include strengthening alternative care for vulnerable

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	children, protecting them from harm, improving inter-agency collaboration, and ensuring their active participation in matters affecting them. The policy is also designed to provide a comprehensive framework for coordinating the efforts of various stakeholders to improve children's well-being and development.
National Youth Policy, 2004	The policy serves as a framework to ensure the active participation of youth (defined as 15- to 29-year-olds) in the country's democratic, economic, and social development. It aims to equip young people with the necessary competencies, skills, and ethics to contribute to and benefit fairly from national development efforts.
Ethiopia's Climate-Resilient Green Economy (2011)	The purpose of Ethiopia's Climate-Resilient Green Economy is to protect the country from the adverse effects of climate change and to build the country's economy. Primarily, this Policy seeks to identify green economy opportunities that could assist Ethiopia in realising their ambitious growth targets while minimising GHG emissions. The Policy highlights increasing the country's renewable energy generation capacity, leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings. Diversification of the national grid's energy sources is once again highlighted, as 90% of the country's total power generation capacity comes from hydro power, creating the potential for grid instability should periods of drought become more frequent.
National Biodiversity Policy 1998	The key objective of this policy is to conserve, develop and utilise the country's biodiversity resources. All developments must take note of the biodiversity of the PAOI and the regional biodiversity initiatives/strategies.
Ethiopian Revised National Biodiversity Strategy and Action Plan (NBSAP) (2015 -2020)	The NBSAP addresses the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society and making the public and decision makers aware of the value of biodiversity and ecosystem services. Ecosystem-based approaches of resource management are recommended as the main implementation strategy required to conserve and sustainably utilise biodiversity to be archived through sustainable management of resources, such as participatory forest management, sustainable range land and aquatic ecosystem management practice.
Cultural Policy of Ethiopia,1997, and amended in 2016	The Policy provides strategic issues and strategies regarding the conservation and protection of the heritage resources of the country. The Policy also requires the systematic identification, development, preservation, and use of cultural, historical, and natural heritages of the peoples of Ethiopia, and facilitates their study, documentation, visibility and transfer to the next generation. It also devised implementation strategies, which include: ▪ The country's heritage resources shall be protected and maintained per their cultural and historical values by devising and applying a heritage management system; and ▪ Close relations shall be forged with communities and other partners to protect and manage the country's heritage.
National Social Protection Policy of Ethiopia,2012	The policy aims to move from a fragmented, emergency-based welfare approach to a coordinated national framework that protects citizens from economic and social deprivation. It seeks to enhance knowledge, skills, and employment opportunities, and ensure access to basic services.
Water Resources Policy, 1999	The overall goal of the water resources policy is to enhance and promote all national efforts towards the efficient and optimum utilisation of the available water resources for socio-economic development on a sustainable basis.

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	The policies are meant to establish and institutionalise environmental conservation and protection requirements as integral parts of water resources planning and project development. The policy emphasises the need to control and ensure that water bodies are protected from indiscriminately discharged industrial wastewater and other wastes to protect water bodies and water systems from pollution and depletion.
Health Policy, 2017	The Ethiopian health Policy of 2017 centres on decentralization and achieving Universal Health Coverage by 2035. It prioritises primary healthcare, disease prevention, and community-based insurance. Key strategies included the Health Sector Transformation Plan and the Health Extension Program, focusing on accessible, comprehensive care for all, especially rural populations.
Guidelines and Strategies	
The Climate Resilient Green Economy (CRGE) Strategy	The CRGE Strategy addresses both climate change adaptation and mitigation objectives to ensure Ethiopia achieves a carbon-neutral middle-income status before 2025, achieving economic development in a sustainable way.
The Rural Job Opportunity Creation Strategy , 2017	The strategy aims to address rural unemployment, migration, and poverty by creating jobs in the rural economy. Key aspects of the strategy include focusing on agri-food sectors like livestock, cash crops, and food crops, encouraging entrepreneurship, improving rural infrastructure, and investing in skills development, particularly Agricultural Technical Vocational Education and Training. The strategy targets a broad range of job seekers, including youth, women, those with limited education or land, and graduates.
Technical Guidelines on Households Waste Management	The guidelines identify overall requirements for management and handling of household waste, to include solid waste as well as wastewater (liquid wastes).
Occupational Safety and Health Directive, 2007	The main objective of this Directive is the overall management of worker health and safety at the workplace throughout the various Project phases. It includes requirements for air emissions and dust control, use of protective equipment, monitoring, sound level limits for construction activities for workers, working in confined spaces, sanitary facilities, working in high temperatures, prevention of injuries, electrocution, fire prevention and safety and drinking water.
Ethiopia's Long-Term Low Emission and Climate Resilient Development Strategy (2020-2050) (2023)	The purpose of Ethiopia's Long-Term Low Emission and Climate Resilient Development Strategy (LT-LEDS) is to provide a path going forward in order to place the country on a low-carbon trajectory, while at the same time ensuring broader socio-economic development. Ethiopia's energy sector is highlighted as contributing minimally to the country's overarching GHG emissions profile (approximately 4% of total GHG emissions). Regarding the energy sector, Ethiopia's LT-LEDS includes the following strategic actions: ▪ Households – Electrification and adoption of energy efficient technologies in all household applications. ▪ Agricultural sector – increase the electrification rate of farm machinery and water pumping. ▪ Industrial sector – expansion of clean and efficient production technologies and increasing the electrification rate of key

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	industrial processes (i.e. boilers). The adoption of green fuels is also highlighted. ▪ The transportation sector – transition to zero-emissions regarding intracity, intercity, and freight travel private and public modes of transport. ▪ General – enhancing and maximising power generation and usage in the industrial, agricultural, and commercial sectors, through renewable energy adoption. The Project should, to the extent possible, ensure that it is compatible with the vision and strategic objectives, interventions, and actions of this Strategy.
Ethiopia's Climate-Resilient Green Economy – Climate Resilient Strategy – Water and Energy (2015)	This strategy was promulgated with the intent of transitioning Ethiopia into a middle-income country by 2025, through rapid economic growth that is resistant to climate change and does not induce a rise in Ethiopia's overarching GHG emissions. Regarding energy, this strategy broadly intends to guide the increase Ethiopia's electrification rate via a diverse energy mix and adoption of modern, energy efficient technologies. This strategy also seeks to bolster access to energy, emphasising biomass energy and off-grid energy solutions. The diversification of the country's current power mix is highlighted as the hydropower currently predominates which is dependent on rainfall creating an unstable national grid. The Project aligns with the aims and objectives contained therein, particularly regarding the adoption of renewable energy sources and the diversification of the national grid's energy sources.

4.2 International Convention, Standards and Guidelines

The Project will be seeking financing from IFIs. Therefore, the Project Developer wishes to design and manage the project in accordance with international E&S standards and requirements. The Project is being developed in alignment with international best practices, as both the IFC and the AfDB have been approached as lenders for the Project.

Ethiopia has also assented to various international conventions, agreements, standards, guidelines, and industry guidelines.

An overview of the international standards, treaties, guidelines and practices is provided in in Table 4-2 and Table 4-3.

TABLE 4-2: INTERNATIONAL STANDARDS, TREATIES, GUIDELINES AND PRACTICES

Standard / Guideline	Summary of Requirements	Project Compliance
Equator Principles (EP4, 2020)		
Principle 1: Review and Categorisation	Requires Equator Principles Financial Institutions (EPFI)'s to categorise a proposed Project based on its potential environmental and social risks and impacts. This categorisation helps determine the level of due diligence and risk management needed. The projects are classified into three categories according to the potential environmental and social risks they represent. The categories are: - Category A – Projects with potential significant adverse environmental and social risks and /or impacts that are diverse, irreversible, or unprecedented; - Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures; and - Category C – Projects with minimal or no adverse environmental and social risks and/or impacts.	The Project is classified as a Category A Project according to the Equator Principles due to the scale of the Project and the potentially significant E&S risks anticipated. Consequently, an ESIA and SLIP has been undertaken which is compliant with the IFC PS, the AfDB OS and the WBG EHS Guidelines.
Principle 2: Environmental and Social Assessment	Requires EPFI's to conduct an ESIA and relevant specialist studies for Projects classified as Category A. EPFI's are expected to include assessments of potential adverse Human Rights impacts and climate change risks as part of the ESIA. The United Nations Guiding Principles on Business and Human Rights provides a guideline on the Human Rights Assessment. A Climate Change Risk Assessment (CCRA) is required: - For all Category A and, as appropriate, Category B Projects, and will include consideration of relevant physical risks as defined by the Task Force on Climate-related Financial Disclosures (TCFD). - For all Projects, in all locations, when combined Scope 1 and Scope 2 Emissions are expected to be more than 100,000 tonnes of CO2 equivalent annually. Consideration must be given to relevant Climate Transition Risks (as defined by the TCFD) and an alternatives analysis completed which evaluates lower GHG intensive alternatives.	This ESIA report (MDI, 2025) and SLIP, and associated specialist studies is aligned and in compliance with the IFC PS, the AfDB OS and the WBG EHS Guidelines. To ensure alignment with IFC and AfDB standards and requirements, various additional specialist studies were required to be undertaken as part of the SLIP, as identified in the Gap Analysis report (SLR, 2025), including the following: - Livelihood Restoration - Indigenous Peoples Social Assessment - Updated Biodiversity Assessment - Critical Habitat Assessment - Noise Modelling and Impact Assessment - CCRA (included the Project's GHG emissions)

Standard / Guideline	Summary of Requirements	Project Compliance
	The ESIA must align with internationally recognised standards, such as IFC PS and WBG EHS Guidelines.	Human Rights and Gender Risk Assessment Shadow Flicker Assessment
Principle 3: Applicable Environmental and Social Standards	The ESIA must address compliance with the relevant host-country laws, regulations and permits that pertain to environmental and social issues. The EPFI must evaluate the Project's compliance with the applicable standards, as follows: For Projects located in Non-Designated Countries, compliance with the applicable IFC PS on Environmental and Social Sustainability and the WBG EHS Guidelines (Exhibit III).	The host-country compliant updated ESIA (MDI, 2025) was submitted in May 2024 to the MOWE in Ethiopia for their review and approval. The Project is situated within a non-designated country and therefore must and does comply with the WBG EHS Guidelines, IFC PS and EP requirements as described in Exhibit III, as well as the AfDB E&S OS.
Principle 4: Environmental and Social Management System (ESMS) and Equator Principles Action Plan	For all Category A and Category B Projects, the EPFI will require the Project Developer to develop and / or maintain an ESMS and ESMP. An Equator Principles Action Plan (EPAP) must be developed to outline any gaps and commitments to meet the requirements of the EPFI and applicable standards.	The ESMP has been developed as part of the SLIP. A project specific ESMS Manual and EPAP will be developed prior to construction as per the IFC PS requirements. The Project Company will develop an Annual Public Sustainability Reporting on environmental, social, governance (ESG) Performance.
Principle 5: Stakeholder Engagement	Requires EPFI's to engage with affected communities and relevant stakeholders in a meaningful, transparent, and culturally appropriate manner. To facilitate stakeholder engagement, the EPFI must commensurate with the Project's risks and impacts and make the ESIA readily available to the affected communities and, where relevant, other stakeholders in the local language and in a culturally appropriate manner.	Further stakeholder consultation and engagement have been undertaken (August to October 2025) since the 2020 surveys included in the updated ESIA report (MDI, 2025). The Stakeholder Consultation and Engagement provided in section 6 of this SLIP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025). The SLIP will need to be made readily available for the public by the Project Company.
Principle 6: Grievance Mechanisms	For all Category A Projects, the EPFI will require, as part of the ESMS, to establish effective grievance mechanisms which are designed for use by Affected Communities and Workers, as appropriate, to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance.	A Local Community Grievance Mechanism (LCGM) and complaints register is currently in place and implemented by the Project Company. The Project Company has developed a Worker's Grievance Mechanism (WGM) for the Project.

Standard / Guideline	Summary of Requirements	Project Compliance
Principle 7: Independent Review	For all Category A Projects, an Independent Environmental and Social Consultant must carry out an Independent Review of the ESIA including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the EPFI's due diligence and determination of the Equator Principle's compliance.	SLR were appointed to review the ESIA Report (MDI, 2025) to identify any gaps required in terms of the IFC PS and the AfDB E&S OS. To achieve this, SLR has compiled this SLIP to address the gaps in the ESIA report to ensure the Project aligns with international lender standards and requirements (IFC and AfDB).
Principle 8: Covenants	Requires that the Project Developer agrees to specific environmental and social covenants in the financial documentation for the project. These covenants ensure that the EPFI remains compliant with the Equator Principle's throughout the Project's lifecycle.	The Project Company will covenant in the financing documentation. This includes: - Complying with the ESMP and EPAP (where applicable) during the construction and operation of the Project - Providing periodic reports in a format agreed with the EPFI that document compliance with the ESMP and EPAP (where applicable) and provide representation of compliance with relevant local, state and host-country environmental and social laws, regulations and permits - Decommissioning the facilities, where applicable and appropriate, in accordance with an agreed decommissioning plan. EPFIs will take reasonable measures to ensure that all existing environmental and social obligations continue to be included in the new financing documentation.
Principle 9: Independent Monitoring and Reporting	For all Category A Projects, in order to assess Project compliance with the Equator Principle's after Financial Close and over the life of the loan, the EPFI will require independent monitoring and reporting . Monitoring and reporting should be provided by an Independent Environmental and Social Consultant; alternatively, the EPFI will require that the client retain qualified and experienced external experts to verify its monitoring information.	The Project Company must implement the necessary monitoring programmes (as outlined in the ESMP) and audits to demonstrate compliance. A Monitoring Plan has been developed for the Project, as per the ESMP.
Principle 10: Reporting and Transparency	For all Category A Projects, the following reporting requirements apply to the Project Developer:	The Project Company will adhere to the reporting requirements stipulated.

Standard / Guideline	Summary of Requirements	Project Compliance
	- The client will ensure that, at a minimum, a summary of the ESIA is accessible and available online and that it includes a summary of Human Rights and climate change risks and impacts when relevant. - The client will report publicly on an annual basis, GHG emission levels (combined Scope 1 and Scope 2 Emissions, and, if appropriate, the GHG efficiency ratio) during the operational phase for Projects emitting over 100,000 tonnes of CO₂ equivalent annually. - The EPFI will encourage the client to share commercially non-sensitive Project-specific biodiversity data with the Global Biodiversity Information Facility (GBIF) and relevant national and global data repositories, using formats and conditions to enable such data to be accessed and re-used in future decisions and research applications. The EPFI will, at least annually, report publicly on transactions that have reached Financial Close and on its EPs implementation processes and experience. The EPFI will report according to the minimum reporting requirements detailed in Annexure B of the standards, taking into account appropriate confidentiality considerations.	The SLIP must be made readily available for the public by the Project Company. A Human Rights and Gender Risk Assessment and CCRA has been developed. The Project Company must report publicly on the GHG emission levels (Scope 1 and 2) annually. The Project Company must share commercially non-sensitive Project-specific biodiversity data with GBIF and relevant national and global data repositories. The EPFI will report publicly on transactions that have reached Financial Close and on its Equator Principle's implementation processes and experience.
IFC PS (2012)		
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	<u>ESMS:</u> The Project Developer, in coordination with other responsible government agencies and third parties as appropriate, will conduct a process of environmental and social assessment, and establish and maintain an ESMS appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review.	The SLIP and ESMP are aligned and in compliance with the IFC PSs. A project specific ESMS Manual will be developed prior to construction as per the IFC PS requirements.
	<u>Policy:</u> The Project Developer will establish an overarching policy defining the environmental and social objectives and principles that guide the project to achieve sound environmental and social performance. The policy provides a framework for the environmental and social assessment and management process, and specifies that the Project (or business activities, as appropriate) will comply with the applicable laws and regulations of the jurisdictions in	An Environmental and Social Policy will be developed by the Project Company prior to construction as per the IFC PS requirements.

Standard / Guideline	Summary of Requirements	Project Compliance
	which it is being undertaken, including those laws implementing host country obligations under international law. The policy will indicate who, within the Project Developer's organisation, will ensure conformance with the policy and be responsible for its execution. <u>Identification of Risks and Impacts:</u> The Project Developer will establish and maintain a process for identifying the environmental and social risks and impacts of the Project, including cumulative impacts. The risks and impacts identification process will be based on recent environmental and social baseline data at an appropriate level of detail. The process will consider all relevant environmental and social risks and impacts of the project (as well as project alternatives), including the issues identified in PS 2 through 8, and those who are likely to be affected by such risks and impact. The Project Developer must complement its environmental and social risks and impacts identification process with specific human rights due diligence as relevant to the particular business. The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities, and potential transboundary effects. Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the PAOI. <u>Management Programs:</u> Consistent with the Project Developer's Policy and the objectives and principles described therein, the Project Developer will establish management programs that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project. The mitigation hierarchy to address identified risks and impacts will favour the avoidance of impacts over minimisation, and, where residual impacts remain, compensation / offset, wherever technically and financially feasible. The management programs will establish environmental and social action plans, which will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation.	The SLIP has identified the E&S risks of the Project including a rapid cumulative impact assessment based on recent environmental and social baseline data. A Human Rights and Gender Risk Assessment has been developed. A CCRA was undertaken for the Project, which includes the assessment of GHG emissions. Potential transboundary effects were considered but are not applicable. The SLIP addresses project alternatives (section 3) based on a reasoned approach, taking biological, physical and technical aspects into account. The PAOI is defined and mapped in the SLIP (section 2.7). The ESMP has been developed for the Project. The mitigation hierarchy is applied to all impacts identified in the SLIP. Residual impacts were considered and assessed in the SLIP. The recommended management /action plans in the ESMP will be developed by the Project Company prior to construction.

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	<u>Organisational Capacity and Competency:</u> The Project Developer, in collaboration with appropriate and relevant third parties, will establish, maintain, and strengthen as necessary an organisational structure that defines roles, responsibilities, and authority to implement the ESMS.	An organisational structure is described in the ESMP and will be developed into the ESMS Manual for the Project.
	<u>Emergency Preparedness and Response:</u> Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the Project Developer, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment.	An Emergency Preparedness and Response Plan (EPRP) has been developed for the Project, included in the ESMP.
	<u>Monitoring and Review:</u> The Project Developer will establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. In addition to recording information to track performance and establishing relevant operational controls, the Project Developer should use dynamic mechanisms, such as internal inspections and audits, where relevant, to verify compliance and progress toward the desired outcomes.	A Monitoring Plan has been developed for the Project, as per the ESMP. This plan describes the overall requirements for environmental monitoring and measurements to ensure that there is adequate control of significant environmental aspects, compliance with legal and other requirements, and to achieve objectives and targets.
	<u>Stakeholder Engagement:</u> Stakeholder engagement is an ongoing process that may involve, in varying degrees, the following elements: stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and ongoing reporting to Affected Communities: Stakeholder Analysis and Engagement Planning: The Project Developer should identify the range of stakeholders that may be interested in their actions and consider how external communications might facilitate a dialog with all stakeholders. The Project Developer will develop and implement a Stakeholder Engagement Plan (SEP) that is scaled to the project risks and impacts and development stage and be tailored to the characteristics and interests of the Affected Communities.	- Stakeholder Analysis and Engagement Planning: Previous and recent stakeholder engagement was undertaken as part of the socio-economic impact assessment. The SEP was also revised, with a specific focus on vulnerable groups, seasonal dwellers and intangible. - Disclosure of Information: The SLIP will need to be made readily available for the public by the Project Company. - Consultation and Informed Consultation and Participation: The Project Company must ensure ongoing reporting to the affected communities. - Indigenous Peoples: PS 7 is applicable to this Project.

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	▪ Disclosure of Information: Disclosure of relevant project information helps Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project. The Project Developer will provide Affected Communities with access to relevant information. ▪ Consultation: When Affected Communities are subject to identified risks and adverse impacts from a project, the Project Developer will undertake a process of consultation in a manner that provides the Affected Communities with opportunities to express their views on project risks, impacts and mitigation measures, and allows the client to consider and respond to them. ▪ Informed Consultation and Participation: For projects with potentially significant adverse impacts on Affected Communities, the Project Developer will conduct an Informed Consultation and Participation (ICP) process that will build upon the steps outlined above in Consultation and will result in the Affected Communities' informed participation. ▪ Indigenous Peoples: For projects with adverse impacts to Indigenous Peoples, the Project Developer is required to engage them in a process of ICP and in certain circumstances the client is required to obtain their Free, Prior, and Informed Consent (FPIC). The requirements related to Indigenous Peoples and the definition of the special circumstances requiring FPIC are described in PS 7. ▪ Private Sector Responsibilities Under Government-Led Stakeholder Engagement: Where stakeholder engagement is the responsibility of the host government, the Project Developer will collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with the objectives of this PS.	▪ Private Sector Responsibilities Under Government-Led Stakeholder Engagement: Stakeholder engagement has been led by the Project Company.
	<u>External Communications and Grievance Mechanisms:</u> The Project Developer will implement and maintain a procedure for external communication. Where there are Affected Communities, the Project Developer will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance.	External communication procedures have been developed in the ESMP and SEP. A LCGM and complaints register is currently in place and implemented by the Project Company.
	<u>Ongoing Reporting to Affected Communities:</u>	The Project Company will ensure ongoing feedback and reporting to the affected communities, as required in the SEP.

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	The Project Developer will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities.	
PS 2: Labour and Working Conditions	<u>Working Conditions and Management of Worker Relationship:</u> - Human Resources Policies and Procedures: The Project Developer will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this PS and national law. - Working Conditions and Terms of Employment: Where the Project Developer is a party to a collective bargaining agreement with a workers' organisation, such agreement will be respected. Where such agreements do not exist, or do not address working conditions and terms of employment, the Project Developer will provide reasonable working conditions and terms of employment. - Workers' Organisations: In countries where national law recognises workers' rights to form and to join workers' organisations of their choosing without interference and to bargain collectively, the Project Developer will comply with national law. Where national law substantially restricts workers' organizations, the Project Developer will not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment. - Non-Discrimination and Equal Opportunity: The Project Developer will not make employment decisions based on personal characteristics unrelated to inherent job requirements. The Project Developer will base the employment relationship on the principle of equal opportunity and fair treatment and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. - Retrenchment: Prior to implementing any collective dismissals, the Project Developer will carry out an analysis of alternatives to retrenchment. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be	In order to establish and maintain a good working relationship with its employees, the Project Company must implement and encourage rigorous labour management that maximises local economic benefits without compromising the quality of work execution. - Human Resources Policies and Procedures: The Project Company will require partners and contractors to comply with its hiring and workforce management policies. In addition to being posted at the project information desk, human resources requirements will be disseminated to the villages and localities affected by the project, through the Local authorities, the communities' leaders, as well as on public bulletin boards accessible to all in the communities concerned. - Working Conditions and Terms of Employment: The Project Company and successful contractors will provide a written employment contract to all employees. This contract will include, in particular, the terms and conditions of work: remuneration, working hours, overtime, vacation and sick leave, etc. The working conditions of the employees of the Project Company and those of their subcontractors will respect the standards defined by the Labor Law of Ethiopia. The Project Company will ensure that the employees of subcontractors are compensated fairly.

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	developed and implemented to reduce the adverse impacts of retrenchment on workers. Grievance Mechanism: The Project Developer will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns.	- Workers' Organisations: The Project Company recognises that each employee can choose whether or not to join a collective agreement as recognized by the Labor Law and respects this choice. - Non-Discrimination and Equal Opportunity: The Project Company will recruit its employees on the basis of equal opportunities, with equal competences, according to the requirements of the position to be filled, without discrimination in terms of age, ethnic or social origin, sex, political opinions or religion. The Project Company's policy is also intended to protect employees from harassment in all its forms. This policy will be understandable to prospective employees and will be explained and communicated to them upon hiring. - Retrenchment: The retrenchment process will be outlined in the Project Company's Retrenchment Plan which must be developed. - Grievance Mechanism: The Project Company has developed a WGM for the Project. The WGM applies to all requests and complaints that might arise from any worker (employees of the Project Company, EPC Contractor, subcontractors) considering themselves affected by the Project, including but not limited to the following: - An aspect of their personal employment — for example, they may be experiencing an ongoing issue such as dissatisfaction regarding their personal pay or benefits. - Interpersonal issues such as bullying, harassment and discrimination.

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		○ Grievances about working time and working conditions. ○ Gender-based violence and harassment.
	<u>Protecting the Work Force:</u> ■ Child Labor: The Project Developer will not employ children in any manner that is economically exploitative or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. ■ Forced Labor: The Project Developer will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty.	Considering the Ethiopian National Children's Policy of 2017 and in accordance with International Labour Organisation (ILO) and UN Conventions, the Project Company will not use forced labour, debt bondage and child labour. Hiring will respect the minimum age requirement of 18 years, except in the case of apprentices or trainees, aged at least 14, who are part of training programs under government control.
	Occupational Health and Safety: The Project Developer will provide a safe and healthy work environment, considering inherent risks in its sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. The Project Developer will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards.	The Project Company will develop an Occupational Health and Safety Plan for the Project.
	Workers Engaged by Third Parties: The Project Developer will establish policies and procedures for managing and monitoring the performance of such third-party employers.	The Project Company will ensure that all workers engaged by third parties are provided with the relevant policies and the ESMS Manual requirements.
	Supply Chain: The Project Developer will monitor its primary supply chain on an ongoing basis to identify any significant changes in its supply chain and if new risks or incidents of child and/or forced labour are identified, The Project Developer will take appropriate steps to remedy them. Additionally, where there is a high risk of significant safety issues related to supply chain workers, The Project Developer will introduce procedures and mitigation measures to ensure that primary suppliers within the supply chain are taking steps to prevent or to correct life-threatening situations.	The Project Company will monitor its primary supply chain on an ongoing basis.
	During the project life cycle, the Project Developer will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible,	The ESIA and SLIP have considered the use of resources efficiently as well as pollution prevention measures in the

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PS 3: Resource Efficiency and Pollution Prevention	minimise adverse impacts on human health and the environment. The principles and techniques applied during the project life cycle will be tailored to the hazards and risks associated with the nature of the project and consistent with GIIP, as reflected in various internationally recognized sources, including the WBG EHS Guidelines.	design and planning phase of the Project, this is discussed further below. Emissions and pollutants from point sources must be avoided and controlled in line with the GIIP according to the EHS Guidelines.
	The Project Developer will refer to the EHS Guidelines or other internationally recognized sources, as appropriate, when evaluating and selecting resource efficiency and pollution prevention and control techniques for the Project.	The Project Company has considered the EHS Guidelines (which are technical reference documents with general and industry-specific examples of GIIP, such as EHS Guidelines for wind energy) when evaluating and selecting resource efficiency and pollution prevention and control techniques for the Project.
	<u>Resource Efficiency:</u> The Project Developer will implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy and water, options to reduce project-related GHG emissions during the design and operation of the project and measures that avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on others. Such measures will integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy, and water.	The Project Company has incorporated reduced water, energy and raw material consumption in the design of the Project. The Project Company has demonstrated in the CCRA the options available to reduce project-related GHG emissions.
	<u>Pollution Prevention:</u> The Project Developer will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Wastes: The Project Developer will avoid the generation of hazardous and non-hazardous waste materials. Where waste generation cannot be avoided, The Project Developer will reduce the generation of waste and recover and reuse waste in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, the Project Developer will treat, destroy, or dispose of it in an environmentally sound manner that includes the appropriate control of	The ESIA and SLIP includes measures to prevent and minimise the release of pollutants/emissions to the environment, such as: 1.1 Soil and Water Pollution Control 1.2 Air Pollutants 1.3 Waste Management 1.4 Chemical and Hazardous Material Management - Wastes: A Waste and Wastewater Management Plan will be developed. - Hazardous Materials Management: A Hazardous Materials Management Plan will be developed. - Pesticide Use and Management: Measures will be addressed in relevant management plans where a

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	emissions and residues resulting from the handling and processing of the waste material. ▪ Hazardous Materials Management: The Project Developer will avoid or, when avoidance is not possible, minimize and control the release of hazardous materials. ▪ Pesticide Use and Management: The Project Developer will, where appropriate, formulate and implement an integrated pest management and/or integrated vector management approach targeting economically significant pest infestations and disease vectors of public health significance.	control program must be employed to combat alien invasive plant species in the most environmentally friendly manner that does not result in undesirable secondary impacts. Herbicides for the control of alien invasive species should be applied according to the relevant instructions and by appropriately trained personnel.
PS 4: Community Health, Safety, and Security	<u>Community Health and Safety:</u> The Project Developer will evaluate the risks and impacts to the health and safety of the Affected Communities during the project life-cycle and will establish preventive and control measures consistent with GIIP such as in the WGB EHS Guidelines or other internationally recognized sources. The Project Developer will identify risks and impacts and propose mitigation measures that are commensurate with their nature and magnitude. Infrastructure and Equipment Design and Safety Hazardous Materials Management and Safety Ecosystem Services Community Exposure to Disease Emergency Preparedness and Response	The updated ESIA (MDI, 2025) assessed the impact on community health, safety and security. Refer to section 7.5. The ESMP includes measures to mitigate these impacts. An EPRP has also been developed for the Project, included in the ESMP.
	<u>Security Personnel:</u> When the Project Developer retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the PAOI. In making such arrangements, the Project Developer will be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law. Safeguarding of personnel and property must be carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the Affected Communities.	▪ The ESMP includes measures for security of personnel. The Project Company will develop a Security Policy to ensure the adoption of a risk-based, rights-respecting approach to security management on site, ensuring adequate resources and oversight, investigation of grievances and abuses, promotion of responsible engagement with public security forces, and continuous monitoring and improvement of security practices for the Project.

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		▪ The Project Company will ensure that a Security Assessment and Management Plan is developed and implemented, which includes the following: ▪ Overseeing compliance by private security providers, ensuring that they adhere to established standards. ▪ Vetting and hiring procedures are critical, necessitating thorough screening of security providers and personnel for any history of misconduct, abuse, or human rights violations. ▪ Private security personnel are expected to operate under the principle of proportional use of force, as outlined in their employment contracts, while respecting human rights. ▪ Training security personnel, which can vary from policy reviews to comprehensive sessions on responding to security threats. ▪ Equipping security personnel with appropriate tools is also vital, including uniforms with identification, communication devices, and any other necessary equipment identified through a Security Risk Assessment. ▪ All allegations of unlawful or abusive acts by security personnel must be investigated, with actions taken to prevent recurrence, including reporting such incidents to public authorities. ▪ Ongoing monitoring of the performance of security contractors is essential to ensure that they maintain professional and appropriate conduct at all times.
PS 5: Land Acquisition	<u>General:</u> ▪ Project Design: The Project Developer will consider feasible alternative project designs to avoid or minimize physical and/or economic	▪ Project Design: The SLIP describes the alternative layout plans that considered both environmental and social sensitive receptors (section 3). The LRP that was undertaken for the Project concludes that no

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Involuntary Resettlement	displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable. - Compensation and Benefits for Displaced Persons: When displacement cannot be avoided, the Project Developer will offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods, as provided in this PS. - Community Engagement: The Project Developer will engage with Affected Communities, including host communities, through the process of stakeholder engagement described in PS 1. Decision-making processes related to resettlement and livelihood restoration should include options and alternatives, where applicable. Disclosure of relevant information and participation of Affected Communities and persons will continue during the planning, implementation, monitoring, and evaluation of compensation payments, livelihood restoration activities, and resettlement to achieve outcomes that are consistent with the objectives of this PS. - Grievance Mechanism: The Project Developer will establish a grievance mechanism consistent with PS 1 as early as possible in the project development phase. - Resettlement and Livelihood Restoration Planning and Implementation: The Project Developer will establish procedures to monitor and evaluate the implementation of a Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP). Where the exact nature or magnitude of the land acquisition or restrictions on land use related to a project with potential to cause physical and/or economic displacement is unknown due to the stage of project development, the Project Developer will develop a	physical displacement is anticipated as no impact on permanent structures is expected. The Project economic displacement will be limited to minor and localised land use restrictions during construction and operation, primarily related to safety buffers around project infrastructure. - Compensation and Benefits for Displaced Persons: The LRP states that no individual compensation will be provided for this Project, given the collective nature of customary land ownership and land use. Instead, all Issa Clan members seasonally using or seasonally residing in the Project lease area will be eligible to access the LRP (aimed at improving the quality of the community's livelihoods) and a community development programme (aimed at benefitting the community as a whole). - Community Engagement: The Project Company will continue to conduct ongoing meaningful consultations, ensuring affected communities are involved in resettlement planning and implementation. - Grievance Mechanism: A LCGM and complaints register is currently in place and implemented by the Project Company. - Resettlement and Livelihood Restoration Planning and Implementation: A LRP was undertaken for the Project Temporary and permanent land use restrictions during the construction and operation phases may reduce access to grazing areas and, in limited cases, cause short-term disruption to pastoral livelihoods. Based on an analysis of livelihood constraints and

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	Resettlement and/or Livelihood Restoration Framework outlining general principles compatible with this Performance Standard.	community preferences, the following three measures have been identified for livelihood restoration: ○ Upgrade and improvement of veterinary clinics. ○ Revegetation and improvement of grazing areas within or in proximity of the Project lease area to enhance the long-term availability and quality of pasture. ○ Development of a water supply system.
	<u>Displacement:</u> ■ Project-related land acquisition and/or restrictions on land use may result in the physical displacement of people as well as their economic displacement. ■ Physical Displacement: In the case of physical displacement, the Project Developer will develop a RAP that covers, at a minimum, the applicable requirements of this PS regardless of the number of people affected. This will include compensation at full replacement cost for land and other assets lost. ■ Economic Displacement: In the case of projects involving economic displacement only, the Project Developer will develop a LRP to compensate affected persons and/or communities and offer other assistance that meet the objectives of this PS.	■ A LRP has been developed for the Project. The LRP concludes that no physical displacement is anticipated as no impact on permanent structures is expected. The Project economic displacement will be limited to minor and localised land use restrictions during construction and operation, primarily related to safety buffers around project infrastructure. The Project layout will be adjusted as much as possible to avoid any temporary shelters such as movable shift houses or herders' huts. Should any temporary housing unit be moved, assistance from the Project staff will be provided.
	<u>Private Sector Responsibilities Under Government-Managed Resettlement:</u> Where land acquisition and resettlement are the responsibility of the government, the Project Developer will collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with this Performance Standard. In addition, where government capacity is limited, the Project Developer will play an active role during resettlement planning, implementation, and monitoring.	Stakeholder engagement has been led by the Project Company.
PS 6: Biodiversity Conservation and Sustainable Management of	<u>General:</u> This PS considers relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. It also takes into	A Biodiversity Survey Report and Impact Assessment was undertaken for the project to identify the threats to biodiversity and ecosystem services, as well as to provide measures to minimise impacts where avoidance was not possible.

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Living Resources Natural	account the differing values attached to biodiversity and ecosystem services by Affected Communities and, where appropriate, other stakeholders.	
	<u>Protection and Conservation of Biodiversity:</u> Habitats must be delineated according to the definitions and requirements listed below in this PS: - Modified Habitat - Natural Habitat - Critical Habitat The PAOI must also assess nearby Legally Protected and Internationally Recognised Areas. The Project must assess the risks of introducing invasive species that could disrupt ecosystems and the existing invasive species that may be affected by project activities must be managed and controlled.	The Biodiversity Survey Report and Impact Assessment delineated the natural habitats in the PAOI accordingly. A Critical Habitat Assessment was undertaken for the Project. No protected areas fall within or near the PAOI. The closest protected areas are two Important Bird Areas, located more than 50 km away. The risks of invasive species are assessed in the Biodiversity Survey Report and Impact Assessment.
	<u>Management of Ecosystem Services:</u> Where a Project is likely to adversely impact ecosystem services, as determined by the risks and impacts identification process, the client will conduct a systematic review to identify priority ecosystem services.	An Ecosystem Services Assessment has been undertaken (refer to section 9) to address the need to specify measures that will be taken to maintain the flows of priority ecosystem services and the associated benefits to particular users.
	<u>Sustainable Management of Living Natural Resources:</u> Project Developers who are engaged in the primary production of living natural resources, including natural and plantation forestry, agriculture, animal husbandry, aquaculture, and fisheries, will be subject to the requirements of this PS. Project Developers who are engaged in such industries will manage living natural resources in a sustainable manner, through the application of industry-specific good management practices and available technologies.	It is currently understood that the Project will not involve natural resource-based industries (agriculture, fisheries, forestry). If this changes, the Project Company must adopt sustainable practices.
	<u>Supply Chain:</u> Where a Project Developer is purchasing primary production (especially but not exclusively food and fiber commodities) that is known to be produced in regions where there is a risk of significant conversion of natural and/or critical habitats, systems and verification practices will be adopted as part of the Project Developer's ESMS to evaluate its primary suppliers.	The supply chain of commodities for the Project are currently unknown at this stage. The Project Company will avoid overexploitation of resources and support responsible supply chain management.
PS 7: Indigenous Peoples	This PS requires the Project Developer to identify, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the PAOI who may be affected by the Project, as well as the nature and degree of the expected direct	An Indigenous Peoples Social Assessment was undertaken for the Project. Upon further review of the sociopolitical system of the Issa Clan, it is concluded that the Issa Clan have the

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	and indirect economic, social, cultural (including cultural heritage), and environmental impacts on them.	characteristics of Indigenous Peoples or Highly Vulnerable Rural Minorities (HVRM) PS 7 is applicable to the Project. According to the assessment conducted, the Issa Clan meets the criteria for the classification of IFC PS7: - They hold collective customary land rights and communal territories essential for their nomadic pastoralist livelihoods. - They maintain distinct cultural practices embedded in their customary law, Xeer Ciise. - The Issa Clan governance institution functions separately from the formal socio-political governance in practice, with regards to decision making. During the Project land lease process, the Issa Clan were not fully involved by the Government during the land acquisition process. This is because land is legally Government owned but is traditionally under customary collective ownership. Legally, as per the Governance framework of Ethiopia. Therefore, with the above criteria, PS7 / OS7 is considered applicable to the Project. Since the Project will have impacts on land and natural resources under customary use by the Issa Clan, the Project will ensure that Free, Prior, Informed and Consent (FPIC) is achieved and has also taken measures to ensure that the internal minority groups affected by the project receive social and economic support. This is detailed in the Benefit Sharing Framework and the Livelihood Restoration Plan.
PS 8: Cultural Heritage	For the purposes of this PS, cultural heritage refers to (i) tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural	The updated ESIA (MDI, 2025) identified the cultural heritage within the PAOI, as well as the impacts and risks from the Project. A total of 46 tangible cultural heritage sites were identified within the Project lease area. There are several

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	values, such as sacred groves, rocks, lakes, and waterfalls; and (iii) certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles. <u>Protection of Cultural Heritage in Project Design and Execution:</u> In addition to complying with applicable law on the protection of cultural heritage, including national law implementing the host country's obligations under the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Project Developer will identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented. ▪ Chance Find Procedures: The Project Developer is responsible for siting and designing a project to avoid significant adverse impacts to cultural heritage. The environmental and social risks and impacts identification process should determine whether the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations. ▪ Consultation: Where a project may affect cultural heritage, the Project Developer will consult with Affected Communities within the host country who use, or have used within living memory, the cultural heritage for longstanding cultural purposes. The Project Developer will consult with the Affected Communities to identify cultural heritage of importance, and to incorporate into the client's decision-making process the views of the Affected Communities on such cultural heritage. ▪ Community Access: Where the Project Developer's PAOI contains cultural heritage or prevents access to previously accessible cultural heritage sites being used by, or that have been used by, Affected Communities within living memory for long-standing cultural purposes, the Project Developer will allow continued access to the cultural site or will provide an alternative access route, subject to overriding health, safety, and security considerations. ▪ Removal of Replicable Cultural Heritage: Where the Project Developer has encountered tangible cultural heritage that is replicable and not critical, the Project Developer will apply mitigation measures that favour avoidance. Where avoidance is not feasible, the client will apply the mitigation hierarchy in the PS.	intangible cultural heritage practices found across the Issa clan. However, no impact is anticipated on the intangible cultural heritage elements because of the Project land needs. The LRP includes the consultation held with the affected communities to identify the cultural heritage within the PAOI. The ESMP includes measures to protect cultural heritage within the PAOI. The site layout will be modified to ensure that the cultural heritage sites identified within the lease area fall at least 50 m outside of all construction safety zones, so that (i) people are still able to access them throughout construction and (ii) flicker and noise disturbances are reduced. A Chance Find Procedure is included in the ESMP.

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	- Removal of Non-Replicable Cultural Heritage: The Project Developer will not remove any nonreplicable cultural heritage, unless all of the following conditions are met: - There are no technically or financially feasible alternatives to removal; - The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and - Any removal of cultural heritage is conducted using the best available technique. - Critical Cultural Heritage: The Project Developer should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances when impacts on critical cultural heritage are unavoidable, the Project Developer will use a process of ICP of the Affected Communities.	
	<u>Project's Use of Cultural Heritage:</u> Where a project proposes to use the cultural heritage, including knowledge, innovations, or practices of local communities for commercial purposes, the Project Developer will inform these communities of (i) their rights under national law; (ii) the scope and nature of the proposed commercial development; and (iii) the potential consequences of such development.	Not applicable to the Project. No impact is anticipated on the intangible cultural heritage elements because of the Project land needs.
AFDB E&S OS		
E&S OS 1: Assessment and Management of E&S Risk and Impact	This OS identifies and assesses E&S risks, minimising negative impacts through mitigation or avoidance, promotes positive development outcomes, ensures transparent stakeholder engagement, and adheres to international best practices for sustainable development.	The SLIP and ESMP is aligned and in compliance with the AfDB E&S OSs. The SLIP has identified the E&S risks of the Project including a rapid cumulative impact assessment based on recent environmental and social baseline data.
E&S OS 2: Labour and Working Conditions	The objectives of this OS include protecting workers' rights, promoting workplace safety and health, ensuring fair treatment, non-discrimination, and equal opportunity, and safeguarding vulnerable workers, such as women, persons with disabilities, children, and migrant workers. It also aims to prevent forced labour and child labour, support freedom of association and collective bargaining, and provide accessible means for workers to raise concerns.	In order to establish and maintain a good working relationship with its employees, the Project Company must implement and encourage rigorous labour management that maximises local economic benefits without compromising the quality of work execution.

Standard / Guideline	Summary of Requirements	Project Compliance
		The Project Company has developed a WGM for the Project. The WGM applies to all requests and complaints that might arise from any worker (employees of the Project Company, EPC Contractor, subcontractors) considering themselves affected by the Project. The Project Company will develop an Occupational Health and Safety Plan for the Project.
E&S OS 3: Resource Efficiency and Pollution Prevention and Management	OS 3 focuses on promoting sustainable resource use (energy, water and raw materials). Adverse impacts on health and the environment must be minimised through the reduction of pollution and the minimisation of the generation of hazardous and non-hazardous waste.	The ESIA and SLIP have considered the use of resources efficiently as well as pollution prevention measures in the design and planning phase of the Project.
E&S OS 4: Community Health, Safety and Security	Focuses on preventing adverse impacts on the health and safety of project-affected communities, promoting public health and safety, and considering climate change in infrastructure design and construction. It also aims to minimise exposure to traffic and road safety risks, ensure effective emergency response measures, and provide security to minimise risks. It also aims to prevent sexual exploitation, abuse, and harassment by project workers.	The updated ESIA (MDI, 2025) assessed the impact on community health, safety and security. Refer to section 7.5. The ESMP includes measures to mitigate these impacts. An EPRP has also been developed for the Project, included in the ESMP. The Project Company will develop a Security Policy to ensure the adoption of a risk-based, rights-respecting approach to security management on site, ensuring adequate resources and oversight, investigation of grievances and abuses, promotion of responsible engagement with public security forces, and continuous monitoring and improvement of security practices for the Project.
E&S OS 5: Land Acquisition, Restrictions on Access to Land, and Land Use, as well as Involuntary Resettlement	This OS requires that involuntary resettlement be avoided, minimised, and that social assessments, including gender issues, inform resettlement plans and activities. It also aims to mitigate adverse social and economic impacts from land acquisition or restrictions on land use by providing timely compensation and sufficient resettlement assistance. OS 5 also aims to improve living conditions for vulnerable persons who are displaced, establish a mechanism for monitoring performance, and execute resettlement activities as sustainable development programs. It ensures informed participation and disclosure of information.	The LRP that was undertaken for the Project concludes that no physical displacement is anticipated as no impact on permanent structures is expected. The Project economic displacement will be limited to minor and localised land use restrictions during construction and operation, primarily related to safety buffers around project infrastructure. The LRP states that no individual compensation will be provided for this Project, given the collective nature of customary land ownership and land use. Instead, all Issa Clan members

Standard / Guideline	Summary of Requirements	Project Compliance
		seasonally using or seasonally residing in the Project lease area will be eligible to access the LRP (aimed at improving the quality of the community's livelihoods) and a community development programme (aimed at benefitting the community as a whole). Temporary and permanent land use restrictions during the construction and operation phases may reduce access to grazing areas and, in limited cases, cause short-term disruption to pastoral livelihoods. Based on an analysis of livelihood constraints and community preferences, the following three measures have been identified for livelihood restoration: Upgrade and improvement of veterinary clinics. Revegetation and improvement of grazing areas within or in proximity of the Project lease area to enhance the long-term availability and quality of pasture. Development of a water supply system.
E&S OS 6: Habitat and Biodiversity Conservation, and Sustainable Management of Living Resources	This OS requires protection and conservation of biodiversity. This includes the application of the mitigation hierarchy and promoting the sustainable management of living natural resources, supporting the livelihoods of vulnerable groups, sustaining ecosystem services and integrating natural resources effectively into sustainable economic development.	The Biodiversity Survey Report and Impact Assessment delineated the natural habitats in the PAOI accordingly. A Critical Habitat Assessment was undertaken for the Project. An Ecosystem Services Assessment has been undertaken to address the need to specify measures that will be taken to maintain the flows of priority ecosystem services and the associated benefits to particular users.
E&S OS 7: Vulnerable Groups	This OS requires that projects respect the rights and interests of indigenous peoples. This includes measures to consult with indigenous peoples about the project, and to obtain their free, prior, and informed consent.	An Indigenous Peoples Social Assessment was undertaken for the Project. An Indigenous Peoples Social Assessment was undertaken for the Project. Upon further review of the sociopolitical system of the Issa Clan, it is concluded that the Issa Clan have the characteristics of Indigenous Peoples or Highly Vulnerable Rural Minorities (HVRM) PS 7 is applicable to the Project. According to the assessment conducted, the Issa Clan meets the criteria for the classification of IFC PS7:

Standard / Guideline	Summary of Requirements	Project Compliance
		- They hold collective customary land rights and communal territories essential for their nomadic pastoralist livelihoods. - They maintain distinct cultural practices embedded in their customary law, Xeer Ciise. - The Issa Clan governance institution functions separately from the formal socio-political governance in practice, with regards to decision making. During the Project land lease process, the Issa Clan were not fully involved by the Government during the land acquisition process. This is because land is legally Government owned but is traditionally under customary collective ownership. Legally, as per the Governance framework of Ethiopia. Therefore, with the above criteria, PS7 / OS7 is applicable to the Project. Since the Project has impacts on land under customary use by the Issa Clan, the Project will ensure that Free, Prior, Informed and Consent (FPIC) is achieved. The Project has also taken measures to ensure that the internal minority groups affected by the project receive social and economic support. This is detailed in the Benefit Sharing Framework and the Livelihood Restoration Plan.
E&S OS 8: Cultural Heritage	OS 8 requires that projects protect cultural heritage sites and artefacts. This includes measures to identify and assess potential impacts on cultural heritage, and to develop mitigation measures to avoid or minimize these impacts.	The updated ESIA (MDI, 2025) and the LRP identified the cultural heritage within the PAOI, as well as the impacts and risks from the Project. The ESMP includes measures to protect cultural heritage within the PAOI. The site layout will be modified to ensure that the cultural heritage sites identified within the lease area fall at least 50 m outside of all construction safety zones, so that (i) people are

Standard / Guideline	Summary of Requirements	Project Compliance
		still able to access them throughout construction and (ii) flicker and noise disturbances are reduced. A Chance Find Procedure is included in the ESMP.
E&S OS 09: Financial Intermediaries	OS9 ensures the proper and efficient use of funds (fiduciary objective) and improves the capacity of financial systems to promote public policy goals like poverty reduction (development objective). The Bank supports this by filling gaps in financial intermediation, promoting long-term investment, and extending financial services to Micro, Small, and Medium Enterprises and the poor, especially women, to achieve sustainable economic and social progress in its regional member countries.	AfDB-supported intermediated financing partners (FIs) must assess and manage the E&S risks of sub-projects they finance, and promote good E&S management practices.
E&S OS 10: Stakeholder Engagement and Information Disclosure	This OS mandates continuous, two-way dialogue with stakeholders throughout a Project's lifecycle, ensuring that affected communities' views are considered in design and implementation to improve project outcomes. This requires a formal SEP for each project, outlining engagement strategies and a grievance mechanism to address concerns.	The Project Company will ensure ongoing feedback and reporting to the affected communities, as required in the SEP. A LCGM and complaints register is currently implemented by the Project Company. The Project Company has developed a WGM for the Project.
Treaties and Conventions		
International Bill of Human Rights	The International Bill of Human Rights (IBHR) is applied by Ethiopia because its constitution deems ratified international human rights treaties an integral part of its domestic law, giving them legal force and allowing courts to use them.	The project will apply the IBHR throughout project design, construction, and operation. This includes protecting rights such as life, health, land, livelihood, and cultural integrity, requiring meaningful community consultation (including FPIC) for potentially affected groups, establishing accessible grievance mechanisms, and ensuring fair compensation for any land displacement.
International Labour Organisation (ILO) Conventions	The ILO's core labour standards are defined by eight fundamental Conventions focusing on freedom of association, collective bargaining, forced labour, child labour, and discrimination, later joined by a ninth Convention on occupational safety and health. These standards, outlined in the ILO Declaration on Fundamental Principles and Rights at Work, address basic terms and conditions like equal pay, minimum age, and non-discrimination in employment. Ethiopia has ratified ILO Conventions through domestication into national law, such as the 2019 Labour Proclamation, which transforms international standards into binding domestic obligations for government, employers, and workers.	The ILO standards have been consulted in the preparation of the SLIP and ESMP.

Standard / Guideline	Summary of Requirements	Project Compliance
Recommendations of the TCFD (2017)	Establishes recommendations for disclosing clear, comparable, and consistent information about the risks and opportunities presented by climate change.	Part B provides a useful framework for categorising the climate-related risks and opportunities to promote greater alignment and standardisation across the different sectors. This framework is used in the CRRA to categorise the Project's climate-related risks and opportunities.
Guidelines		
WBG EHS Guidelines (2007)	- Environmental (Air Emissions and Ambient Air Quality; Energy Conservation; Wastewater and Ambient Water Quality; Water Conservation; Waste Management; Noise and Contaminated Land) - Occupational Health and Safety (General Facility Design and Operation; Communication and Training; Physical Hazards; Chemical Hazards; Personal Protective Equipment (PPE); Special Hazard Environmental and Monitoring) - Community Health and Safety (Water Quality and Availability; Structural Safety of Project Infrastructure; Life and Fire Safety; Traffic Safety; Transport of Hazardous Materials; Disease Prevention and Emergency Preparedness and Response) - Construction and Decommissioning (Environment; Occupational Health and Safety and Community Health and Safety) - Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labour Influx; - Industry Sector Guidelines: The EHS Guidelines are technical reference documents with general and industry-specific examples of GIIP as defined in IFC's Performance Standards applicable to this project: - EHS General Guidelines (2007); - EHS Guidelines for Electric Power Transmission and Distribution (2007); and - World Bank Group: EHS Guidelines Wind Energy (2015).	All guidelines have been consulted in the preparation of the ESMP.
Policies		
Sustainable Development Goals (2015)	The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all UN Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs recognise that action in one area will affect outcomes in others, and that development must balance	The Project will be executed sustainably in accordance with the provisions of the SDGs.

Standard / Guideline	Summary of Requirements	Project Compliance
	social, economic, and environmental sustainability. Through the pledge to Leave No One Behind, countries have committed to fast-track progress for those furthest behind first. That is why the SDGs are designed to bring the world to several life-changing ‘zeros’, including zero poverty, hunger, HIV / AIDS and discrimination against women and girls. SDG 7 aims at achieving universal access to affordable, reliable, sustainable, and modern energy for all by 2030. Goal 7 targets include: ▪ Ensure universal access to affordable, reliable, and modern energy services; ▪ Increase substantially the share of renewable energy in the global energy mix; ▪ Double the global rate of improvement in energy efficiency; ▪ Enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology; and ▪ Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.	

TABLE 4-3: OTHER GUIDELINES AND CONVENTIONS APPLICABLE

Guideline / Convention / Agreement	Considerations
Guidelines	
Stakeholder Engagement	▪ IFC Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (2007) ▪ IFC Addressing Grievances from Project-Affected Communities (2007)
Resettlement	▪ IFC Handbook for Preparing a Resettlement Action Plan (2007) ▪ UN Basic Principles and Guidelines on Development-based Evictions and Displacement (2007)
Human Rights	▪ UN Guidelines on Business and Human Rights (2011) ▪ International Bill of Human Rights (1995) ▪ International Covenant on Civil and Political Rights (1966) ▪ The African Charter on Human and Peoples' Rights (1986)
Labour and Working Conditions	▪ ILO's Declaration on Fundamental Principles and Rights of Work (1998) ▪ European Bank for Reconstruction and Development (EBRD) Workers Accommodation (2009) ▪ Occupational Health and Safety Convention (1979) ▪ Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration (1977)
Standards and Limits	▪ World Health Organisation (WHO) ○ Ambient Air Quality Standards; ○ COVID-19 Guidelines; and ○ Drinking Water Quality Standards.
Conventions	
Biodiversity and Protected Areas	▪ International Plant Protection Convention (1951) ▪ Convention for the Establishment of the Desert Locust Control Organization for Eastern Africa (1962) ▪ African Convention on the Conservation of Nature and Natural Resources (1968) ▪ Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) (1973) ▪ Convention on the Conservation of Migratory Species of Wild Animals (1979) ▪ Convention on Biological Diversity (1992) ▪ New Partnership for Africa's Development (NEPAD) (2001)
Climate Change / Energy	▪ Vienna Convention on Protection of the Ozone Layer (1980) ▪ Montreal Protocol (1987) ▪ UN Framework Convention on Climate Change (1996) ▪ UN Framework Convention on Climate Change - Kyoto Protocol (23 February 2005) ▪ Paris Agreement adopted on 12 December 2015 at the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC CoP21)

Guideline / Convention / Agreement	Considerations
Air Quality	Stockholm Convention on Persistent Organic Pollutants (POPs) (2004)
Heritage Resources	- United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage - Convention concerning the Protection of the World Cultural and Natural Heritage (1972) (Paris) - UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972) - Convention on the Protection of World Cultural and Natural Heritage (1984)
Pollution Control / Waste Management	- The Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movements and Management of Hazardous Waste (1991) - Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1999) - Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (2004)

4.3 AMEA Power Policies

AMEA Power has implemented a Quality Health, Safety and Environment (QHSE) Management System in place throughout the Company, its local entities and across all its projects. The QHSE Management System aims at improving the quality of processes, ensuring the health and safety of employees, contractors and communities, monitoring and reducing the environmental impacts, contributing to positive social development and promoting sustainability. The QHSE Management System ensures that the satisfaction of the needs and expectations of various stakeholders and business partners are taken into account and met and is built in accordance with local and international standards.

QHSE policies have been put in place that provide guidelines for key QHSE-related areas, including the selection of investments in supporting the reduction in GHG emissions, assessment of environmental, health and safety and community impacts of projects and the monitoring and recording of environmental and social issues. AMEA Power believes in engaging with local communities throughout the life-cycle of the projects, to enable sustainable social and economic development locally. Local employment is supported by the creation of job opportunities for the members of the hosting communities, with a focus on training and empowering employees through the establishment of numerous development programs.

The following policies are in place⁸:

- Environmental Policy: This recognises that preservation of and respect for the environment are the basic pillars of sustainable development, including climate change mitigation. This is evident in the company's compliance with ISO14001:2015 and best environmental practices in all its activities, through responsible use of resources, prevention, correction, and compensation for adverse environmental impacts, as well as the conservation of natural resources so that they may be enjoyed by present and future generations.
- Gender Equality Policy: AMEA Power is committed to encouraging equality, diversity and inclusion among the workforce, and eliminating any kind of discrimination, violence and harassment. The aim is for the workforce to be truly representative of all sections of society, and for each employee to feel respected and able to give their best. Throughout this Policy Statement, the Project

⁸ <https://www.ameapower.com/qhse-at-amea-power-2/> (Accessed 01 September 2025).

Company acknowledge their obligation to respect and protect our personnel in line with Good International Practices. The commitment extends to the workforce, contractors, suppliers, affected communities and visitors.

- **Health Policy:** AMEA Power recognises that Health and Safety is a key priority and commits to plan and implement all necessary preventive and protective measures during the development, construction and operations phases of all of its projects, in compliance with the international standard ISO 45001:2018, as well as local regulations and all applicable requirements. The Project Company strives to maintain high standards of health and safety that extend to all operations, premises and countries where it operates.
- **Quality Policy:** AMEA Power pledges to create value for its stakeholders through excellence in process management, being responsible for overseeing compliance with the international standard ISO 9001:2015 and all applicable requirements, and to lead by example in the application of good practices, prioritising the demand for continuous quality improvement of its work as well as in the different management systems implemented. This culture of quality and efficiency in operations extends to all divisions and countries where it operates.
- **Security Policy:** AMEA Power strives to create and maintain a secure, safe and welcoming environment for its employees and assets without adversely affecting the human rights of its employees, contractors or stakeholders to include particular local communities. On conducting its business, it aims to ensure compliance with the applicable national and local laws and regulations on security issues, as well as with international standards including, IFC Performance Standards PS4 on Community, Health, Safety and Security, and by the Voluntary Principles on Security and Human Rights, the UN Code of Conduct for Law Enforcement Officials, and the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, and to lead by example in the application of international good practices.
- **Social Sustainability Policy:** AMEA Power understands its leading role in contributing to the sustainable development of the communities in the countries where it operates and to the improvement of the quality of life of the people that live there. To achieve this goal, it seeks to align social collaboration with its business activities, through sustainable medium and long-term projects where it is present, reinforcing the trust between the company and the societies in which it operates and increasing its positive contributions to respect human rights and freedoms recognised by the Universal Declaration of the Human Rights as underpinned in the SDGs and the United Nation Compact Global (UNCG), and the ILO.

The QHSE Management System is certified to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards. The certification scope includes the engineering, construction and operations phases of renewable energy projects. This assists AMEA Power to operate to the highest standards of quality, health, safety and environment, ensuring the satisfaction of stakeholders and business partners and guaranteeing continual improvements in its operations. The project-specific policies and procedures will be developed to be in line with the AMEA Power policies.

5 UPDATED ENVIRONMENTAL AND SOCIAL BASELINE

This section aims at supplementing the updated ESIA report (MDI, 2025) environmental and social baseline of the receiving environment for the Project in line with IFC PS and AfDB E&S OS.

To ensure alignment with IFC and AfDB standards and requirements, various additional specialist studies were required to be undertaken, as identified in the Gap Analysis report (SLR, 2025). These additional specialist studies resulted in updates to the receiving environment. This information has been incorporated into the sections below.

The Baseline Update provided in this section aims to compliment the updated ESIA report (MDI, 2025).

5.1 Physical Environment

The updated ESIA report (MDI, 2025) has already assessed the following for the Project in terms of the baseline for the physical environment:

- Landscape and Visual
- Land Use / Land Cover
- Climatic Conditions
- Geology
- Soil and Geomorphology
- Hydrology
- Hydrogeology
- Noise
- Air Quality

In terms of the physical environment, the Gap Analysis report (SLR, 2025) identified the need to provide an update to climate and noise baseline for the Project in order to assess the impacts to these aspects in the following was subsequently undertaken as part of the SLIP process.

This section aims at complementing the ESIA (MDI, 2025), specifically for the physical environmental aspects in line with IFC PS and AfDB E&S OS.

5.1.1 Climate Related Hazards

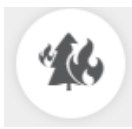
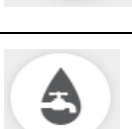
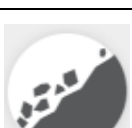
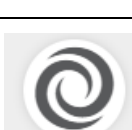
A baseline of climate conditions for the PAOI has been provided in the updated ESIA report (MDI, 2025). This section aims to provide information on climate related hazards associated with the Project. Information for this baseline was sourced from the CCRA undertaken by the Environmental Consultant in August 2025.

5.1.1.1 Natural Hazards Identified

Natural hazards are defined as the potential occurrence of “a physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources (IPCC, 2012).”

An overview of the natural hazards identified for the Sitti Administrative area is provided in Table 5-1.

TABLE 5-1: OVERVIEW OF NATURAL HAZARD RISK FOR THE SITTI ADMINISTRATIVE ZONE

Hazard Type		Hazard Rating	Description
	Wildfire	High	Presently, there is greater than a 50% chance of encountering weather that could support a significant wildfire that is likely to result in both life and property loss in any given year.
	Extreme heat	High	Presently, prolonged exposure to extreme heat, resulting in heat stress, is likely to occur at least once in the next five years.
	River flood	Medium	Presently, there is a chance of more than 20% that potentially damaging life-threatening river floods occur in the coming 10 years.
	Urban flood	Medium	Presently, there is a more than 20% chance that potentially damaging and life-threatening urban floods occur in the coming 10 years.
	Water scarcity	Medium	Presently, there is an up to 20% chance that droughts occur in the coming 10 years
	Landslide	Very low	Presently, the Sitti Administrative Zone has rainfall patterns, terrain slope, geology, soil, land cover and (potentially) earthquakes that make localised landslides an uncommon hazard phenomenon.
	Cyclone	Very low	Presently, there is less than a 1% chance of potentially damaging cyclone-strength winds in the Sitti Administrative Zone in the next 10 years.

5.1.1.2 Observed and Projected Changes in Climate

The following section presents a brief description of the projected changes in climate for the PAOI. It is important to understand these changes as these are often the drivers of the climate hazards that pose a potential risk to the Project, as well as Project-affected communities, priority ecosystem services, and sites of demonstrated importance to climate mitigation and adaptation.

Change in Mean Monthly Temperature

Mean annual temperature refers to the average temperature of a location over the course of a year for all 12 months. It is important to understand projected changes in mean annual temperature as marked temperature increases could negatively impact project efficiency and employee health.

Figure 5-1 presents the projected change in mean monthly temperature relative to the historical period (2005) for the 2025, 2050 and 2075 time periods, under the Socio-economic Pathway (SSP) 2-4.5 scenario. In all three time periods, the mean temperature is projected to increase for each month, with this trend progressively increasing for each period nearing the end of century. The increase is relatively consistent

for all 12 months of the year. In the near-term (2025), mean annual temperature is projected to increase by 2.1% (1.7% to 2.6%). In the medium-term (2050) mean annual temperature is projected to increase by 5.1% (3.9% to 6.1%). In the long-term, mean annual temperature is projected to increase by 7.3% (5.6% to 8.8%).

Figure 5-2 presents the projected change in mean annual temperature relative to the historical period (2005) for the 2025, 2050 and 2075 time periods, under the SSP 5-8.5 scenario. Similarly to the above-presented SSP2-4.5 projections, the mean temperature is projected to increase for each month, progressively increasing for each time period nearing the end of century. The increase is relatively consistent for all 12 months of the year. In the near-term (2025), mean annual temperature is projected to increase by 2.4% (1.8% to 2.9%). In the medium-term (2050) mean annual temperature is projected to increase by 6.6% (5.1% to 8%). In the long-term, mean annual temperature is projected to increase by 11.9% (9.2% to 14.5%). Hence, whilst exhibiting similar trends to the SSP2-4.5 projections, the SSP5-8.5 projections yield a stronger increasing trend, particularly in the medium and long-term.

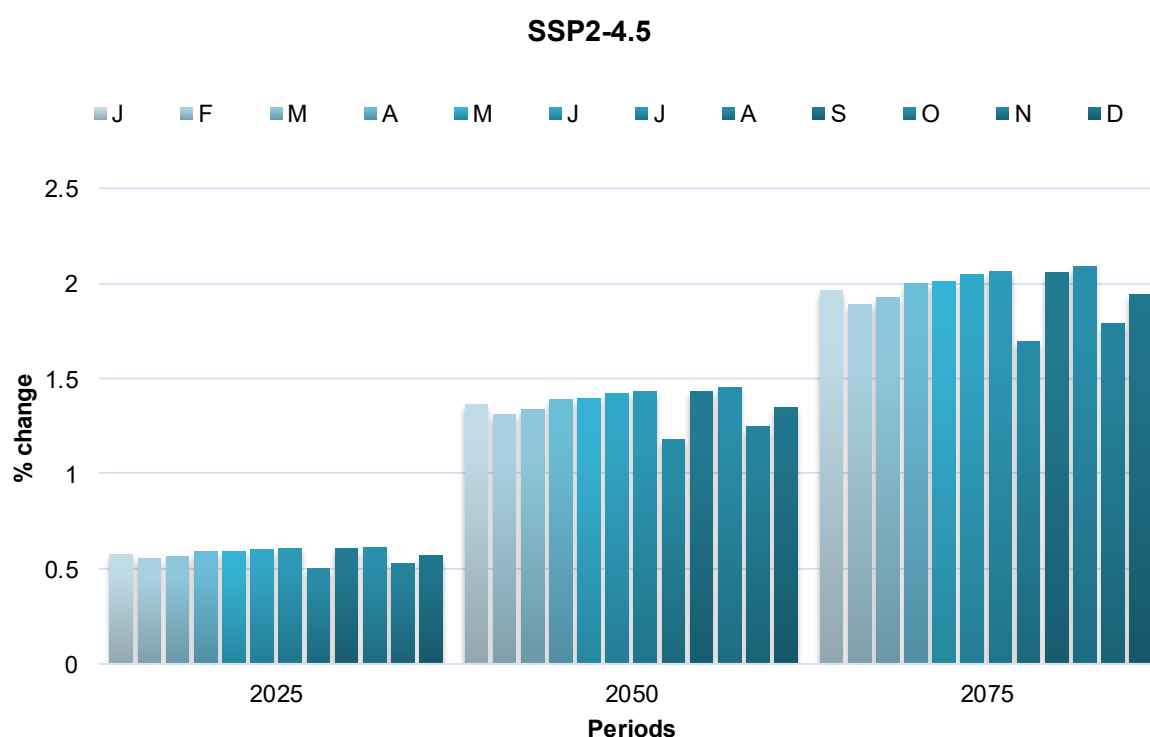


FIGURE 5-1: PROJECTED CHANGE IN MEAN MONTHLY TEMPERATURE FOR THE SSP2-4.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

SSP2-8.5

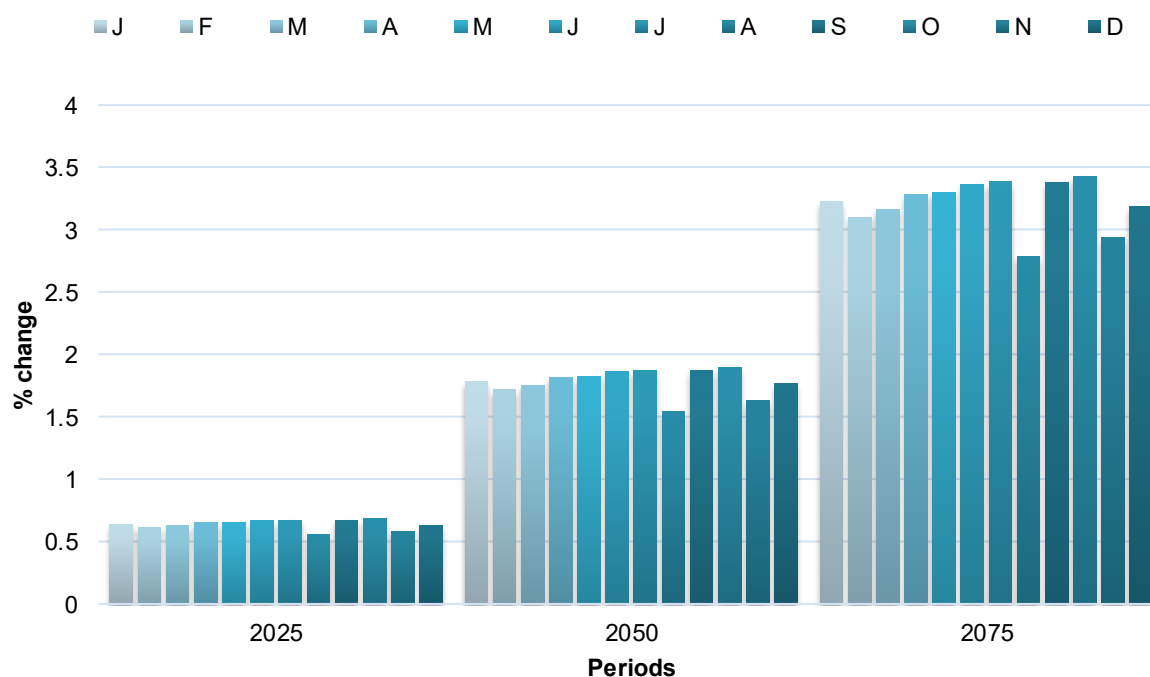


FIGURE 5-2: PROJECTED CHANGE IN MEAN MONTHLY TEMPERATURE FOR THE SSP2-8.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Number of Very Hot Days ($T_{max} > 35^{\circ}\text{C}$)

The number of very hot days refers to days where the daily maximum temperature exceeds 35°C . Recognising the anticipated increase in extremely hot days is crucial, as these conditions can negatively impact both operational performance and the well-being of employees.

Figure 5-3 presents the projected change in the number of hot days relative to the historical reference period (2005) for the 2025, 2050 and 2075 time periods under the SSP2-4.5 scenario. With each successive time period, the number of hot days increases, with 2025 recording an increase of 16.3%, 2050 recording an increase of 39.4%, and 2075 recording an increase of 58.5%, against the historical reference period.

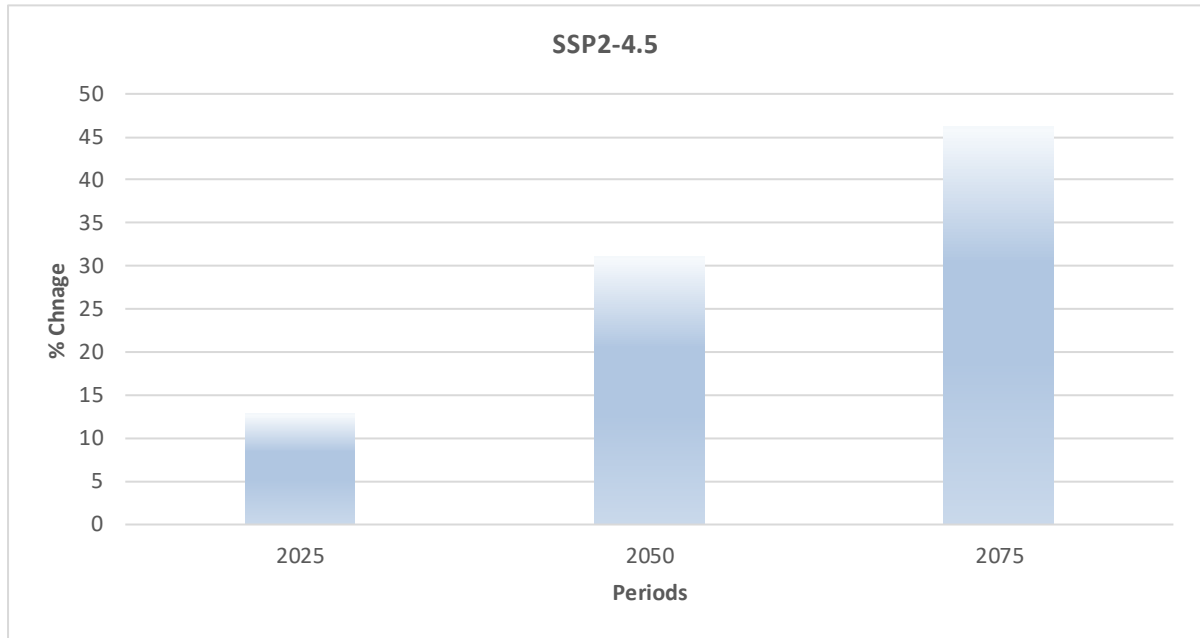


FIGURE 5-3: PROJECTED CHANGE IN THE NUMBER OF HOT DAYS FOR THE SSP2-4.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Figure 5-4 presents the projected change in the number of hot days relative to the historical reference period (2005) for the 2025, 2050 and 2075 time periods under the SSP5-8.5 scenario. With each successive time period, the number of hot days increases, with 2025 recording an increase of 18.3%, 2050 recording an increase of 52.5%, and 2075 recording an increase of 10.3.5% against the historical reference period. The increases recorded under the SSP5-8.5 scenario are, thus, more intense than the changes recorded for the SSP2-4.5 scenario.

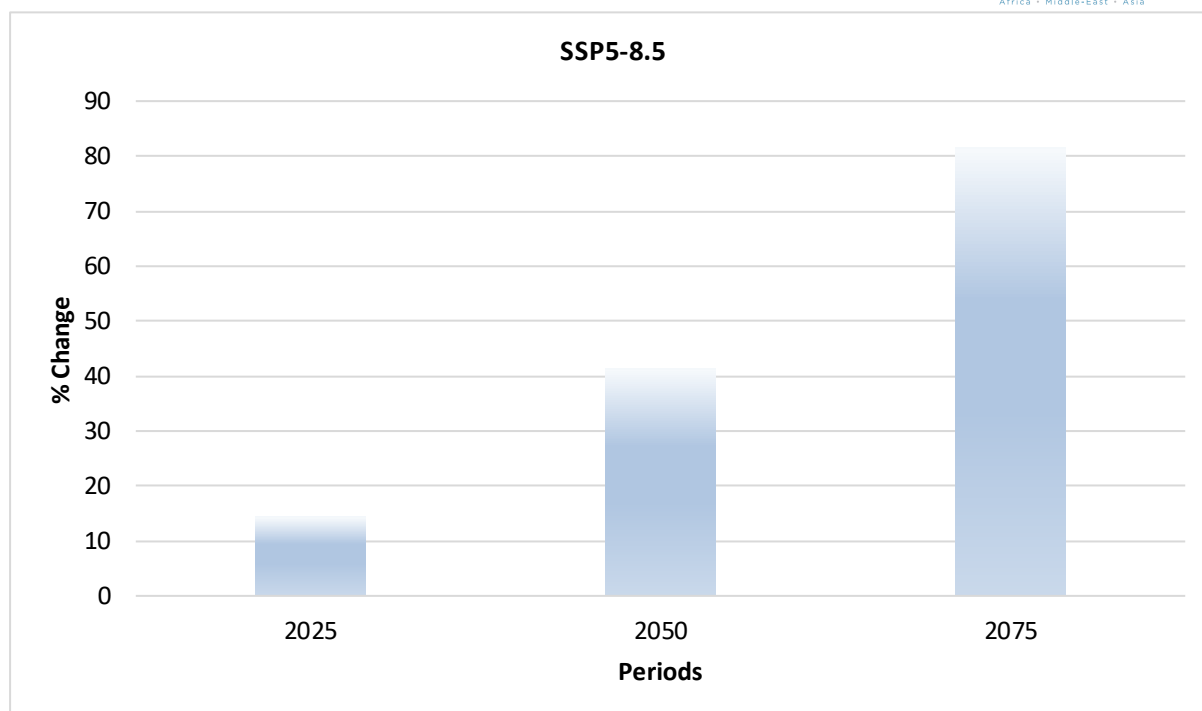


FIGURE 5-4: PROJECTED CHANGE IN THE NUMBER OF HOT DAYS FOR THE SSP5-8.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Heat Index

Heat index is a measure that combines air temperature and relative humidity. It is often referred to as the 'feels-like' temperature as it estimates how hot it feels to the human body. It is important to understand the change in heat index as an increase in relative humidity, together with an increase in actual air temperature, increases the risk of heat-related illnesses. This is because high humidity reduces the human body's ability to cool itself through sweating.

Table 5-2 presents the danger levels and potential health impacts associated with different heat index ranges.

TABLE 5-2: DANGER LEVELS ASSOCIATED WITH DIFFERENT HEAT INDEX RANGES

Warning	Heat index	Health impact
Safe	< 26	No adverse effects expected due to heat
Caution	27 - 32	Fatigue possible with prolonged exposure and/or physical activity
Extreme caution	33 - 40	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	41 - 50	Heat cramps or heat exhaustion likely and heat stroke possible with prolonged exposure and/or physical activity
Extreme danger	52 - 92	Heat stroke highly likely

Figure 5-5 presents the projected change in the heat index relative to the historical baseline for the SSP2-4.5 scenario. In all three time periods, there is a decrease in the instances where the heat index is classed as 'Safe' and 'Caution'. Regarding the 'Safe' category, projected decreases range between -2.3% and -5.3%. Regarding the 'Caution' category, projected decreases range between -1.6% and -8.9% In all three

time periods, there is an increase in the instances where the heat index is classed as ‘Extreme Caution’ and ‘Danger’. Regarding the ‘Extreme Caution’ category, projected increases range between 3.9% and 8.3%. Regarding the ‘Danger’ category, projected increases range between 0.1% and 5.9%. There is no change in instances classed as ‘Extreme Danger’.

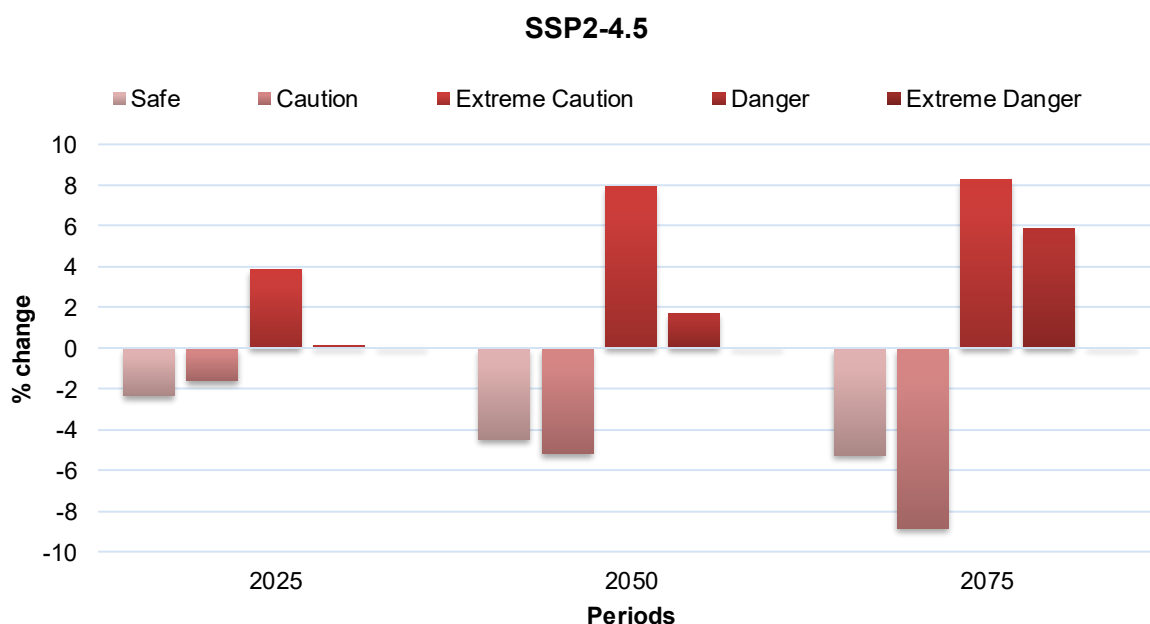


FIGURE 5-5: PROJECTED CHANGE IN THE HEAT INDEX IN THE SSP2-4.5 SCENARIO

Figure 5-6 presents the projected change in the heat index relative to the historical baseline for the SSP5-8.5 scenario. In all three time periods, there is a decrease in the instances where the heat index is classed as ‘Safe’ and ‘Caution’. Regarding the ‘Safe’ category, projected decreases range between -2.6% and -5.8%. Regarding the ‘Caution’ category, projected decreases range between -1.8% to -19.0%. For the 2025 and 2050 time periods, instances where the heat index is classed as ‘Extreme Caution’ are projected to increase between 4.2% and 8.5%. For the 2075 time period, instances where the heat index is classed as ‘Extreme Caution’ are projected to decrease by -2.8%. In all three time periods, there is an increase in the instance where the heat index is classed as ‘Danger’ ranging between 0.2% and 27.6%. The increases recorded under the SSP5-8.5 scenario are, thus, more intense than the changes recorded for the SSP2-4.5 scenario. There is no change in instances classed as ‘Extreme Danger’.

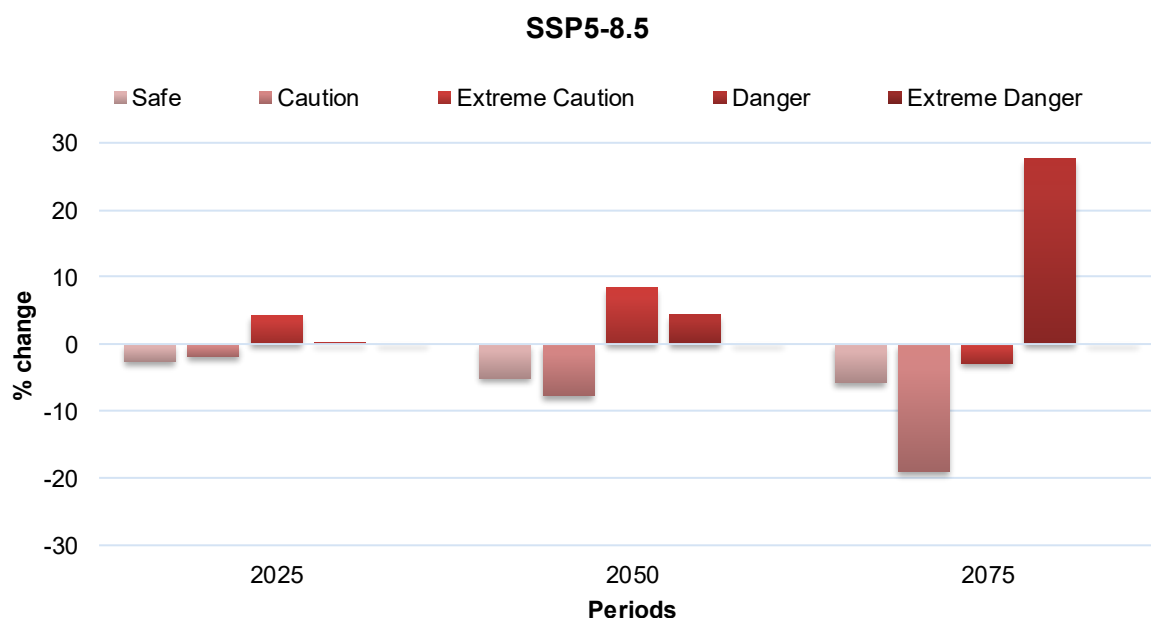


FIGURE 5-6: PROJECTED CHANGE IN THE HEAT INDEX IN THE SSP5-8.5 SCENARIO

Mean Monthly Precipitation

Mean monthly precipitation refers to the average amount of precipitation (rain, snow, sleet etc.) that falls in a specific area over the course of a year. Understanding projected changes in mean monthly precipitation is crucial, as both increases and decreases can adversely affect projects differently, such as through flood events or water scarcity.

Figure 5-7 presents the projected change in mean monthly precipitation relative to the historical scenario (2005) for the 2025, 2050 and 2075 time periods, under the SSP2-4.5 scenario. In all three time periods, the mean monthly precipitation is projected to increase, with this trend progressively increasing for each time period nearing the end of the century. For each time period, monthly precipitation quantities increase relative to the historical scenario (2005) incrementally up until the end of the year. Mean annual precipitation is projected to increase by 6.8% (+2.4% to +15.4%) in the near-term (2025), 16.2% (+5.7% to +36.5%) in the medium-term (2050), and 23.2% (+8.2% to +52.5%) in the long-term (2075).

Figure 5-8 presents the projected change in mean monthly precipitation relative to the historical scenario (2005) per month for the 2025, 2050 and 2075 time periods, under the SSP 5-8.5 scenario. Similarly to the above-presented SSP2-4.5 scenario, mean monthly precipitation is projected to increase, with this trend becoming more pronounced for each time period nearing the end of the century. Moreover, the trend of increasing precipitation as the year progresses holds, however, is intensified. Mean annual precipitation is projected to increase by 7.6% (+2.7% to +17.1%) in the near-term (2025), 21.1% (+7.5% to +47.7%) in the medium-term (2050), 38.2% (+13.5% to +86.1%) in the long-term (2075).

SSP2-4.5

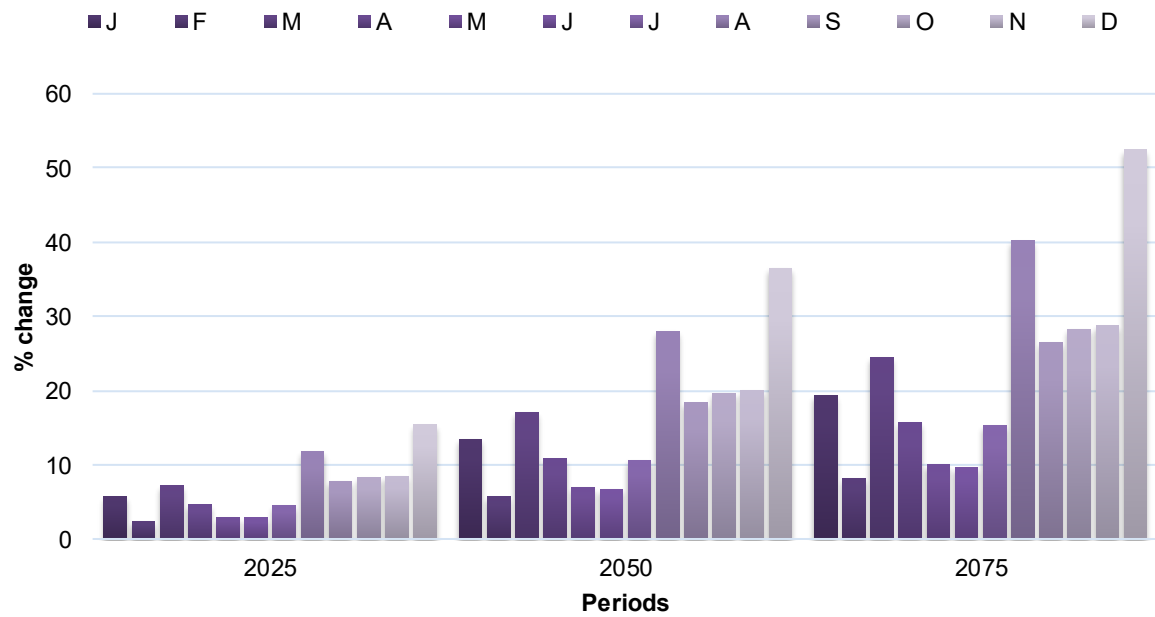


FIGURE 5-7: PROJECTED CHANGE IN MEAN MONTHLY PRECIPITATION FOR THE SSP2-4.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

SSP5-8.5

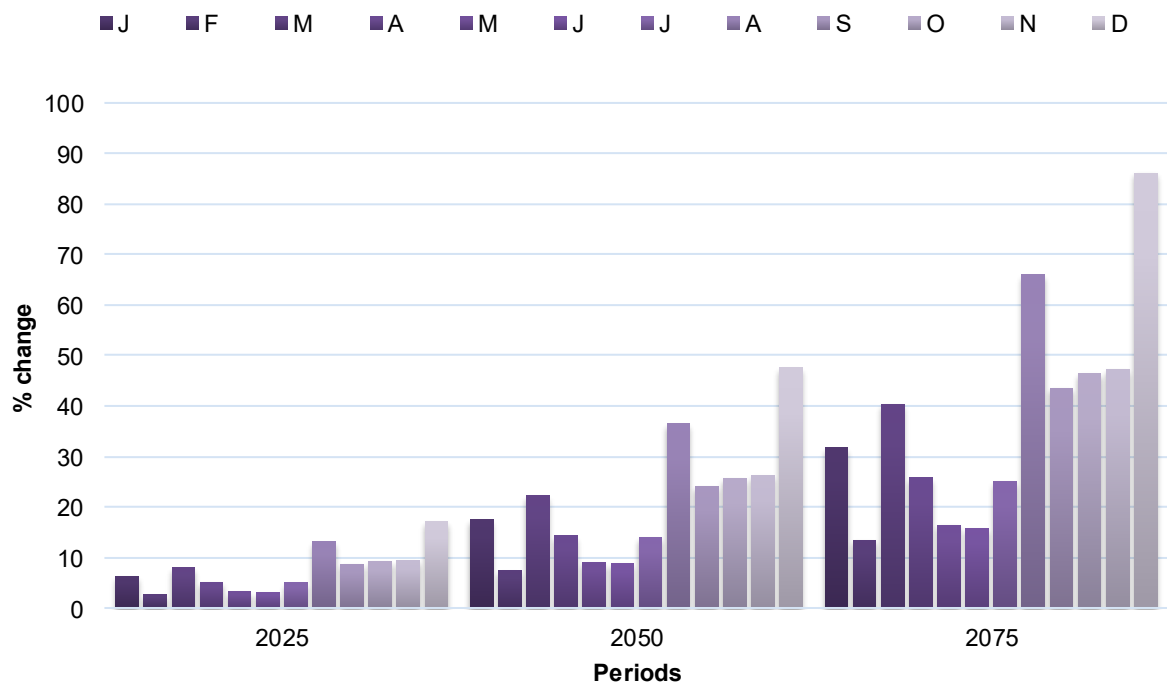


FIGURE 5-8: PROJECTED CHANGE IN MEAN MONTHLY PRECIPITATION FOR THE SSP5-8.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Extreme Precipitation over a 24-hour Period

Extreme precipitation over a 24-hour period refers to instances where a location receives significantly more precipitation over a 24-hour period than is typical for that area. It can also be defined as the top 1% of the heaviest precipitation events based on historical events. Understanding changes in daily extreme precipitation is crucial because such events can threaten human health, damage infrastructure, and disrupt transportation.

Figure 5-9 presents the projected change in daily extreme precipitation relative to the historical period (2005) for a range of recurrence intervals (1:2; 1:5; 1:10; 1:25; 1:50; 1:100; 1:200; 1:500; 1:1,000) for the SSP2-4.5 scenario. In all three time periods, daily extreme precipitation is projected to increase for all recurrence intervals (between 2.5% and 24.7%).

Figure 5-10 presents the projected change in daily extreme precipitation relative to the historical period (2005) for a range of recurrence intervals for the SSP5-8.5 scenario. Mirroring the SSP2-4.5 projections, all three time periods yield an increase for all recurrence intervals (between 2.8% and 40.6%), however, exhibit an intensified increasing trend.

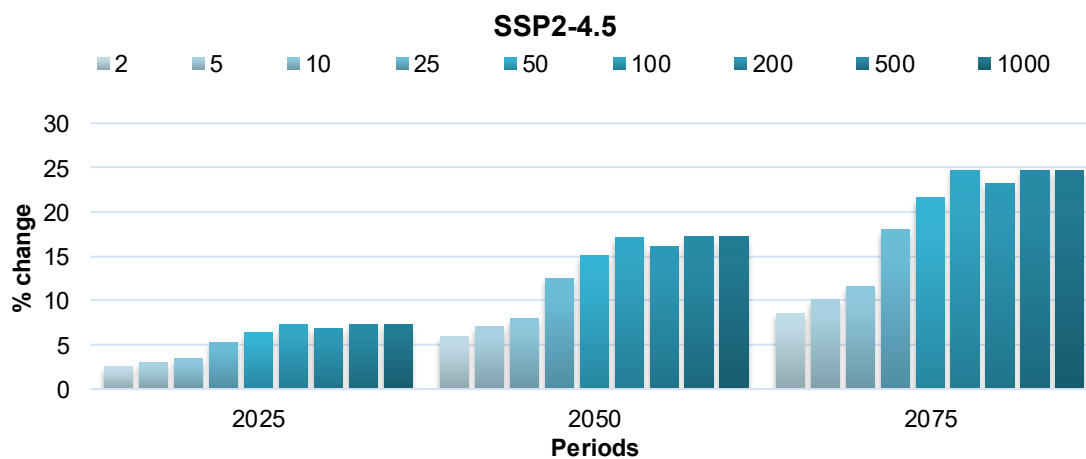


FIGURE 5-9: PROJECTED CHANGE IN EXTREME PRECIPITATION OVER A 24-HOUR PERIOD FOR A RANGE OF RECURRENCE INTERVALS FOR THE SSP2-4.5 SCENARIO

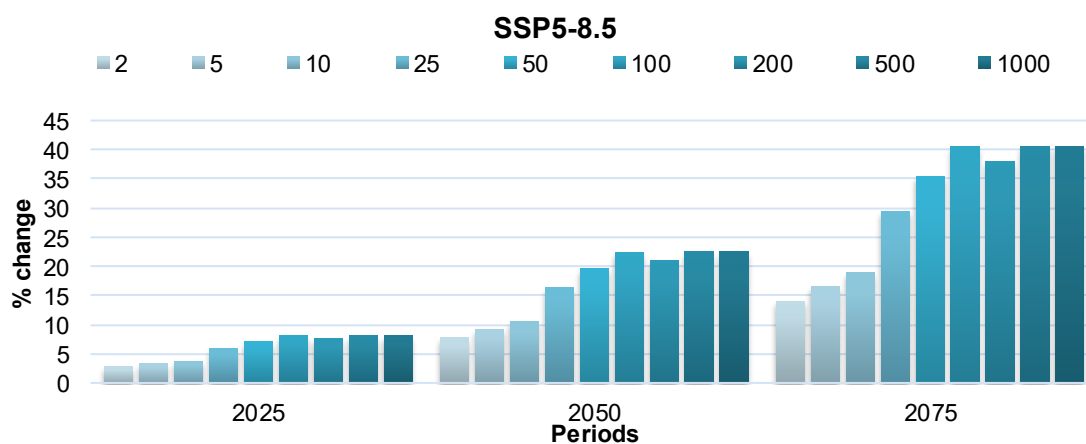


FIGURE 5-10: PROJECTED CHANGE IN EXTREME PRECIPITATION OVER A 24-HOUR PERIOD FOR A RANGE OF RECURRENCE INTERVALS FOR THE SSP5-8.5 SCENARIO

Mean Monthly Wind Speed

Wind speed is defined as the rate at which air moves from one location to another, typically induced by differences in atmospheric pressure and temperature. Understanding wind speed projections is essential, as a decrease in wind speed could lead to lower output from a wind energy facility.

Figure 5-11 presents the projected change in mean monthly wind speed relative to the historical scenario (2005) for the 2025, 2050 and 2075 time periods, under the SSP 2-4.5 scenario. In all three time periods mean monthly wind speed is projected to increase for the months spanning January-September and decrease for the months spanning October to December. Overall, mean annual wind speeds are projected to increase by 0.4% (-0.8% to +1.3%) in near term (2025), 1.1% (-1.9% to +3.0%) in the medium-term (2050), and 1.5% (-2.7% to +4.3%) in the long-term (2075).

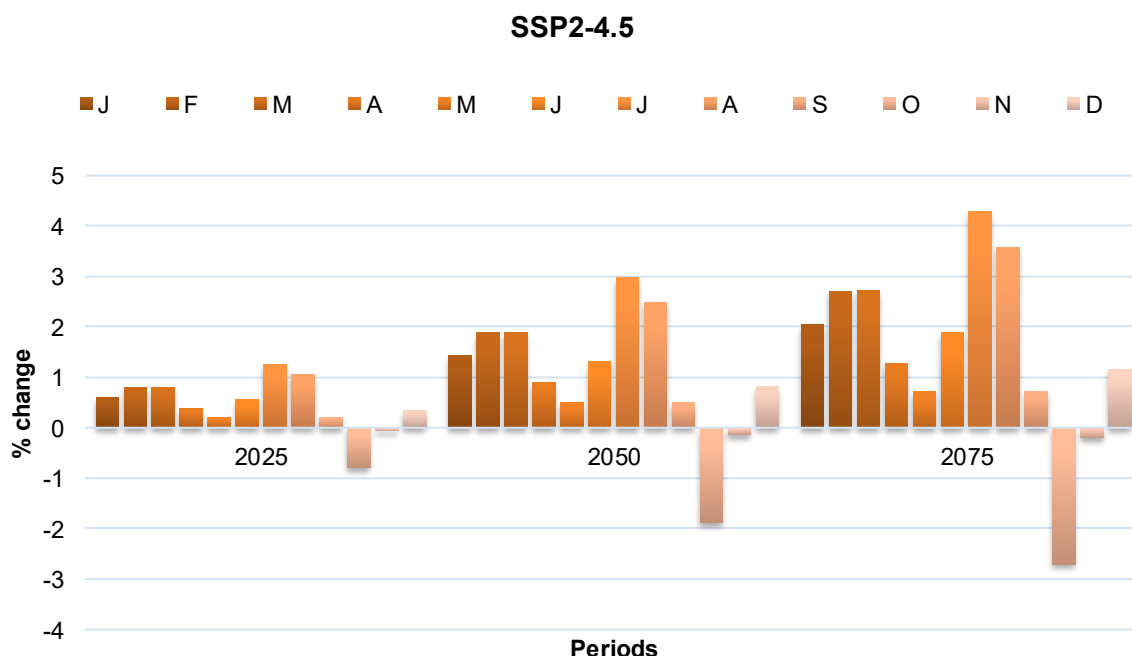


FIGURE 5-11: PROJECTED CHANGE IN MEAN MONTHLY WIND SPEED FOR THE SSP2-4.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Figure 5-12 presents the projected change in mean monthly wind speed relative to the historical scenario (2005) for the 2025, 2050 and 2075 time periods, under the SSP 5-8.5 scenario. Similar to the SSP2-4.5 projections, mean monthly wind speed is projected to increase for the months spanning January-September and decrease for the months spanning October to December, however, yield a more pronounced increase than what was observed under the SSP2-4.5 projections). Overall, mean annual wind speeds are projected to increase by 0.5% (-0.9% to +1.4%) in the near term (2025), 1.4% (-2.5% to +3.9%) in the medium-term (2050), and 2.5% (-4.4% to + 7.0%) in the long-term (2075).

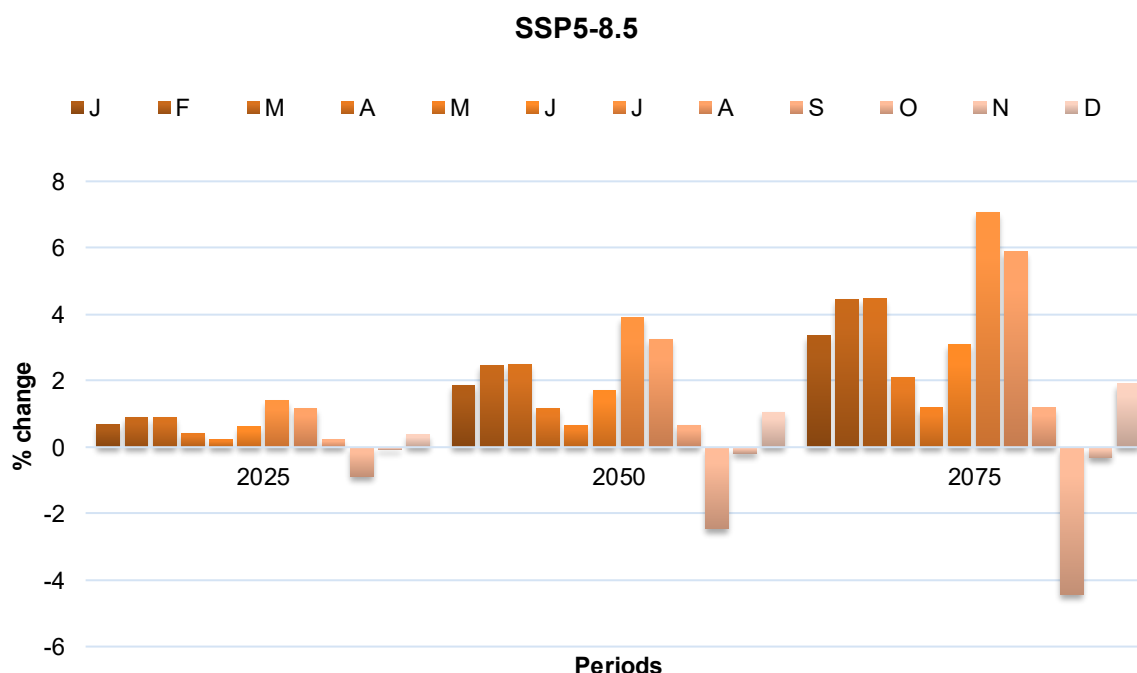


FIGURE 5-12: PROJECTED CHANGE IN MEAN MONTHLY WIND SPEED FOR THE SSP5-8.5 SCENARIO FOR THE 2025, 2050, AND 2075 TIME PERIODS

Extreme Wind Speed

Extreme wind speed refers to wind speeds that exceed the typical conditions for that area. Understanding changes in extreme wind speeds is crucial, as they can pose significant risks to both human health and infrastructure. It can also be associated with extreme weather events, such as thunderstorms and cyclones.

Figure 5-13 presents the projected change in extreme wind speed relative to the historical baseline in the SSP2-4.5 scenario for a range of recurrence intervals (1:2; 1:5; 1:10; 1:25; 1:50; 1:100; 1:200; 1:500; 1:1,000). In the near term (2025), extreme wind speed is projected to increase by 0.3% to 0.8%. In the medium-term (2050), extreme wind is projected to increase by 0.001% to 1.1%. In the long-term (2075), extreme wind is projected to increase by 0.6% to 1.8%.

Figure 5-14 presents the projected change in extreme wind speed relative to the historical baseline in the SSP5-8.5 scenario for a range of recurrence intervals (1:2; 1:5; 1:10; 1:25; 1:50; 1:100; 1:200; 1:500; 1:1,000). In the near term (2025), extreme wind speed is projected to increase by 0.5% to 0.7%. In the medium-term (2050), extreme wind is projected to increase by 0.3% to 0.6%. In the long-term (2075), extreme wind is projected to increase by 0.7% to 2.3%.

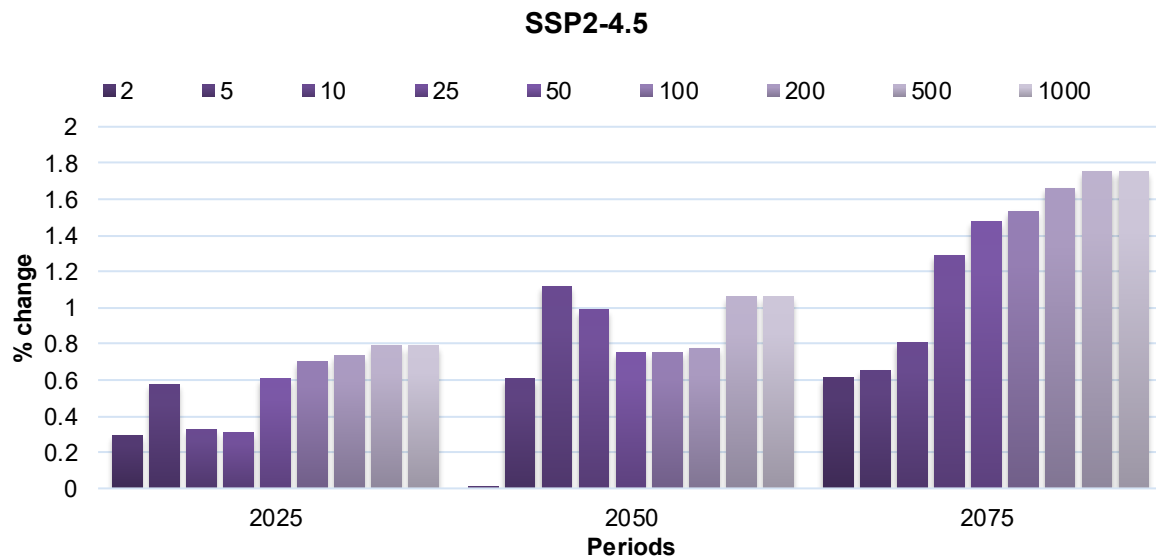


FIGURE 5-13: PROJECTED CHANGE IN EXTREME WIND SPEEDS FOR THE SSP2-4.5 SCENARIO FOR A RANGE OF RECURRENCE INTERVALS FOR THE 2025, 2050, AND 2075 TIME PERIODS

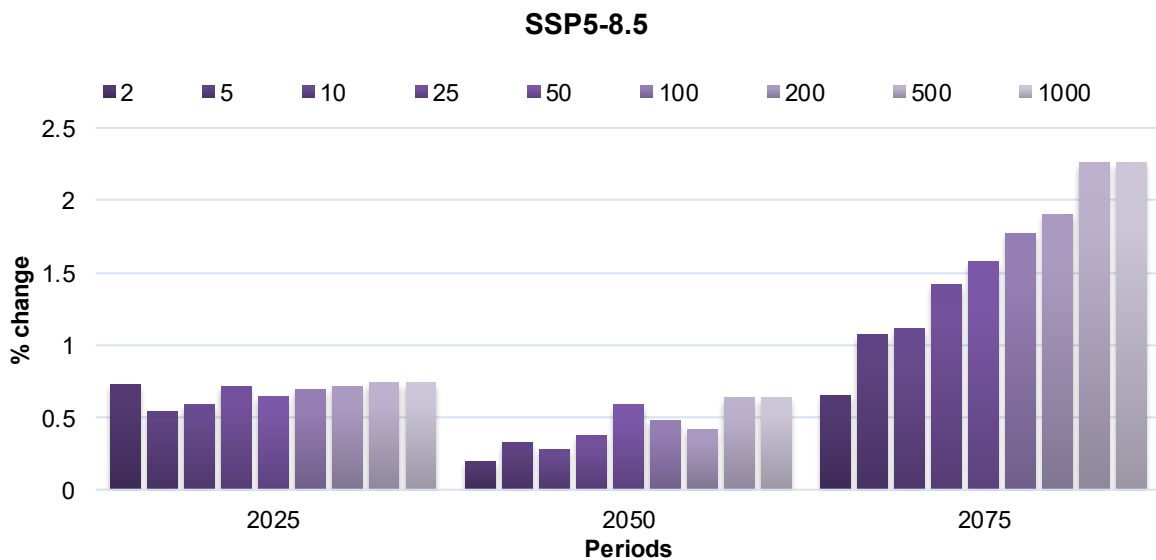


FIGURE 5-14: PROJECTED CHANGE IN EXTREME WIND SPEEDS FOR THE SSP5-8.5 SCENARIO FOR A RANGE OF RECURRENCE INTERVALS FOR THE 2025, 2050, AND 2075 TIME PERIODS

5.1.2 Environmental Noise

A noise baseline for the PAOI has been provided in the updated ESIA report (MDI, 2025). This data from the noise baseline was reviewed to determine the applicable noise legislation and international best practice and to gain an understanding of the baseline noise measurements previously undertaken for the Project. Information for this section was sourced from the Noise Impact Assessment undertaken by the Environmental Consultant in October 2025.

5.1.2.1 Relevant Noise Guidelines on Exceedances

National

Ethiopia's Environmental Pollution Control Proclamation No. 300 of 2002, together with the Guideline Ambient Environment Standards for Ethiopia, establishes the national framework for preventing and controlling environmental pollution. Guideline ambient environment standards for Ethiopia are presented in Table 5-3.

TABLE 5-3: ETHIOPIA GUIDELINE STANDARD FOR AMBIENT NOISE

Area Code	Category of Area	Noise Limits in dB(A) LA _{eq}	
		Day Time 06:00 – 21:00	Night-Time 21:00 – 06:00
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45

International

According to the WBG EHS Guidelines, the criteria for noise impact assessments, as outlined by the IFC, include:

- Identification of environmentally sensitive receptors (human, livestock or wildlife).
- Preliminary modelling may assume hemispherical propagation (i.e. radiation of sound, in all directions, from a source point), focussing on sensitive receptors within 2000 m.
- If preliminary modelling suggests that turbine noise at all sensitive receptors is likely to be below an LA90 of 35 dB(A) at a wind speed of 10 meters/second (m/s) at 10 m height during day and night times, then this preliminary modelling is likely to be sufficient to assess noise impact, otherwise it is recommended that more detailed modelling be carried out, which may include background ambient noise measurements.
- The model should consider cumulative noise from all WEFs in the vicinity with the potential to increase noise levels.
- If noise criteria based on ambient noise are to be used, it is necessary to measure the background noise in the absence of any wind turbines. This should be done at one or more noise-sensitive receptors. Critical receptors will be those closest to the WEF but if the nearest receptor is also close to other significant noise sources, an alternative receptor should be selected.
- The background noise should be measured over a series of 10-minute intervals, using appropriate wind screens. At least five of these 10-minute measurements should be taken for each integer wind speed from cut-in speed to 12 m/s.

In addition to the IFC limits stipulated for WEF of a LA90 of 35 dB(A) at a wind speed of 10 m/s at 10 m height during day and night times, the IFC also refer to the WHO Community Noise Guidelines for residential, industrial and commercial receptors. The IFC states that noise impacts should not exceed the levels presented in Table 5-4 or result in a maximum increase of 3 dB(A) above background levels at the nearest receptor location offsite.

TABLE 5-4: IFC EHS NOISE LIMIT GUIDELINES

Receptor Category	One Hour LA _{eq} (dBA)	
	Daytime 07:00 – 22:00	Night-time 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

ETSU-R-97, formally titled “The Assessment and Rating of Noise from Wind Farms,” was developed in the United Kingdom in 1996 by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry. It provides a standardized methodology for assessing wind turbine noise at residential properties, balancing the operational requirements of wind energy facilities with the protection of community amenity. The framework establishes the use of the LA₉₀ descriptor, representing the background noise level exceeded for 90% of the measurement period, as the rating level for both measured and predicted turbine noise. Noise from wind turbines is typically 1.5–2.5 dB(A) lower in LA₉₀ than in LA_{eq}, reflecting the character of the continuous operational sound. ETSU-R-97 stipulates that turbine noise should be limited to a range of 35–40 dB(A) during the daytime, with a fixed nighttime limit of 43 dB(A). For receptors with a financial interest in the facility, these limits may increase to 45 dB(A) for both day and night.

In the guidelines for Environmental Noise Impact Assessment (2014) by the Institute of Environmental Management & Assessment (IEMA), the change in sound pressure level at receivers can be linked to expected long term impact significance by four categories. Table 5-5 shows the four category classifications ascribed to the relevant ranges of level increase. This can be a useful impact assessment tool where noise level increases exceed 3 dB(A), and where the magnitude of excess and corresponding risk significance is needed.

TABLE 5-5: LONG-TERM IMPACT DUE TO CHANGE IN ENVIRONMENTAL SOUND LEVELS (IEMA, 2014)

Long Term Impact Classification	Sound Level Change LA _{eq, T} (dB(A)) Day or Night ^(a)
Negligible	< 3
Minor Negative	≥ 3 and < 5
Moderate Negative	≥ 5 and < 10
Major Negative	≥ 10
Notes: (a) - The IEMA guidance on the significance of noise level changes is defined in terms of LA _{eq} . For the purposes of this assessment, equivalent change thresholds have been applied to LA ₉₀ values to indicate the relative magnitude of change in background noise levels.	

5.1.2.2 Baseline Noise Environment

Baseline noise measurements were collected by MDI (2025) between 26 April 2025 and 01 May 2025.

Measurements were taken using the “A”-weighted scale, which approximates the frequency response of the human ear. The sound level meter was positioned approximately 1.5 m above ground level and away from reflective surfaces with a wind shield fitted to minimise wind interference. Instruments were checked and calibrated prior to use in accordance with manufacturer requirements, with deviations below 1.0 dB(A). Day and night representative noise levels were measured over 5-second, 1-minute, 15-minute and 1-hour periods at each monitoring location with LA_{eq} samples logged.

The equipment used to conduct the noise survey is detailed in Table 5-6 and meteorological parameters for the survey period is shown in Table 5-7. The consultants indicated they used wind screens to reduce the impact of wind on the noise measurements; however, wind speeds were above 5 m/s and wind screens become less effective above this wind speed.

Monitoring location details, continuous average hourly noise levels (LAeq) and corresponding background noise levels (LA90) are provided in Table 5-8. Monitoring locations are shown in Figure 5-15.

TABLE 5-6: EQUIPMENT USED FOR BASELINE DATA COLLECTION

Equipment	Brand	Range	Class
Realtime Sound Level Meter	Smart Sensor	30 – 130dB(A)	IEC651 & ANSI S1.4 TYPE 2
Microphone	½ inch Condenser Microphone		

TABLE 5-7: SUMMARY OF METEOROLOGICAL PARAMETERS FOR THE SURVEY PERIOD

Date	Maximum Temperature (°C)	Minimum Temperature (°C)	Wind Speed (m/s)	Predominant Wind Direction
26 April 2025	37	23	10	NW
27 April 2025	32	21	8.2	NWN
28 April 2025	33	24	5.4	NW
29 April 2025	32	26	6.9	WNW
30 April 2025	33	23	7.4	SW
01 May 2025	36	24	9.4	W

TABLE 5-8: BASELINE ENVIRONMENTAL NOISE MONITORING

Monitoring site	Location name	Location type ^(a)	Latitude (°N)	Longitude (°S)	1-hour LA _{eq} (dBA)				LA ₉₀ (dBA) ^(b)
					Daytime		Nighttime		
					Ethiopia (06:00 – 21:00)	IFC (07:00 – 22:00)	Ethiopia (21:00 – 06:00)	IFC (22:00 – 07:00)	
1	Aysha Town	Residential	10.748199°	42.568089°	60.7	60.5	59.6	59.7	59.1
2	Lasrat Village	Residential	10.668679°	42.459178°	68.2	68.4	57.3	52.6	53.9
3	Existing wind farm project	Industrial	10.698419°	42.576555°	60.3	60.4	62.4	63.3	41.8
4	Degego Kebele	Industrial	10.731770°	42.486302°	69.0	69.0	NM		60.2
5	Ged Goble Village	Residential	10.585664°	42.466017°	64.5	64.5	NM		52.6
Notes:									
Red - Exceeds the Ethiopia and IFC standard/guideline defined for the applicable receptor category.									
Orange - Exceeds the IFC WEF guideline.									
NM - No measurements collected during the defined night-time period									
(a) - Based on the IFC definition “a point of reception or receptor may be defined as any point on the premises occupied by persons where extraneous noise and/or vibration are received. Examples of receptor locations may include permanent or seasonal residences; hotels / motels; schools and daycares; hospitals and nursing homes; places of worship; and parks and campgrounds”⁹									
(b) - LA₉₀ is the A-weighted sound level exceeded for 90% of the time during the measurement period (e.g., 10 minutes or 1 hour), representing the typical background noise level.									

⁹ IFC EHS. 2007. Noise management guidelines.

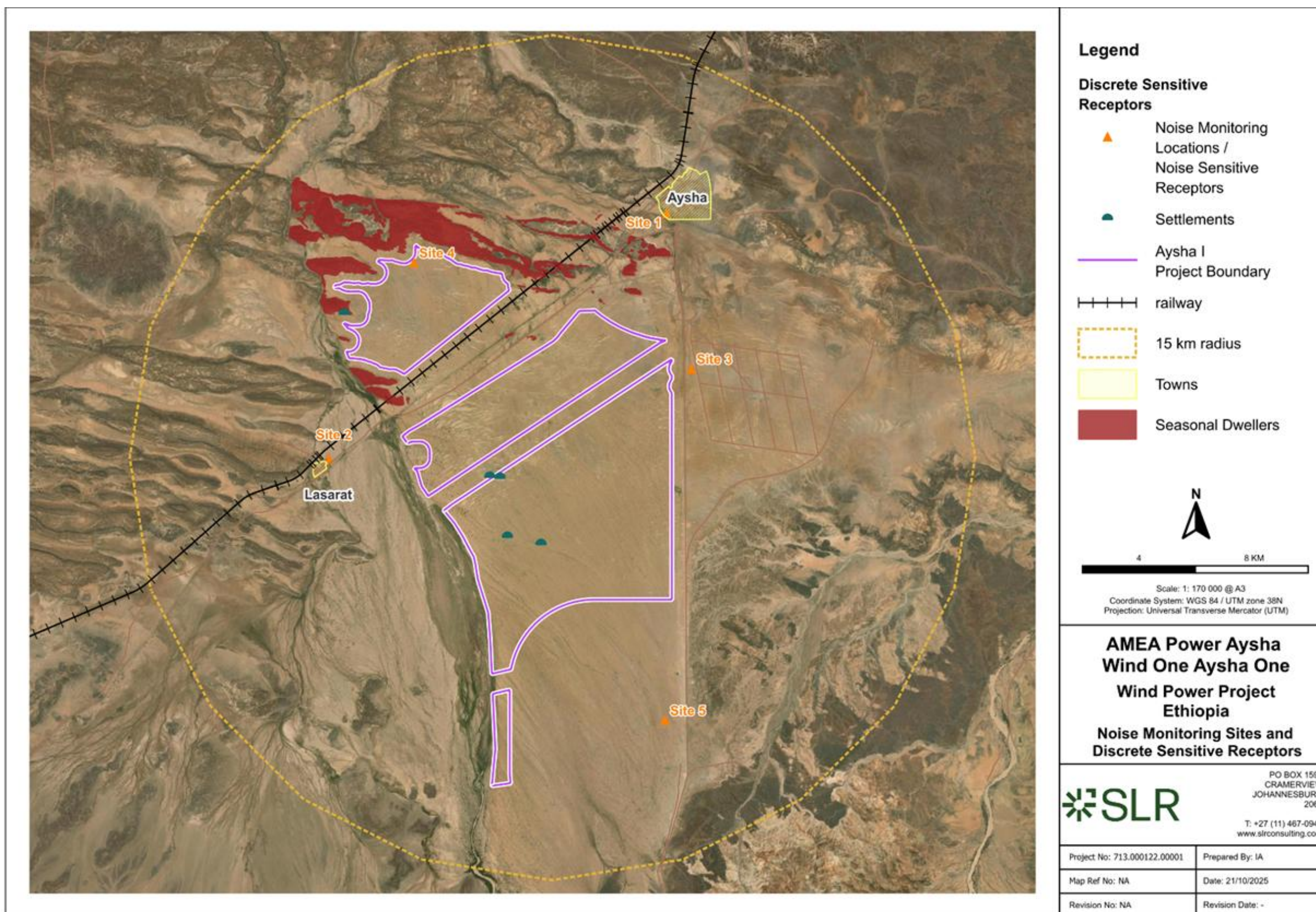


FIGURE 5-15: BASELINE ENVIRONMENTAL NOISE MONITORING LOCATION

The main sources of noise noted by MDI (2025) were traffic, places of worship, and existing turbines. Key findings from the monitoring include:

- The highest continuous daytime noise levels (1-hour LAeq) were measured at the Degego Kebelo site, at 69.0 dB(A), applicable to both the IFC and Ethiopian averaging times. This site is classified as an industrial receptor and is therefore compliant with the IFC EHS guideline limit of 70 dB(A) and the Ethiopian standard of 75 dB(A). The ESIA (MDI, 2025) notes that a major noise source proximate to this site is the Djibouti main road.
- The highest continuous nighttime noise levels (1-hour LAeq) were measured at the existing wind farm, at 62.4 dB(A) (IFC defined nighttime period) and 63.3 dB(A) (Ethiopian defined nighttime period). This site is also assessed as an industrial receptor and is compliant with the WBG EHS guideline limit of 70 dB(A) and the Ethiopian standard of 75 dB(A). The ESIA (MDI, 2025) notes that major noise sources include operation of existing turbines and traffic on the Djibouti main road.
- Aysha Town and Lasarat Village show exceedances of the IFC and Ethiopian threshold limits for daytime and nighttime averages. Ged Goble Village exceeds the IFC and Ethiopian thresholds for daytime; no nighttime measurements were available for this location. The ESIA (MDI, 2025) notes that peaks observed during continuous monitoring were attributed to traffic during prayer times.
- The highest LA90 was recorded at Degego Kebele, at 60.2 dB(A).

5.2 Biological Environment

The updated ESIA report (MDI, 2025) previously assessed the following for the Project in terms of the baseline for the biological environment:

- Biodiversity
- Terrestrial Ecology: Vegetation Types and Flora
- Wildlife Habitats and Wildlife Resources
- Birds (Avi-Fauna)
- Bats
- Biodiversity Areas and Protected Areas.

However, as identified in the Gap Analysis report (SLR, 2025) the following was subsequently undertaken as part of the SLIP process:

- Updated Biodiversity Assessment, including additional survey periods, collision risk modelling for birds, and biodiversity management plan.
- Critical Habitat Assessment.

Biolnsight and Ecoa (Group BE) undertook a Biodiversity Survey and Impact Assessment. Critical Habitat Assessment and prepared a Biodiversity Management Plan for the Project. The mitigation measures described in this ESIA has also utilized measures in these documents.

This section aims at complementing the ESIA (MDI, 2025), specifically for the biological environmental aspect in line with IFC PS and AfDB E&S OS.

The Aysha I WPP project will impact various biodiversity receptors, including natural habitats, plant communities, small terrestrial fauna (invertebrates, amphibians, reptiles, small mammals), medium and large-sized mammals, bats, ground birds, and soaring birds. Impacts on biodiversity were assessed according to their duration, magnitude, sensitivity, and significance.

5.2.1 Data Collection

Biolnsight and Ecoa (Group BE) undertook a Biodiversity Survey and Impact and Critical Habitat Assessment for the Project.

As described in section 2.7.2, the PAOI for biodiversity refers to the broader area that may be affected by a project, including both direct and indirect impacts. For the purposes of the surveys undertaken, biodiversity PAOI was defined which refers to the specific geographical area that was studied and analysed for its ecological features and impacts.

5.2.1.1 Desktop Analysis

A desktop analysis was undertaken to determine what biodiversity values may be present in the PAOI using data from the Ethiopian Biodiversity Institute (2022), documents of work previously executed nearby including the updated ESIA report for the Project (MDI, 2025). The biodiversity receptors identified that could be susceptible to the Project are:

- Flora;
- Fauna:
 - Terrestrial mammals, reptiles and amphibians; and
 - Birds and bats (priority values).

5.2.1.2 Flora Survey

To ground truth the habitats and flora identified for the PAOI, field surveys for every season were conducted (Table 5-9), by making use of three to six sample plots in the different habitat types identified in the desktop assessment. Along with tree and shrub species data, herbaceous species found in each 20 m x 20 m sample plots were collected from three 1 m² quadrants laid at opposite corners and the centre of the sample plot. Water bodies were dry during the winter and spring, therefore, sampling at these sites was not conducted during these seasons. Biotic and physical features in the PAOI were used to classify habitats, and GPS information was taken from each habitat type to produce a habitat map.

TABLE 5-9: FLORA SURVEYS UNDERTAKEN

Season	Survey Start	Survey End	Sampling Plots
Tsedey (autumn)	17 November 2024	23 November 2024	27
Bega (winter)	02 February 2025	06 February 2025	31
Belg (spring)	31 May 2025	03 June 2025	31
Kiremt (summer)	01 September 2025	04 September 2025	31

5.2.1.3 Herpetofauna Survey

To evaluate the reptiles and amphibians within the PAOI, both visual encounter surveys and pitfall trapping utilising drift fences were implemented across eight areas that encompassed the various habitats identified. Nocturnal surveys for amphibians were carried out in proximity to water sources. Eight transects were selected with a length of approximately 1 km each (Figure 5-16). The surveys were conducted for about one hour, taking from between 08:00 to 13:00 and again between 16:30 to 20:30. Each transect was surveyed an additional time on a different day. The surveyor examined two meters to the left and two meters to the right, while progressing along the transect line. Drift fences and pitfall traps were deployed along each transect line to function as passive capture devices. An exception was made during the summer season due to material vandalism by local nomad pastoralists, which forced the survey team to reduce the number of trap lines to three. To compensate, an additional new transect was surveyed during this season to increase sampling effort. Data was additionally collected from opportunistic observations at the PAOI.

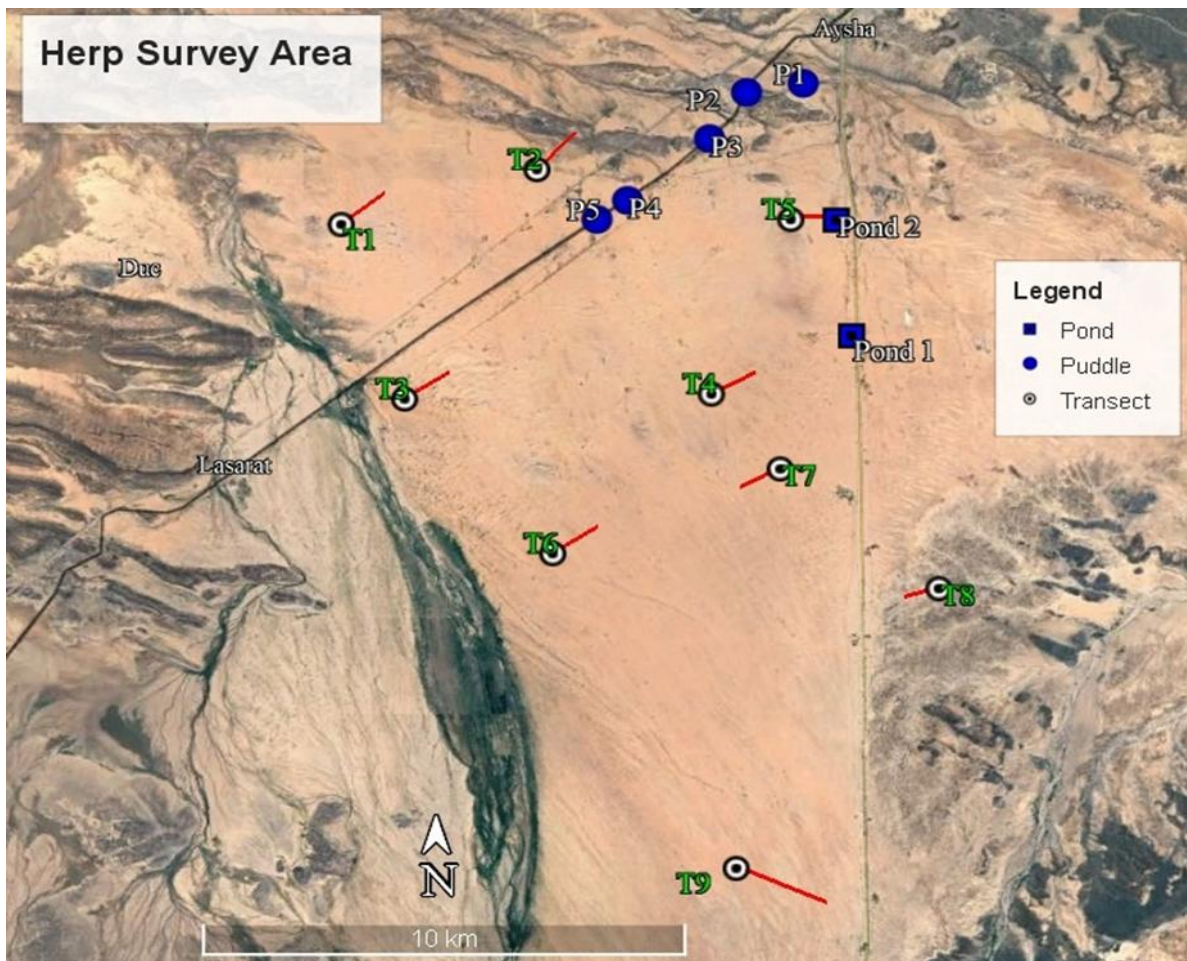


FIGURE 5-16: LOCATION OF TRANSECTS, WATER BODIES AND SAMPLING POINTS TO OBSERVE HERPETOFAUNA (SOURCED FROM BIOINSIGHT)

5.2.1.4 Mammals Survey

To evaluate the diversity and abundance of terrestrial mammal species within the PAOI, eight transect lines (Figure 5-17), each measuring between 2 to 4 km, were randomly established within each habitat. Surveys took place during the morning hours (06:00 to 11:00) and in the afternoon (14:00 to 17:00) using digital cameras, binoculars, Global Positioning System (GPS), meter tape with 50 m length, field guides and data sheets. Four mammal survey campaigns were undertaken, one per season.

Data on species, number of individuals, and behaviour were recorded by observing tracks, scats, and other signs of mammal presence along designated trails. Indirect evidence such as the presence of quills, burrows and soil mounds for non-observed mammals was registered. Mammal sightings were additionally recorded during the Vantage Point (VP) surveys for birds. Camera traps and live traps for small mammals were not used during mammal surveys due to previous vandalism of equipment in the PAOI as well as because of the high temperatures during the day being dangerous for trapped small mammals.

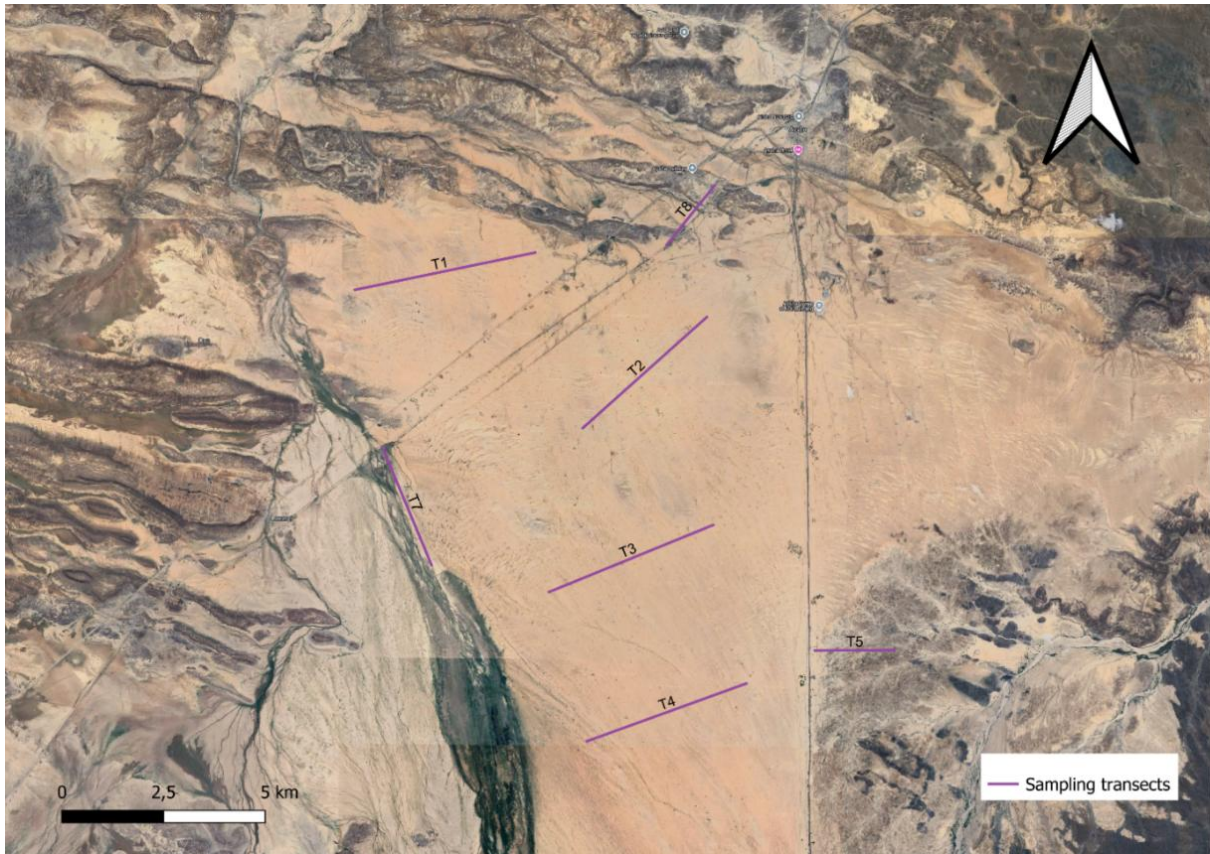


FIGURE 5-17: LOCATION OF SAMPLING TRANSECTS TO OBSERVE MAMMALS (SOURCED FROM BIOINSIGHT)

5.2.1.5 Bat Surveys

Bat diversity and abundance were assessed within the PAOI by conducting walking transect surveys and deploying static ultrasound detectors. Eight transects of 2 km length were chosen to include hotspots that are likely to support bat activity (Figure 5-18). This selection process ensured the survey would capture the largest diversity of bat species present within the PAOI.

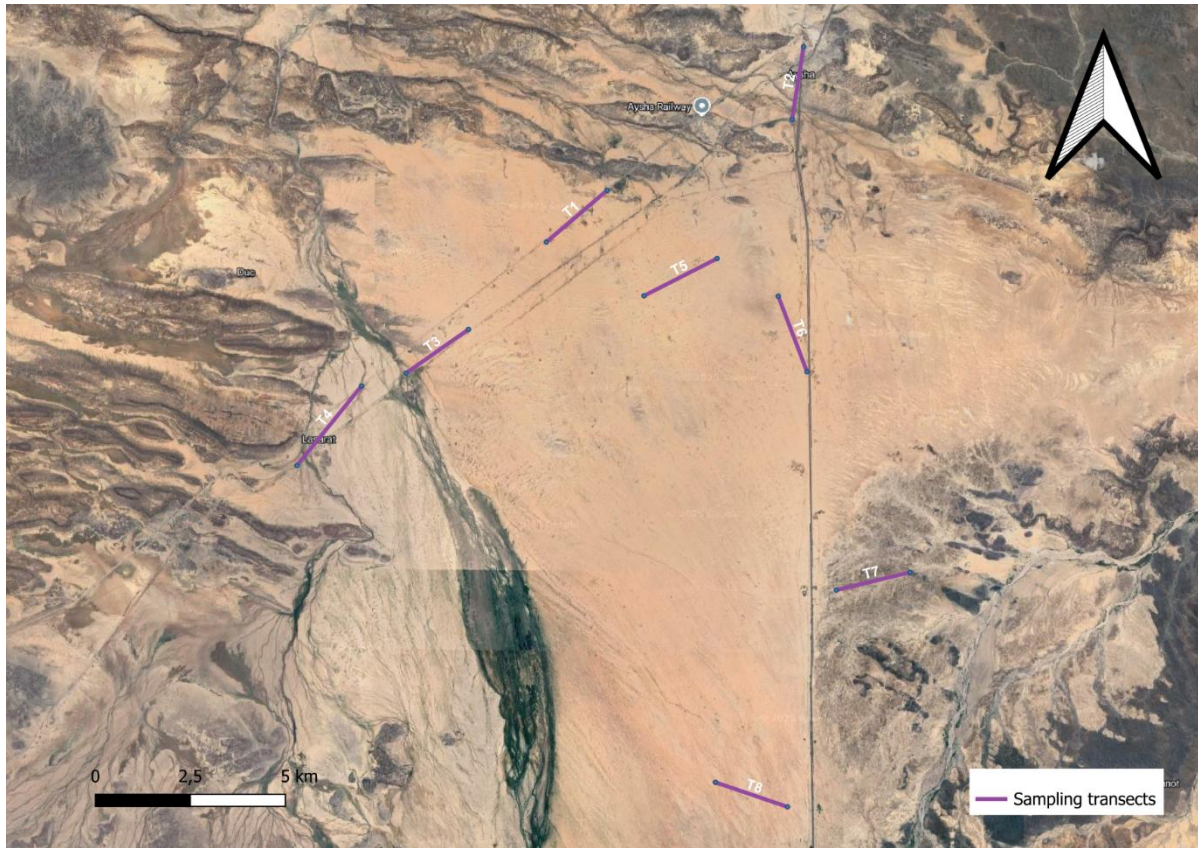


FIGURE 5-18: LOCATION OF SAMPLING TRANSECTS TO OBSERVE BATS (SOURCED FROM BIOINSIGHT)

Transect surveys were conducted for 2 - 2.5 hours after sunset, with a maximum of two transects conducted each night. Acoustic bat monitoring was also carried out using AnaBat II and AnaBat acoustic recorders. Acoustic monitoring was complemented with visual observations using handheld torches and overhead lights to spot bats in flight. This dual approach permitted a comprehensive assessment of the behavioral ecology of the bat species present.

Anecdotal evidence of bat presence was also collected through community engagement and daytime searches for bat roosts. The latter involved inspecting various locations including trees, bridges, abandoned buildings and other structures, including outside the PAOI.

To complement walking transects, five static ultrasound detectors (Song Meter SM4BAT FS Ultrasonic Recorder, Wildlife Acoustics) were deployed on meteorological masts within the PAOI (Figure 5-19). Three detectors were placed at a height between 8-10 m (ground detectors), and two detectors were placed at a height of 74 m (height detectors). All detectors were away from devices whose sounds might be picked by the microphones. Data collection lasted from April 2025 until October 2025. Recordings were set to start one hour before sunset and end one hour after sunrise. Sample rate was from 192—256 kHz, and minimum frequency trigger was 9 kHz.

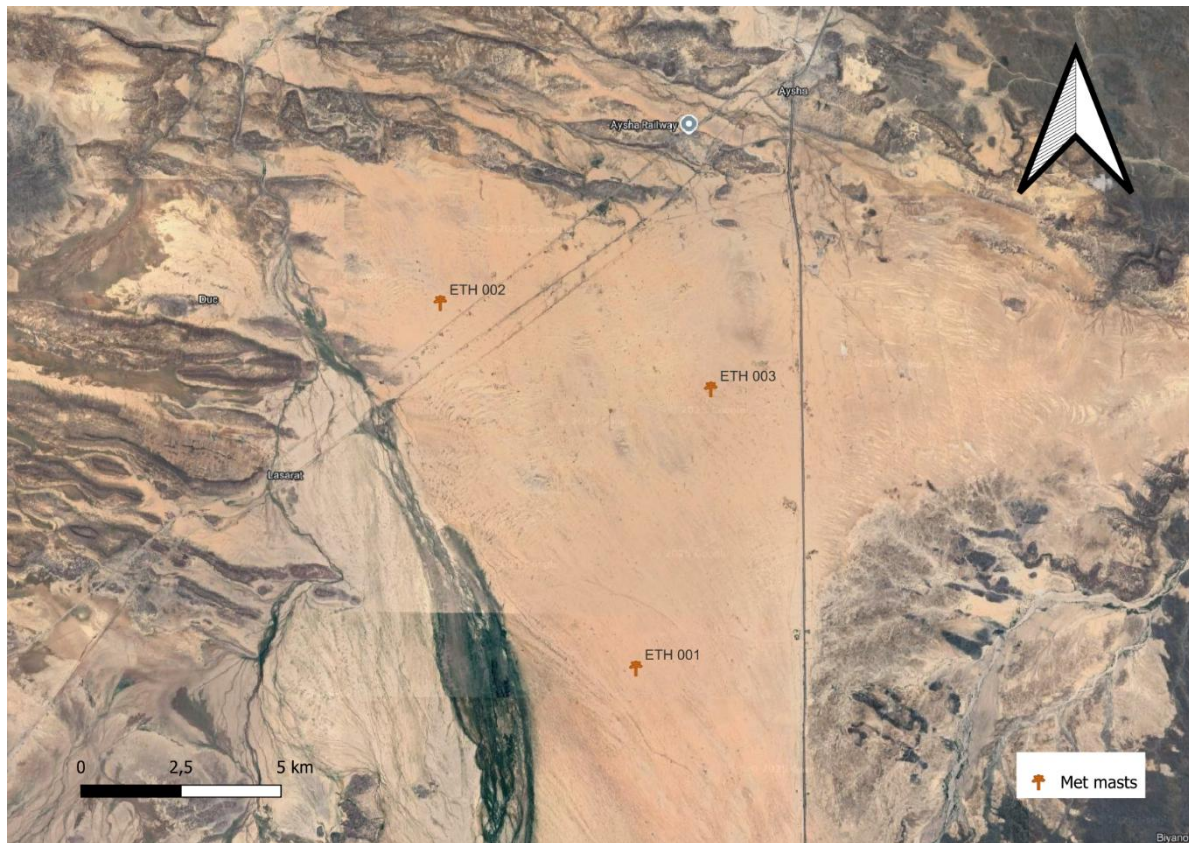


FIGURE 5-19: LOCATION OF MET MASTS WHERE SM4 BAT DETECTORS WERE PLACED (SOURCED FROM BIOINSIGHT)

5.2.1.6 Bird Surveys

The baseline assessment for bird biodiversity followed the Scottish Natural Heritage guidelines, which are internationally accepted as a standard to conduct bird surveys for onshore Wind Power Plants (Scottish Natural Heritage, 2017).

VP surveys were chosen as the best method to assess bird diversity and flight activity over the PAOI. In addition to species, number of individuals and behaviors were observed, the flight pattern was recorded for priority species to develop collision risk models. Collision risk models were developed for soaring birds and flocks with enough observations to present reliable estimates. Band's model (Band *et al.* 2007) was used to estimate birds' collision risk with the proposed Project layout. The Band model combines field data with statistical modeling to quantify the number of birds. It is a widely used model in the United Kingdom and other countries as a standard approach for risk assessment of collision (Willmott *et al.* 2012). The collision risk model analysis aims to estimate the total number of collisions per year and will also be presented for each target species of the analysis.

11 VPs, with a detectability buffer of 2 km, were established to cover nearly the entire turbine layout planned for the Project (Figure 5-20).

Each VP was surveyed once every week and for a maximum of three hours/day by two or three surveyors. VPs were surveyed according to the following schedule:

- September to November and March to May (migration seasons) - two VPs surveyed each day, 07:30 - 10:30 and 14:30 - 17:30
- December to February and June to August - Three VPs surveyed each day, 07:30-10:30, 11:00-14:00, and 14:30-17:30.

Each VP was surveyed for a minimum of 36 hours each season and at alternative schedules between consecutive weeks to record individuals that might visit the AOI at different times.

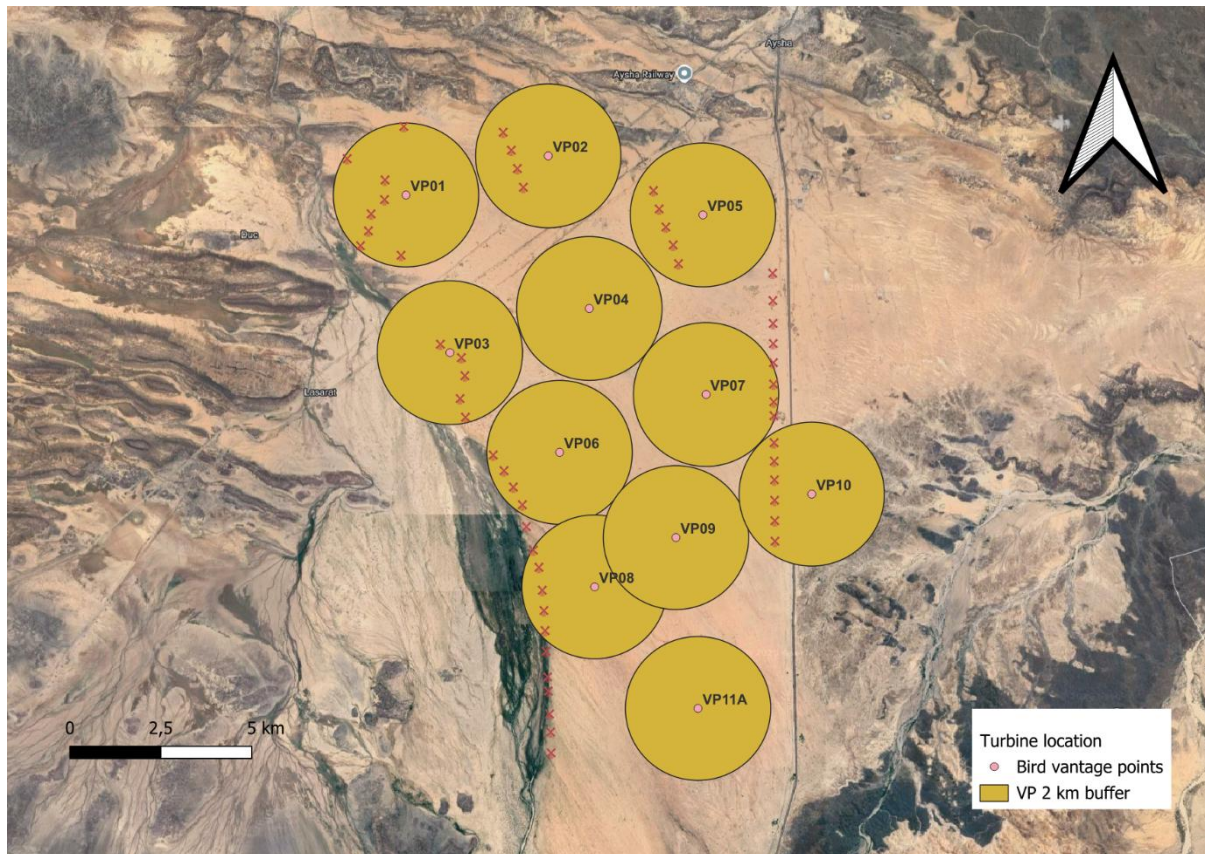


FIGURE 5-20: VANTAGE POINT LOCATIONS AND THEIR 2 KM BUFFER SUPERIMPOSED ON THE TURBINE LOCATIONS (SOURCED FROM BIOINSIGHT)

Bird observations were classified into three species groups according to priority biodiversity features: Soaring birds, flocks and secure birds. Bird species were additionally classified as either resident or migrant using International Union for Conservation of Nature (IUCN) map data (<https://www.iucnredlist.org/>) and bird experts' opinion.

Nest surveys are essential for identifying which bird species are breeding within the vicinity of a wind power plant. The presence of breeding birds is a strong indicator that the area holds significant ecological value for the survival of these species. Furthermore, nest surveys highlight potential conservation challenges, particularly for species at risk of collision with wind turbines, which can lead to breeding failures. This risk is especially critical for species already facing the threat of extinction. By conducting thorough nest surveys, developers can gather crucial data that informs the planning and operational strategies of wind power plants, ensuring they are designed and managed in a way that minimizes harm to avian populations and supports broader conservation efforts. The fieldwork team conducted nest surveys for one week in May, checking the entire AOI for nesting or breeding activity. VP surveys were on hold during this week. Records of nesting or breeding activity continued opportunistically after this week. Nest surveys were conducted during daylight, starting at 07:00 and finishing at 18:00. Breeding activity was observed by stopping at vantage points for short periods of time and recording species, presence of breeding behavior, presence and state of nests, and number of eggs and chicks.

5.2.1.7 Critical Habitat Assessment

Applicable International Requirements

IFC PS 6 (2012) defines Critical Habitat as “any habitat with high biodiversity conservation significance, characterized by the presence of CR or EN species, restricted-range or endemic species, globally significant congregations of species, threatened or unique ecosystems, or ecosystems supporting

important evolutionary processes. In contrast with critical habitats, sensitive habitats are those that are particularly vulnerable to negative impacts from either natural or anthropogenic disturbances.”

In accordance with the IFC PS 6, habitats are divided into modified habitats, natural habitats, and critical habitats. Critical Habitats are a subset of either modified or natural habitats supporting high biodiversity values, including:

- Habitat of significant importance to critically endangered and/or endangered species (classified in the Red List according to criteria developed by the International Union for Conservation of Nature (IUCN));
- Habitat of significant importance to endemic and/or restricted-range species;
- Habitat supporting globally significant concentrations of migratory species and/or congregator species;
- Highly threatened and/or unique ecosystems;
- Areas associated with key evolutionary processes.

Assessment Methods

The Critical Habitat Assessment comprises several steps to ensure the process is robust:

- Initial Screening: Consultation with stakeholders and a literature review, which included scientific articles, reports and books related to the site, and online resources including but not limited to:
 - Field data collection and verification of available information e.g. habitat mapping, flora and fauna surveys;
 - Online databases such as Global Biodiversity Information Facility and iNaturalist;
 - IUCN Red List of Threatened Species;
 - BirdLife International Important Bird and Biodiversity Areas (IBAs);
 - World Database of Key Biodiversity Areas.
- A baseline biodiversity assessment which includes the collection of field data to confirm the information obtained during the literature review and accurately estimate impacts on biodiversity and ecosystems;
- Critical Habitat determination:
 - Determination of the Ecologically Appropriate Areas of Analysis (EAAA);
 - Assessment of Critical Habitat criteria.

Screening of Biodiversity Values

The first step of the Critical Habitat Assessment consists in a screening of biodiversity values that may qualify under IFC PS6. In this context, the screening is carried out within a broad study area encompassing the PAOI and the surrounding landscape. This study area was defined in a way to be sufficiently large to capture the main ecological patterns relevant for the Project, including migratory pathways, foraging ranges, habitat connectivity and known conservation features (Figure 5-21).

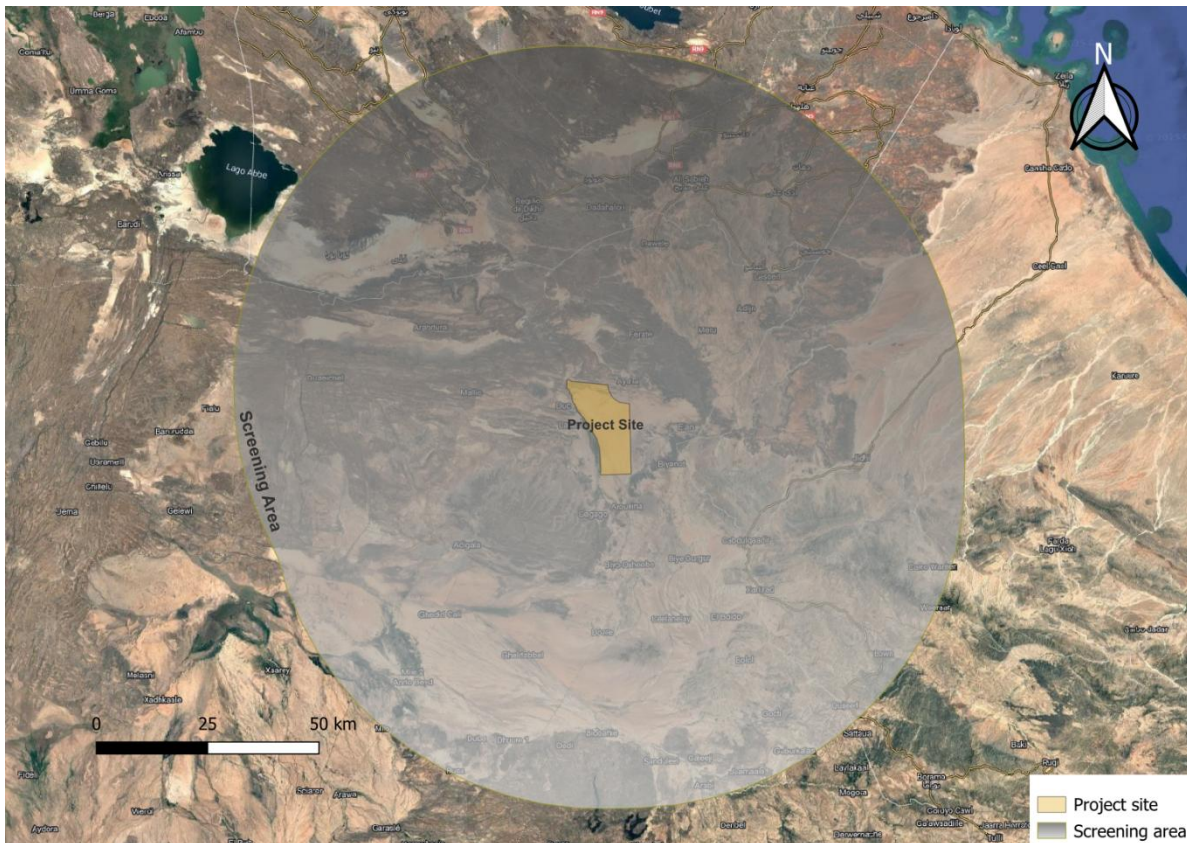


FIGURE 5-21: SCREENING AREA TO ASSESS BIODIVERSITY VALUES

Within this study area, species and ecosystems of conservation concern were identified based on:

- A desk-based review of available information (scientific literature, IUCN Red List, BirdLife Important Bird and Biodiversity Areas, Key Biodiversity Areas and other relevant sources);
- Consultation with stakeholders and experts; and
- The results obtained from the dedicated biodiversity baseline surveys for birds, bats, terrestrial mammals, reptiles, amphibians and flora.

Each biodiversity value identified in this way was then evaluated against the IFC criteria to determine whether it should be screened in for further assessment. Only those species or ecosystems that show a reasonable likelihood of regular occurrence and potential to meet Critical Habitat thresholds are retained for the next step. Values with negligible likelihood of occurrence, very occasional records, or clearly insufficient numbers are screened out at this stage and are not assessed further.

For the biodiversity values that are screened in, a specific EAAA is subsequently defined (discussed further below). In this sense, the screening stage and the EAAA definition constitute a two-step process, ensuring that Critical Habitat determination is undertaken at an ecologically meaningful scale, as required by IFC PS6 Guidance Note 6.

Ecologically Appropriate Area of Analysis

For all biodiversity values that were screened in the previous section, an EAAA was defined in accordance with IFC PS6 Guidance Note 6, particularly paragraph GN59. The EAAA is understood as the spatial unit where the Critical Habitat criteria and their quantitative thresholds are applied, and therefore it should reflect the ecological reality of each species or ecosystem. It is important to note that the EAAA is not the same as the initial study area or PAOI; instead, it represents the ecologically meaningful landscape extent needed to assess whether a biodiversity value may qualify as Critical Habitat. The boundaries of each EAAA were established by considering several aspects, namely:

- The known or inferred distribution of the species or ecosystem in the wider landscape;
- Ecological processes relevant for their persistence (for example breeding, roosting, migration, recruitment or congregation);
- The degree of habitat connectivity and the presence of key landscape features; and
- The observations obtained during the biodiversity baseline surveys.

Depending on the ecological characteristics of each taxon, distinct but still practical approaches were adopted. For wide-ranging species such as large raptors and vultures, the EAAA required a broader spatial extent to encompass their typical movement patterns. For species with more restricted home ranges, like gazelles, the EAAA could be delineated in a more localized manner. In line with IFC PS6 training guidance, which recognizes that each Priority Biodiversity Value may have its own EAAA or that EAAAs may overlap partially or entirely where they share common habitat, screened in values with similar ecological requirements and overlapping distributions were assigned to the same common EAAA. This means that a limited number of EAAAs was defined, each representing an ecologically coherent “group” of biodiversity values, rather than creating a separate EAAA for every single species.

The EAAA is presented in Figure 5-22. Separate EAAAs were defined for terrestrial mammal species (3 km buffer around the “Project Site”) and wide-ranging raptors (15 km buffer around the “Project Site”), consistent with their ecological requirements (Figure 5-22.). Once each EAAA was defined, the IFC PS6 Critical Habitat thresholds were applied exclusively within that spatial extent. This includes thresholds for globally important concentrations of critical endangered (CR) or endangered (EN) species, restricted-range species, and migratory or congregatory species, as well as assessments related to unique ecosystems and key evolutionary processes. By doing so, the Critical Habitat Assessment ensures that the determination is both ecologically robust and aligned with international good practice.

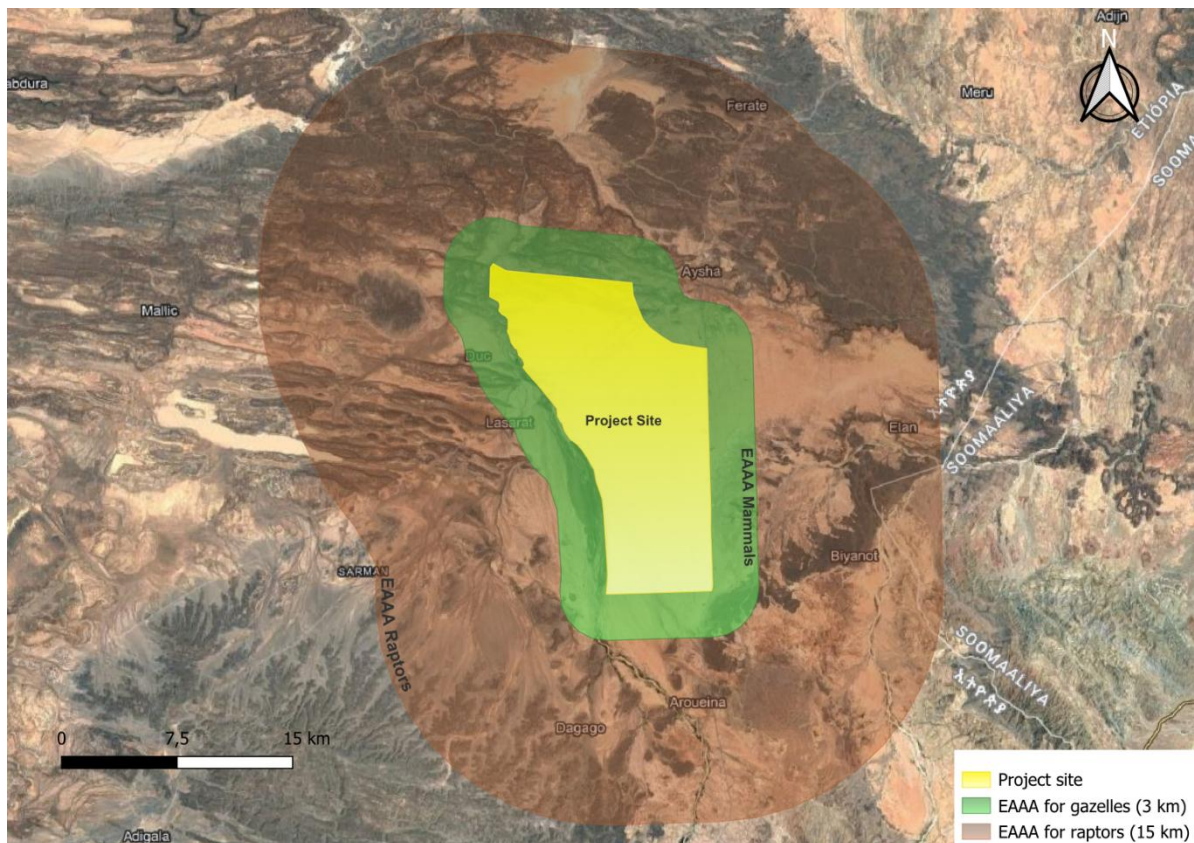


FIGURE 5-22: EAAA FOR THE SPECIES ASSESSED IN THE CRITICAL HABITAT ASSESSMENT

Assessment against Critical Habitat Criteria

The Critical Habitat determination refers to the evaluation of the area in question with respect to each of the five Critical Habitat criteria defined in IFC PS 6. Each criterion is summarised in Table 5-10 below.

TABLE 5-10: CRITICAL HABITAT ASSESSMENT CRITERIA

Critical Habitat Criteria as defined by IFC PS 6	PS 6 Criterion Number
CR and/or EN species	1
Endemic or restricted-range species	2
Migratory or congregatory species	3
Highly threatened and/or unique ecosystems	4
Key evolutionary processes	5

5.2.2 Flora

5.2.2.1 Habitats

Modified, natural and critical habitat refers to the biodiversity value of the area as determined by species, ecosystems, and ecological processes. As part of the risks and impacts identification process featured in PS6, modified and natural habitats were classified for the first buffer of the project's Aol. Critical habitat was featured in the Critical Habitat Assessment report.

As explained in PS6 (IFC 2019), natural and modified habitats exist on a continuum that ranges from largely untouched, pristine natural habitats to intensively managed, modified habitats. Project sites will often be located among a mosaic of habitats with varying levels of anthropogenic and/or natural disturbance. The determination of natural vs modified habitat is made based on two levels:

- **Human-induced disturbance:** for example, presence of invasive species, level of pollution, extent of habitat fragmentation, viability of existing naturally occurring species assemblages, resemblance of existing ecosystem functionality and structure to historical conditions, degree of other types of habitat degradation);
- **Biodiversity values confirmed onsite:** for example, threatened species, ecosystems, and ecological processes necessary for maintaining nearby critical habitats.

The project site has been extensively modified by human activities, namely the presence of nomad pastoralists that occupy the area seasonally to provide water and vegetation for cattle. Therefore, a finer level of detail was necessary to distinguish heavily modified habitats from natural habitats which, despite having some anthropogenic disturbance, still retain most of its historic functions. For this reason, it is more accurate to classify natural habitat as *semi-natural habitat*, even though the report makes a distinction between natural and modified habitat to maintain concept simplicity. The following criteria were used to classify natural habitats:

- Areas absent of invasive species (i.e. *Neltuma juliflora*);
- Areas with mainly vegetation typical of arid ecosystems;
- Areas where native, non-synanthropic wildlife was frequently observed;
- Areas not occupied permanently by human settlements or infrastructure.

With these four criteria in mind, the following map of modified and natural habitats was created for the project's Aol encompassing the physical footprint of non-project activities. Physical features and composition of plant species within the PAOI were used to classify six plant habitats identified for the Project (Photo 1). The area occupied by each habitat is presented in Table 5-11.

- **Grassland:** dominated by bare land with scattered acacia shrubs, white wild indigo, camel grass, saltbush, little leaf and basket bush. Such habitat is found in all but the southern area of the PAOI. This is the dominant habitat within the PAOI and classified as Natural.
- **Shrubland:** *Blepharis ciliaris* and *Indigofera spinosa* are the most common species in this habitat, where the natural vegetation is mainly scrub. Shrubland is sparsely spread through the PAOI, with less predominance in the center. This habitat is classified as Natural.
- **Bushland:** dominated by scattered stunted *Vachellia tortilis* – *Balanites aegyptiaca* species and other shrub plants. Spread through the PAOI except in the center.
- **Thicket/valley:** Small valley where water flows seasonally, mainly during the wet season. Covered by dense stands of the invasive species *Neltuma juliflora* and other shrubs. Mainly located in the southwest area of the PAOI.
- **Rocky outcrops:** Areas characterised by exposed rock formations with little vegetation, where small shrubs such as *Aerva javanica*, *Cadaba farinosa* and *Rhynchosia* species are dominant. Mainly located in the north and east areas of the PAOI.
- **Water ponds:** Constructed artificial ponds filled with diverted floods and rainfall. Mainly located in the northeast area of the PAOI. Many of these ponds dry up after the wet season.



1.



2.



3.



4.



5.



6.

PHOTO 1: IDENTIFIED HABITAT TYPES: (1) GRASSLAND, (2) SHRUBLAND, (3) ANTHROPOGENIC MODIFIED HABITAT, (4) WATER POND, (5) ROCKY OUTCROP, (6) THICKET OF MESQUITES (PHOTOS BY HAILU ATNAFU)

TABLE 5-11: AREA OCCUPIED BY EACH HABITAT TYPE

Habitat	Area (ha)	Cover (%)
Grassland	9077	23,56
Shrubland	10144	26,33
Bushland	8172	21,21
Thicket	4882	12,67
Rocky outcrops	6254	16,23

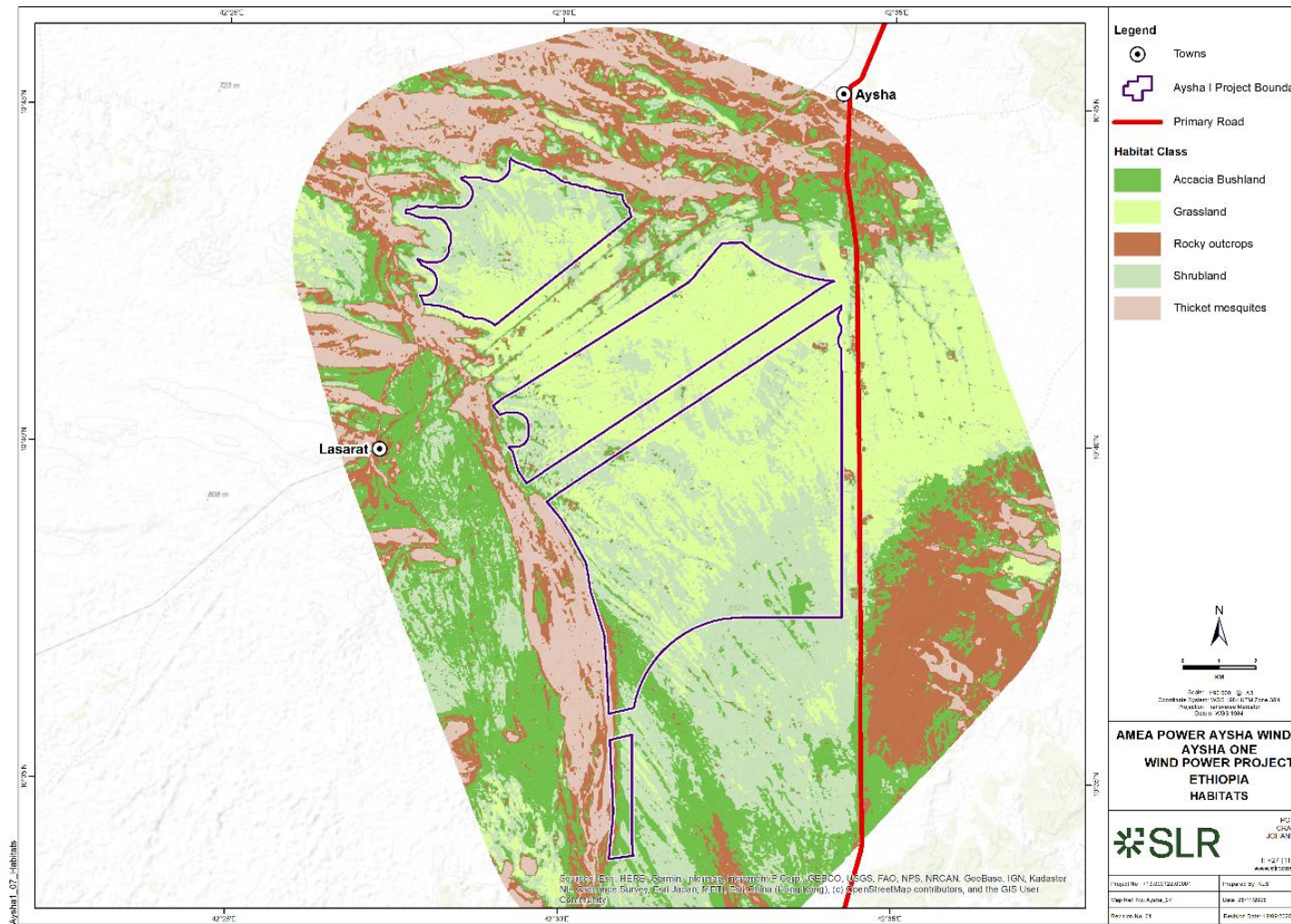


FIGURE 5-23 AREA OCCUPIED BY EACH HABITAT TYPE

5.2.2.2 Flora Species

The baseline assessment undertaken by Biolinsight in 2025 identified a total of 65 species of vascular plants was recorded within the PAOI (Table 5-12), belonging to 26 families. Eight species are tree species, while the rest are shrubs, herbs and plants with other growing life forms. Most of the species recorded are globally widespread. The southwest area of the PAOI is mainly occupied by the mesquite *Neltuma juliflora*, a highly invasive species. One species (*Rhynchosia ramosa*) is endemic to the region (Ethiopia, Somalia), and another, *Mesembryanthemum sp.*, is not recorded in the Ethiopian Flora Book and thus likely endemic to the region as well. *Jatropha horizontalis*, a VU species, was only known from the Negele-Filtu area in the Sidamo floristic region, at elevations between 1,270–1,500 m. Its occurrence in the PAOI suggests its geographic range may be larger than previously thought. *Jatropha horizontalis* was identified near the old railway station.

The highest diversity of plants was observed in the summer survey, with 54 of the total 65 plant species recorded. The observed result was most likely associated with the onset of rainfall, which, according to Asfaw and Tessema (2022), may initiate regeneration of particularly herbaceous species due to the reduction in soil

moisture stress at soil surface areas. Plant diversity was also higher in the shrubland, bushland and rocky outcrop habitats; the thickets of mesquites had the lowest diversity of plant species.

TABLE 5-12: LIST OF PLANT SPECIES RECORDED WITHIN THE PAOI

Order	Family	Species	Name	Habit
Asparagales	Asparagaceae	<i>Albuca abyssinica</i> Jacq.		Herb (geophyte)
Asparagales	Asparagaceae	<i>Ledebouria somaliensis</i> (Baker) Stedje & Thulin		Herb
Asparagales	Asphodelaceae	<i>Aloe megalaeantha</i> Balcer	Aloes	Herb
Asterales	Asteraceae	<i>Pluchea ovalis</i> (Pers.) DC.		Small shrub
Boraginales	Boraginaceae	<i>Heliotropium steudneri</i> Vatke		Herb
Brassicales	Brassicaceae	<i>Farsetia longisiliqua</i> Decne.		Herb
Brassicales	Capparaceae	<i>Cadaba farinosa</i> Forssk.	NA	Small shrub
Brassicales	Cleomaceae	<i>Cleome brachycarpa</i> Vahl ex DC.		
Brassicales	Salvadoraceae	<i>Salvadora persica</i> L.		Shrub
Caryophyllales	Aizoaceae	<i>Mesembryanthemum</i> spp	Ice Plants	Herb
Caryophyllales	Amaranthaceae	<i>Aerva javanica</i> (Burm. f.) Juss. ex Schult.	Desert Cotton	Small shrub
Caryophyllales	Amaranthaceae	<i>Salsola spinescens</i> Moq.		Small shrub
Caryophyllales	Tamaricaceae	<i>Tamarix aphylla</i> (L.) Karst.	Athel Tree	Tree
Commelinales	Commelinaceae	<i>Commelina latifolia</i> Hochst. ex A.Rich.		Herb
Cucurbitales	Cucurbitaceae	<i>Cucumis jeffreyanus</i> Thulin (1991)		Creeping vine
Fabales	Fabaceae	<i>Acacia horrida</i> (L.) Willd.		Tree
Fabales	Fabaceae	<i>Acacia mellifera</i> (M. Vahl) Benth.		Tree
Fabales	Fabaceae	<i>Vachellia tortilis</i> (Forssk.)	Umbrella Thorn	Tree
Fabales	Fabaceae	<i>Crotalaria pycnostachya</i> Benth.		Small shrub
Fabales	Fabaceae	<i>Dactyloctenium aegyptium</i> (L.) Wild.		Grass
Fabales	Fabaceae	<i>Indigofera oblongifolia</i> Forssk.		Small shrub
Fabales	Fabaceae	<i>Indigofera spinosa</i> Forssk.	NA	Herb
Fabales	Fabaceae	<i>Lolium</i> sp		Grass
Fabales	Fabaceae	<i>Neltuma juliflora</i> (Sw.) Raf.	Mesquite	Tree (introduced)
Fabales	Fabaceae	<i>Rhynchosia minima</i> (L.) DC.		Climber
Fabales	Fabaceae	<i>Rhynchosia ramose</i> Verdc.		Climber
Fabales	Fabaceae	<i>Senegalia mellifera</i> (Vahl) Seigler & Ebinger	Black Thorn	Tree

Order	Family	Species	Name	Habit
Fabales	Fabaceae	<i>Senna italica</i> Mill.	Eland's Pea	Small shrub
Gentianales	Apocynaceae	<i>Calotropis procera</i> (Ait.) Aitf.		Shrub
Gentianales	Apocynaceae	<i>Caralluma acutangula</i> (Decne.) NE. Br.		Cactus
Gentianales	Apocynaceae	<i>Leptadenia pyrotechnica</i> (Forssk.) Decne.		Herb
Gentianales	Apocynaceae	<i>Pergularia tomentosa</i> L.		Shrub
Lamiales	Acanthaceae	<i>Blepharis ciliaris</i> (L.) B.L. Burtt.	NA	Herb
Lamiales	Acanthaceae	<i>Barleria acanthoides</i> Vahl.	Spiny White Barleria	Herb
Lamiales	Acanthaceae	<i>Barleria orbicularis</i> Hochst. ex T. Anderson	NA	Herb
Lamiales	Acanthaceae	<i>Ruellia patula</i> Jacq.		Herb
Lamiales	Lamiaceae	<i>Leucas jamesii</i> Bak.		
Lamiales	Lamiaceae	<i>Leucas minimifolia</i> Chiov.		Small shrub
Lamiales	Lamiaceae	<i>Orthosiphon pallidus</i> Royle ex Benth.	Pale Piccadill	
Lamiales	Verbenaceae	<i>Lippia javanica</i> (Burm.f) Spreng.		Small shrub
Malpighiales	Euphorbiaceae	<i>Chrozophora tinctoria</i> (L.) A. Juss.	Turnsole	
Malpighiales	Euphorbiaceae	<i>Jatropha horizontalis</i> M.G.Gilbert		Small shrub
Malpighiales	Euphorbiaceae	<i>Phyllanthus maderaspatensis</i> L.		Herb
Malvales	Malvaceae	<i>Abutilon fruticosum</i> Guill. & Perro	Sweet Indian Mallow	Small shrub
Malvales	Malvaceae	<i>Corchorus trilocularis</i> L.		
Malvales	Malvaceae	<i>Grewia tenax</i> (Forsk.) Fiori.		Shrub
Malvales	Malvaceae	<i>Sida alba</i> L.	Spring Sida	Perennial herb
Malvales	Malvaceae	<i>Triumfetta rhomboidea</i> Jacq.	Diamond burbark	Shrub
Poales	Poaceae	<i>Cenchrus setigerus</i> Vahl		Grass
Poales	Poaceae	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Common Crowfoot	Grass (introduced)
Poales	Poaceae	<i>Echinochloa colona</i> (L.) Link		Grass
Poales	Poaceae	<i>Eragrostis aspera</i> (Jacq.) Nees		Grass
Poales	Poaceae	<i>Panicum coloratum</i> L.		Grass
Poales	Poaceae	<i>Sporobolus airoides</i> (Torr.) Torr.	Alkali Sacaton	Grass
Poales	Poaceae	<i>Chrysopogon aucheri</i> (Boiss.) Stapf	NA	Herb
Poales	Poaceae	<i>Eragrostis</i> sp.	NA	Grass

Order	Family	Species	Name	Habit
Rosales	Rhamnaceae	<i>Ziziphus spina-christi</i> (L.) Willd.	Christ's Thorn Jujube	Tree
Rosales	Rosaceae	<i>Agrimonia</i> sp.	Agrimony	Herb
Solanales	Solanaceae	<i>Datura stramonium</i>	Jimson Weed	Herb
Solanales	Solanaceae	<i>Physalis angulata</i> L.	NA	Herb
Solanales	Solanaceae	<i>Solanum hastifolium</i> Hochst. ex Dunal		Small shrub
Solanales	Solanaceae	<i>Solanum somalense</i> Franch.		Small shrub
Vitales	Vitaceae	<i>Cissus rotundifolia</i> Vahl	Bushveld Grape	Climber
Zygophyllales	Zygophyllaceae	<i>Melocarpum robecchii</i>	NA	Herb
Zygophyllales	Zygophyllaceae	<i>Balanites aegyptiaca</i> (L.) Del.	Desert Date	Tree
Zygophyllales	Zygophyllaceae	<i>Tribulus terrestris</i> L.		Tree

5.2.3 Herpetofauna

A literature review revealed 23 species of herpetofauna with the potential to occur in the PAOI. Of these, four amphibian species were identified within the PAOI and were only observed when water was present on the site. Fifteen reptile species were identified on site. Two of the observed species (*Hyperolius viridiflavus* and *Agama rueppelli*) constitute range expansions from the current geographic range listed in the IUCN. The species observed are classified as Least Concern (LC) in the IUCN Red List (Table 5-13).

TABLE 5-13: LIST OF REPTILES AND AMPHIBIANS RECORDED WITHIN THE PAOI

Family	Species	Name	Threat
Bufonidae	<i>Sclerophrys dodsoni</i>	Dodson's Toad	LC
Ptychadenidae	<i>Ptychadena anchietae</i>	Plain Grass Frog	LC
Hyperoliidae	<i>Hyperolius viridiflavus</i>	Common Reed Frog	LC
Pyxicephalidae	<i>Tomopterna kachowskii</i>	Kachowski's Sand Frog	LC
Psammophiidae	<i>Psammophis schokari</i>	Forskål's Sand Snake	LC
Boidae	<i>Eryx colubrinus</i>	Kenyan Sand Boa	LC
Viperidae	<i>Echis pyramidum</i>	Egyptian Saw-scaled Viper	LC
Scincidae	<i>Trachylepis brevicollis</i>	Short-necked Skink	LC
Scincidae	<i>Trachylepis striata</i>	Striped Skink	LC
Agamidae	<i>Agama rueppelli</i>	Rüppell's Agama	LC
Agamidae	<i>Agama spinosa</i>	Spiny Agama	LC
Lacertidae	<i>Latastia longicaudata</i>	Common Long-tailed Lizard	LC
Lacertidae	<i>Pseuderemias mucronata</i>	Blanford's Sand Racer	LC
Gekkonidae	<i>Hemidactylus flaviviridis</i>	Yellow-bellied House Gecko	LC

Family	Species	Name	Threat
Phyllodactylidae	<i>Tarentola annularis</i>	White Spotted Gecko	LC
Sphaerodactylidae	<i>Pristurus crucifer</i>	Cross-marked Semaphore Gecko	LC
Sphaerodactylidae	<i>Pristurus flavipunctatus</i>	Middle Eastern Rock Gecko	LC
Chamaeleonidae	<i>Chamaeleo calcaricarens</i>	Spurless Basilisk Chameleon	LC
Varanidae	<i>Varanus albigularis</i>	White-throated Monitor	LC

5.2.4 Mammals

Surveys were conducted using visual observations and indirect sign surveys (e.g., tracks, scats, burrows). Eight transects, ranging from 2–4 km in length, were established across different habitats and surveyed during the day. Camera traps and live traps were not used due to safety concerns and the risk of vandalism. Instead, the focus was on observing mammals directly and recording their presence, abundance, and behavior. This approach was particularly effective for identifying larger mammals and those with conservation priority.

During surveys, 18 species were recorded, including two species of conservation priority: the Soemmerring's Gazelle (*Nanger soemmerringii*) and the Dorcas Gazelle (*Gazella dorcas*), both classified as Vulnerable (VU). The Soemmerring's Gazelle was particularly abundant in grassland and shrubland habitats, while the Dorcas Gazelle was more commonly observed in open habitats. The presence of these species underscores the importance of the project area as a habitat for threatened ungulates.

Most of the species observed are classified as LC by the IUCN Red List, three are classified as Near Threatened (NT) and two are classified as VU.

TABLE 5-14: LIST OF MAMMALS RECORDED WITHIN THE PAOI

Family	Species	Name	Threat	Observations	Abundance
Ctenodactylidae	<i>Pectinator spekei</i> ²	Speke's Pectinator	LC	1	2
Sciuridae	<i>Xerus rutilus</i>	Unstriped Ground Squirrel	LC	2 4	2 6
Hystricidae	<i>Hystrix cristata</i> ¹	Crested Porcupine	LC	1	1
Leporidae	<i>Lepus habessinicus</i>	Abyssinian Hare	LC	34 67	37 84
Suidae	<i>Phacochoerus africanus</i>	Common Warthog	LC	2 1	4 2
Bovidae	<i>Madoqua saltiana</i>	Salt's Dik-dik	LC	16 25	22 64
Bovidae	<i>Litocranius walleri</i>	Gerenuk	NT	3 11	16 33
Bovidae	<i>Nanger soemmerringii</i>	Soemmerring's Gazelle	VU	28 57	93 224
Bovidae	<i>Gazella dorcas</i>	Dorcas Gazelle	VU	18 22	42 46
Bovidae	<i>Tragelaphus imberbis</i> ¹	Lesser Kudu	NT	1	1
Cercopithecidae	<i>Papio hamadryas</i>	Hamadryas Baboon	LC	2 4	94 41
Herpestidae	<i>Herpestes sanguineus</i>	Common Slender Mongoose	LC	5	5

Family	Species	Name	Threat	Observations	Abundance
Canidae	<i>Otocyon megalotis</i> ¹	Bat-eared Fox	LC	5	8
Canidae	<i>Lupulella mesomelas</i>	Black-backed Jackal	LC	7 7	9 11
Canidae	<i>Canis lupaster</i> ²	African Wolf	LC	1	1
Hyaenidae	<i>Crocuta crocuta</i> ²	Spotted Hyaena	LC	1	1
Hyaenidae	<i>Hyaena hyaena</i> ¹	Striped Hyaena	NT	1	1
Felidae	<i>Caracal caracal</i> ¹	Caracal	LC	2	2

¹Observed during bird surveys

²Casual observations

Abyssinian hares and Soemmerring's gazelles were the most abundant species in the PAOI, followed by Dorcas gazelles and Salt's dik-dik. The PAOI is an important area for artiodactyls, particularly Soemmerring's gazelle and Dorcas gazelle, both classified as VU by the IUCN Red List. These two species are more abundant in grassland and shrubland habitats, with Soemmerring's gazelles preferring more closed habitats and Dorcas gazelles preferring more open habitats. Large groups of Hamadryas baboons were occasionally observed at the PAOI. Carnivores were also rare at the PAOI, with bat-eared foxes and black-backed jackals being the most common.

5.2.5 Bats

Bat diversity and activity were assessed using a combination of walking transect surveys and static acoustic monitoring. Eight transects, each 2 km long, were established to cover key habitats and potential bat activity hotspots (e.g., near water sources, linear infrastructure like railways). Transect surveys were conducted 2–2.5 hours after sunset, using AnaBat II/IV detectors to record echolocation calls, complemented by visual observations with torches to detect bats in flight. This dual approach allowed for both species identification and behavioral observations.

For static monitoring, five Song Meter SM4BAT FS ultrasonic recorders were deployed on meteorological masts at two heights (ground level: 8–10 m; elevated: 74 m). Data collection spanned April to October 2025, with recordings triggered from one hour before sunset to one hour after sunrise. Due to vandalism, data from only three detectors (one elevated, two ground-level) were usable. Therefore, bat activity at rotor-swept height was under-sampled, and elevated bat monitoring will be repeated during the construction phase to address this data gap and complete the bat baseline study. Community engagement and daytime roost searches supplemented field data, focusing on potential roosting sites (e.g., abandoned buildings, trees).

A total of 13 bat species were detected during surveys (Table 5-15). Ten species were detected during walking transect surveys, and three through analysis of the static bat detectors. All species detected are currently classified by the IUCN as LC.

Activity peaked between May–September, with 84% of detections occurring during this period. Dominant species included *Mops pumilus* (Little Free-tailed Bat, 39.6% of identified calls), highly active near turbine locations, and *Tadarida aegyptiaca* (Egyptian Free-tailed Bat, 37.4% of identified calls), widely distributed across masts. There was higher activity near linear infrastructure (e.g., railways) and modified habitats (e.g., Aysha Town). The Garba-Alle stream and shrublands near Degago road were hotspots in July–August. Ground-level detectors recorded 87% of calls, while elevated detectors (74 m) captured only 13%, suggesting low collision risk at turbine height. While no threatened species were detected, the high activity

of free-tailed bats (*Mops* and *Tadarida* spp.) near turbines flags a need for operational mitigation (e.g., cut-in speed curtailment >5 m/s).

TABLE 5-15: LIST OF BATS RECORDED WITHIN THE PAOI

Family	Species	Name	Red List	Status
Vespertilionidae	<i>Eptesicus hottentotus</i>	Long-tailed House Bat	LC	Needs confirmation
Vespertilionidae	<i>Laephotis capensis</i>	Cape Serotine	LC	Present
Vespertilionidae	<i>Neoromicia somalica</i>	Somali Serotine	LC	One record
Vespertilionidae	<i>Pipistrellus hesperidus</i>	Dusky Pipistrelle	LC	Present
Vespertilionidae	<i>Scotophilus dinganii</i>	African Yellow Bat	LC	Present
Miniopteridae	<i>Miniopterus natalensis</i>	Natal Long-fingered Bat	LC	Few records
Molossidae	<i>Mops pumilus</i>	Little Free-tailed Bat	LC	Common
Molossidae	<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat	LC	Needs confirmation
Rhinolophidae	<i>Rhinolophus fumigatus</i>	Rüppell's Horseshoe Bat	LC	One record
Rhinolophidae	<i>Rhinolophus hildebrandtii</i>	Hildebrandt's Horseshoe Bat	LC	Few records
Rhinopomatidae	<i>Rhinopoma microphyllum</i>	Greater Mouse-tailed Bat	LC	Few records
Hipposideridae	<i>Hipposideros megalotis</i>	Ethiopian Large-eared Roundleaf Bat	LC	Few records
Emballonuridae	<i>Tapozous perforatus</i>	Egyptian Tomb Bat	LC	Few records

Bat activity was significantly greater between May-September 2025, with almost no observations in the other months. Bat density was greater and more consistent near modified habitats in August with linear infrastructures, namely the new railway and the old railway. Peaks in abundance were found in the Garba-Alle Stream in July, the town of Aysha and the shrubland near Degago Road in August, and the power station in September. No bat roosts were recorded.

5.2.5.1 Results from Static Bat Detectors

Overall, static bat detectors recorded 2190 sounds emitted by bats ranging between April and September. To increase analysis efficiency, 10% of these recordings were subsampled, originating 222 records for identification (Table 5-16).

The number of sounds recorded at height (27 recordings from ETH 002) were lower than those recorded on ground (83 recordings from ETH 002 and 112 recordings from ETH 003). It is clear the PAOI is dominated by two bat species, the little free-tailed bat and the Egyptian free-tailed bat, with other species being occasional visitors.

TABLE 5-16: BAT DETECTOR RESULTS

Species	Recordings	Relative Proportion (%)	Notes
<i>Mops pumilus</i>	82 (ground) + 6 (height)	39.6	Most frequently recorded; highly active at Mast 2 and Mast 3 sites
<i>Tadarida aegyptiaca</i>	71 (ground) + 12 (height)	37.4	Second most dominant; widely distributed across masts
<i>Eptesicus hottenotus</i>	16 (ground) + 5 (height)	9.5	Moderately represented; mostly detected in May and August
<i>Pipistrellus hesperidus</i>	15 (ground)	6.8	All records on Mast 3 in July
<i>Laephotis capensis</i>	1 (ground) + 1 (height)	0.9	Rare occurrence (detected in July)
<i>Neoromicia somalicus</i>	1 (ground)	0.5	Single detection in June
<i>Rhinolophus fumigatus</i>	1 (ground)	0.5	Single detection, suggesting low site activity
Noise / unidentified calls	11	5.0	Low proportion of unidentified or noise signals.

5.2.6 Birds

5.2.6.1 Species Diversity

According to the VP surveys undertaken between October 2024 and September 2025, a total of 18 104 individuals and a total of 140 bird species were recorded, refer to the list in the Biodiversity Survey an Impact Assessment. A total of 65 species had three or less observations during the one-year bird monitoring assessment and were classified as rare visitors to the PAOI. Among the remaining species, 55 (73,3%) are regular or cyclical species resident in the area, 15 (20,0%) are non-breeding migrants, four (5.3%) species are passage migrants, and one species (the scissor-tailed kite) is a breeding migrant (1.3%). Refer to Figure 5-24 for the rate of occurrence for the bird observations in the PAOI.

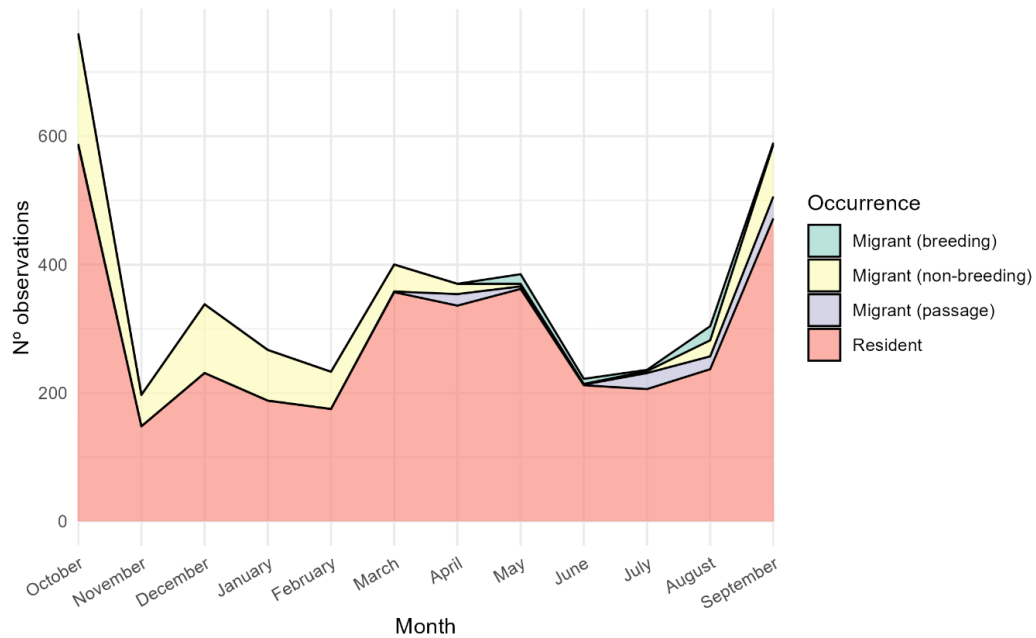


FIGURE 5-24: NUMBER OF BIRD OBSERVATIONS ACCORDING TO RATE OF OCCURRENCE IN THE PAOI

5.2.6.2 Secure Birds

Secure birds (i.e. bird species on which the Project will have a minor impact) consist of 90 bird species. Of these, 40 (44,4%) are rare species. The most abundant bird species was the chestnut-bellied sandgrouse (Figure 5-25). The most abundant non-breeding migrant species was the northern wheatear (299 individuals), followed by the isabelline wheatear (249 individuals). As for passage migrants, the white-throated bee-eater (448 individuals), the European bee-eater (266 individuals) and the common swift (217 individuals) were the most abundant species, with flocks consisting of dozens of individuals frequently crossing the PAOI during migration.

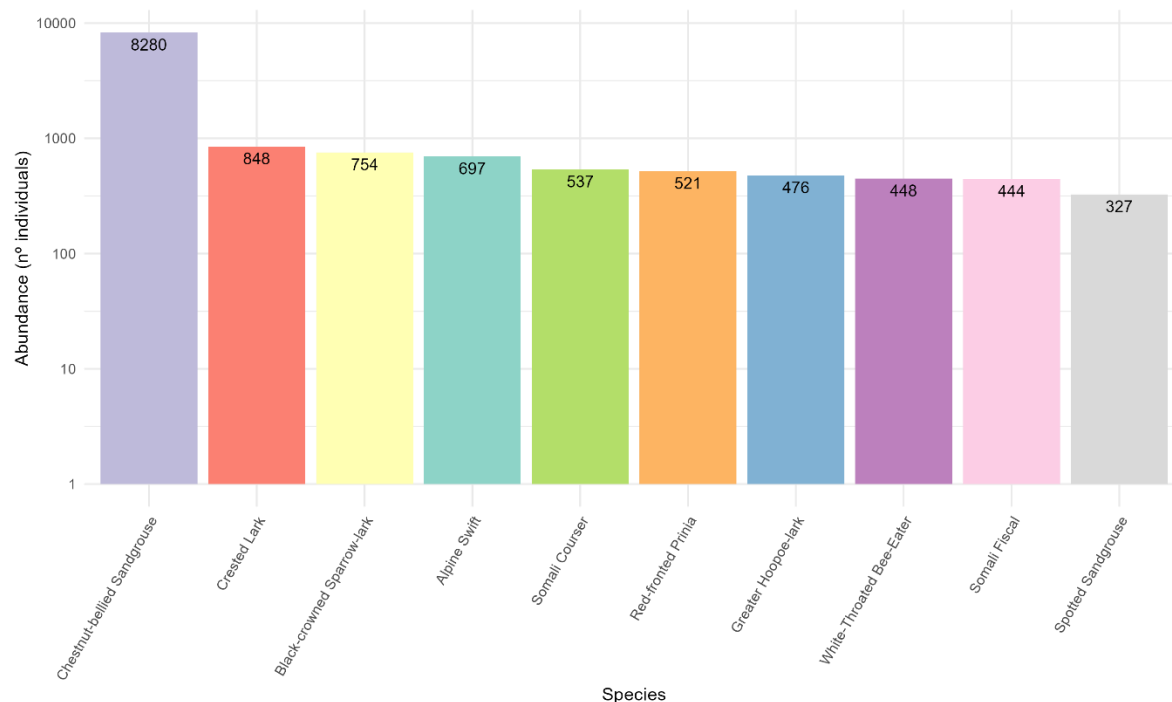


FIGURE 5-25: TOTAL NUMBER OF INDIVIDUALS COUNTED IN THE PAOI FOR THE TOP TEN MOST ABUNDANT BIRD SPECIES

5.2.6.3 Soaring Birds

29 species were classified as *soaring birds*, of which five were *target species*, and the remaining were *secondary species* (Table 5-17). The majority are classified as LC (82.8%). One species is CR, two are EN, and two are VU. A literature review revealed the potential occurrence of 35 other species of soaring birds that were not observed during bird surveys.

TABLE 5-17: SOARING BIRDS RECORDED WITHIN THE PAOI

Species	Name	Threat	Migration	No. Records
<i>Gyps africanus</i>	White-backed Vulture	CR	Resident	17
<i>Neophron percnopterus</i>	Egyptian Vulture	EN	Resident	10
<i>Aquila rapax</i>	Tawny Eagle	VU	Resident	2
<i>Terathopius ecaudatus</i>	Bateleur	EN	Resident	1
<i>Chelictinia riocourii</i>	Scissor-tailed Kite	VU	Migrant (breeding)	81
<i>Aquila spilogaster</i>	African Hawk-eagle	LC	Resident	2
<i>Circaetus pectoralis</i>	Black-chested Snake-eagle	LC	Resident	3
<i>Circaetus gallicus</i>	Short-toed Snake-eagle	LC	Migrant (non-breeding)	5
<i>Hieraaetus wahlbergi</i>	Wahlberg's Eagle	LC	Migrant (non-breeding)	2
<i>Circus pygargus</i>	Montagu's Harrier	LC	Migrant (non-breeding)	1
<i>Circus macrourus</i>	Pallid Harrier	NT	Migrant (non-breeding)	1

Species	Name	Threat	Migration	No. Records
<i>Milvus migrans</i>	Black Kite	LC	Migrant (non-breeding)	3
<i>Accipiter tachiro</i>	African Goshawk	LC	Resident	1
<i>Micronisus gabar</i>	Gabar Goshawk	LC	Resident	1
<i>Falco biarmicus</i>	Lanner Falcon	LC	Resident	8
<i>Falco tinnunculus</i>	Common Kestrel	LC	Resident	40
<i>Falco naumanni</i>	Lesser Kestrel	LC	Migrant (non-breeding)	2
<i>Falco subbuteo</i>	Eurasian Hobby	LC	Migrant (non-breeding)	3
<i>Neotis heuglinii</i>	Heuglin's Bustard	LC	Resident	3
<i>Ardeotis arabs</i>	Arabian Bustard	NT	Resident	5
<i>Lophotis gindiana</i>	Buff-crested Bustard	LC	Resident	2
<i>Ardea alba</i>	Great White Egret	LC	Resident	4
<i>Ardea cinerea</i>	Grey Heron	LC	Resident	1
<i>Ardea goliath</i>	Goliath Heron	LC	Resident	1
<i>Ardea melanocephala</i>	Black-headed Heron	LC	Resident	2
<i>Ardeola ralloides</i>	Squacco Heron	LC	Resident	2
<i>Bubulcus ibis</i>	Cattle Egret	LC	Resident	116
<i>Egretta garzetta</i>	Little Egret	LC	Migrant (non-breeding)	2
<i>Scopus umbretta</i>	Hamerkop	LC	Resident	4

The cattle egret was the most abundant species because of large flocks observed crossing the PAOI in August 2025 (Figure 5-26). Among the species with a more regular presence on the PAOI, the common kestrel and the scissor-tailed kite were the most abundant species. The scissor-tailed kite is a particularly highlighted result due to its conservation status as a VU species currently in decline. Vultures were also observed during surveys, but observations were limited to autumn and winter.

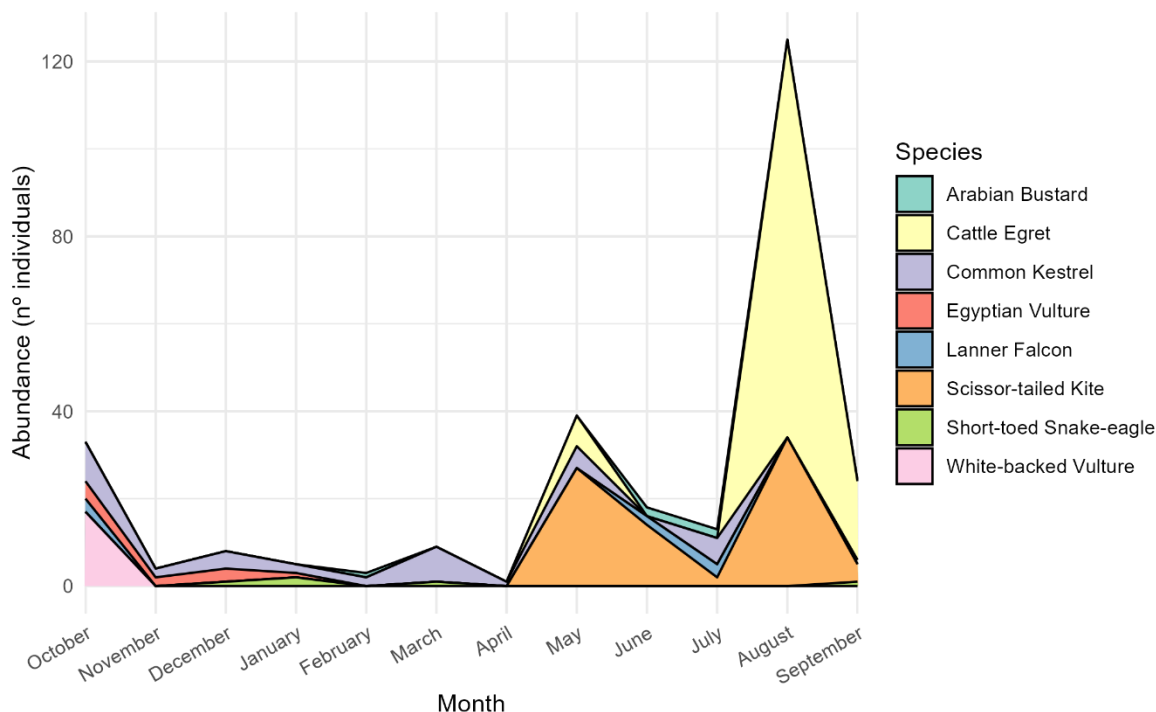


FIGURE 5-26: NUMBER OF INDIVIDUALS OF SOARING BIRDS OBSERVED IN EACH MONTH DURING VP SURVEYS

Collision Risk Modelling (CRM) was conducted for soaring birds and flocks, using an adapted Band model that combined elements from Band (Band et al. 2007; Band 2012) and Masden (2015) versions. Key parameters included flight activity within the turbine risk height zone (15–235 m), avoidance rates (0.8 for soaring species, 0.95 for *Falco tinnunculus*, 0.98 for others), and turbine specifications (Vestas V162: 130 m hub height, 105 m rotor radius).

The estimation of the number of collisions for each species in a scenario that expresses a dropout rate (avoidance) with associated uncertainty and variability (e.g. rate of 0.98 ± 0.1) is described in Table A.1.

TABLE A.1. ESTIMATED NUMBER OF COLLISIONS FOR EACH TARGET SPECIES.

Species	Number of collisions/year (mean±SD; IC95%)	Number of collisions during lifetime of the project (20 years; mean)	Time until first collision (mean; in years)
<i>Circaetus gallicus</i>	1,23E-06 ± 7,15E-07	0	0
<i>Chelictinia riocourii</i>	6,59E-06 ± 2,97E-06	0,0002	100000 years
<i>Falco subbuteo</i>	1,70E-07 ± 1,21E-07	0	0
<i>Falco tinnunculus</i>	2,49E-06 ± 7,30E-07	0	0
<i>Gyps africanus</i>	5,46E-08 ± 1,30E-08	0	0
<i>Neophron percnopterus</i>	1,59E-06 ± 3,92E-07	0	0
<i>Pterocles exustus</i>	0,003 ± 0,001	0,06	333.3 years
<i>Pterocles senegallus</i>	3,43E-05 ± 1,73E-05	0,0006	33333.3 years

TABLE A.2. EXTRAPOLATION OF THE ESTIMATION OF THE NUMBER OF COLLISIONS FOR EACH TARGET SPECIES, CONSIDERING NEAREST PV COLLISION ESTIMATES FOR ADJACENT TURBINES.

Species	Number of collisions/year (mean±SD; IC95%)	Number of collisions during lifetime of the project (20 years; mean)	Time until first collision (mean; in years)
<i>Circaetus gallicus</i>	1,51E-06	0,00	664413
<i>Chelictinia riocourii</i>	8,66E-06	0,00	115511
<i>Falco subbuteo</i>	3,65E-07	0,00	2738759
<i>Falco tinnunculus</i>	3,66E-06	0,00	273118
<i>Gyps africanus</i>	7,45E-08	0,00	13428212
<i>Neophron percnopterus</i>	2,22E-06	0,00	449727
<i>Pterocles exustus</i>	0,004	0,08	245
<i>Pterocles senegallus</i>	3,51E-05	0,00	28497

TABLE A.3. EXTRAPOLATION OF THE ESTIMATED NUMBER OF COLLISIONS FOR EACH TARGET SPECIES, CONSIDERING ESTIMATES OF PV COLLISION WITH HIGHER RISK FOR ADJACENT TURBINES (MORE CAUTIOUS SCENARIO).

Species	Number of collisions/year (mean±SD; IC95%)	Number of collisions during lifetime of the project (20 years; mean)	Time until first collision (mean; in years)
<i>Circaetus gallicus</i>	2,54E-06	5,08E-05	393357
<i>Chelictinia riocourii</i>	1,73E-05	3,46E-04	57722
<i>Falco subbuteo</i>	5,57E-07	1,11E-05	1794996
<i>Falco tinnunculus</i>	4,14E-06	8,29E-05	241379
<i>Gyps africanus</i>	7,81E-08	1,56E-06	12808372
<i>Neophron percnopterus</i>	2,96E-06	5,93E-05	337429
<i>Pterocles exustus</i>	0,006	0,13	153
<i>Pterocles senegallus</i>	8,01E-05	1,60E-03	12491

5.2.6.4 Nest Survey Results

Ten nests were detected during nest surveys of which four were old nests and the remaining had breeding activity. Three of those nests contained adults of white-throated bee-eaters incubating eggs, suggesting the PAOI is an important breeding site for the species. During the VP surveys another nineteen nests were discovered. Three of these are confirmed nests of scissor-tailed kites, a migrant species classified as

Vulnerable by the IUCN, plus three probable nests of the same species (surveyor confirmed kites perched or flying around those nests). These observations confirm the PAOI is an important spring nesting area for scissor-tailed kites (Figure 5-27).

TABLE 5-18: EVIDENCE OF NESTING AND BREEDING ACTIVITIES DURING NEST SURVEYS

Species	Nest evidence	Location
White-throated Bee-Eater (<i>Merops albicollis</i>)	Three active nests guarded by adults	West of the PAOI, south of Lasarat
Little Bee-eater (<i>Merops pusillus</i>)	Incubating pair of adults	East of the PAOI, in rocky outcrop habitat
Scissor-tailed Kite (<i>Chelictinia riocourii</i>)	Three nests confirmed, another three likely (adults found nearby)	Near VPs 04, 05 and 09
Brown Snake-eagle (<i>Circaetus cinereus</i>)	Adult perching on electric pole near the nest, no evidence of breeding	Near VP04
Lesser Masked Weaver (<i>Ploceus intermedius</i>)	One nestling found	West of the PAOI, northeast of Lasarat
Rüppell's Weaver (<i>Ploceus galbula</i>)	One nest newly completed (1), one old nest (2)	(1) Near riverine area, east of the PAOI, (2) near the little bee-eater's nest
Ring-necked Dove (<i>Streptopelia capicola</i>)	One nest with incubating adults (1) and one old nest (2)	(1) Near nest of lesser masked weaver, (2) near VP11A
Somali Crow (<i>Corvus edithae</i>)	Adult with two nestlings	Near the road, near the Aysha II Project substation
Yellow-breasted Barbet (<i>Trachyphonus margaritatus</i>)	Nest with chicks	Near VP10
Somali Fiscal (<i>Lanius somalicus</i>)	Two old nests	Near VP04 and VP07

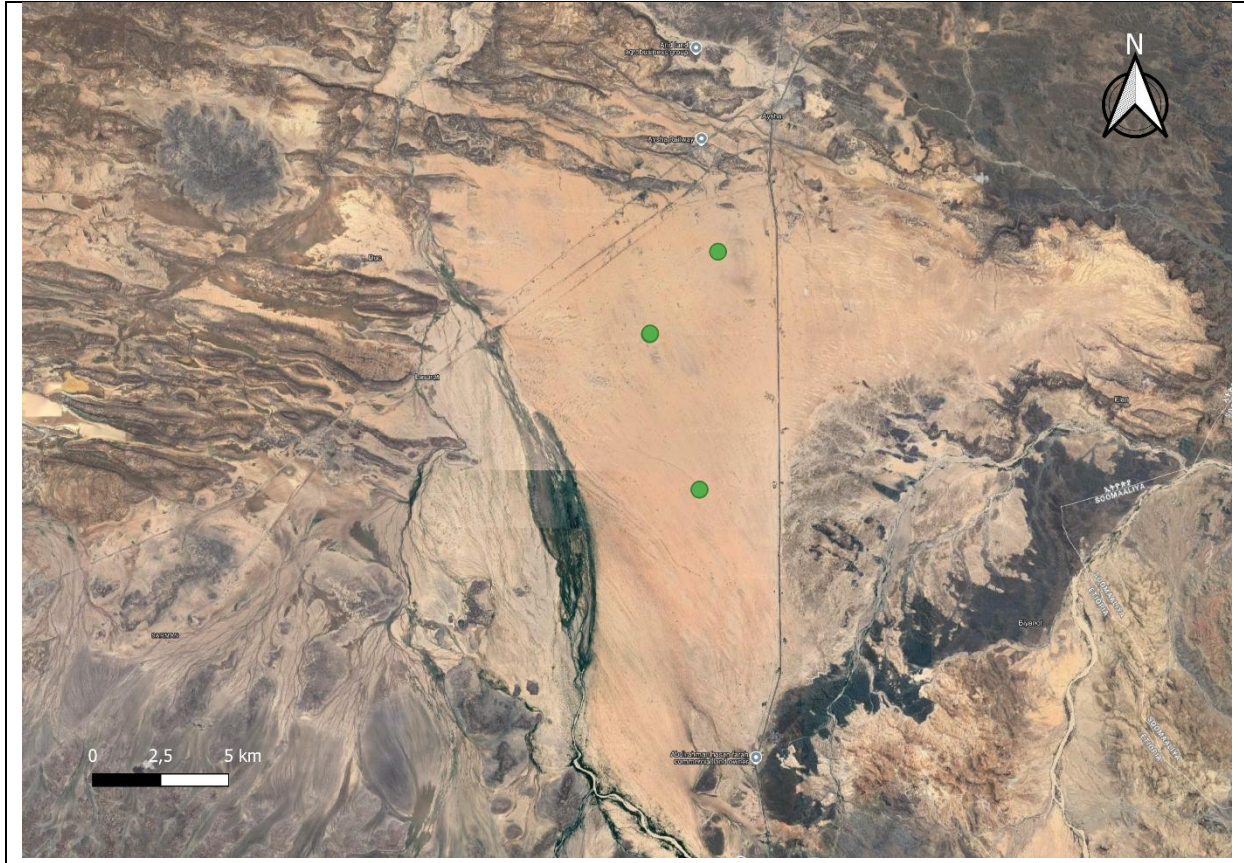


FIGURE 5-27: SCISSOR-TAILED KITE NEST LOCATIONS CONFIRMED IN MAY 2025 NEAR AYSHA

5.2.7 Critical Habitat Assessment

5.2.7.1 Screening Exercise

The first stage of the Critical Habitat Assessment is to undertake a screening exercise where the species of conservation concern that have been recorded within the PAOI or those considered to be potentially present are rapidly assessed against the thresholds for determination of critical habitat. Critical Habitat Assessment screening has been undertaken for all species considered present or potentially present within the PAOI that are of global conservation concern. Other than a Red List of Endemic Trees & Shrubs of Ethiopia and Eritrea (Vivero *et al.* 2005), there are no national or regional references listing the conservation status of Ethiopian species (i.e. a national or regional Red Book). Therefore, the Critical Habitat Assessment was based on ecosystems and species classified by the IUCN with a conservation status of CR, EN, or VU. Species with a global conservation status of Near Threatened or Least Concern have been excluded from the Critical Habitat Assessment screening.

The following species have been excluded from the Critical Habitat Assessment (Table 5-19). Despite being threatened, they were observed at the PAOI rarely (< 5 observations).

TABLE 5-19: SPECIES EXCLUDED FROM THE CRITICAL HABITAT ASSESSMENT AFTER THE INITIAL SCREENING

Order	Family	Species	Name	Red List	Reason for Exclusion
Accipitriformes	Accipitridae	<i>Necrosyrtes monachus</i>	Hooded Vulture	CR	Not observed
Accipitriformes	Accipitridae	<i>Gyps rueppelli</i>	Rueppell's Vulture	CR	Not observed
Accipitriformes	Accipitridae	<i>Trigonoceps occipitalis</i>	White-headed Vulture	CR	Not observed
Accipitriformes	Accipitridae	<i>Torgos tracheliotos</i>	Lappet-faced Vulture	EN	Not observed
Accipitriformes	Accipitridae	<i>Aquila rapax</i>	Tawny Eagle	VU	One individual observed in October 2024
Accipitriformes	Accipitridae	<i>Aquila nipalensis</i>	Steppe Eagle	EN	Not observed
Accipitriformes	Accipitridae	<i>Aquila heliaca</i>	Eastern Imperial Eagle	VU	Not observed
Accipitriformes	Accipitridae	<i>Terathopius ecaudatus</i>	Bateleur	EN	A single observation in October 2024
Accipitriformes	Sagittaridae	<i>Sagittarius serpentarius</i>	Secretarybird	EN	Not observed
Falconiformes	Falconidae	<i>Falco cherrug</i>	Saker Falcon	EN	Not observed
Pelecaniformes	Threskiornithidae	<i>Geronticus eremita</i>	Northern Bald Ibis	EN	Not observed
Passeriformes	Muscicapidae	<i>Oenanthe dubia</i>	Sombre Rockchat	DD	Two distinct observations in August 2025
Carnivora	Felidae	<i>Acinonyx jubatus</i>	Cheetah	VU	Observed far from the project site
Artiodactyla	Bovidae	<i>Dorcatragus megalotis</i>	Beira	VU	Observed far from the project site

Species for which the screening exercise has been completed as well as the results of the screening against Criteria 1, 2 and 3 are described below. For each species, results of the biodiversity baseline assessment are shown against the relevant criteria that trigger Critical Habitat.

5.2.7.2 Candidate Species to Trigger Critical Habitat

Seven species have been recorded with a threatened conservation status. Of these, two species, the tawny eagle (*Aquila rapax*, VU) and the bateleur (*Terathopius ecaudatus*, EN) had a single observation during the biodiversity surveys. Therefore, they were excluded from further assessment.

However, the mitigation hierarchy must still be followed to ensure no net loss of these species caused by Project impacts.

5.2.7.2.1 Dorcas Gazelle (*Gazella dorcas*)

For the purpose of applying IFC PS6 Critical Habitat thresholds, the Dorcas gazelle was assessed within the Terrestrial Mammal EAAA, defined as a 3 km buffer around the "Project Site" (Figure 5-22). This EAAA reflects

the spatial extent covered by mammal transect surveys and is considered ecologically appropriate for the local gazelle populations, given their relatively restricted home ranges and movement patterns. In line with IFC PS6 guidance, the same EAAA was used for the two gazelle species, as they share similar habitat use and occur within the same ecological envelope around the Project. This approach ensures proportionality and avoids generating overly fragmented or artificial EAAAs for species that effectively occupy common habitat at this scale.

The Dorcas gazelle (*Gazella dorcas*) (Photo 2) is a medium-sized antelope native to the arid and semi-arid regions of North Africa and the Middle East. A total of 42 individuals were observed during the mammal transect surveys and 46 were observed during the VP surveys. This suggests the EAAA is occupied by fewer than 50 individuals of this species yearly. If the species' conservation status were to decline to EN due to Project impacts (criteria 1b of IFC's PS6), the EAAA would still need to support a population of at least 175 individuals to trigger Critical Habitat. This number is substantially higher than the number of individuals observed during biodiversity studies. Therefore, it is unlikely the Dorcas gazelle will meet the criteria for Critical Habitat designation within the PAOI (Table 5-20).



PHOTO 2: DORCAS GAZELLE (PHOTO BY CHALA ADUGNA)

TABLE 5-20: CRITICAL HABITAT ASSESSMENT FOR THE DORCAS GAZELLE (*GAZELLA DORCAS*)

Critical Habitat Criteria	Threshold	Assessment	Critical Habitat
Criteria 1	175 individuals present in the EAAA	Total number of individuals observed during biodiversity studies was 46 individuals	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	Not applicable	Not applicable	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

Based on the results from the biodiversity surveys, the EAAA holds fewer than 50 individuals of this species in a typical year. Under IFC PS6, the threshold to trigger Critical Habitat for VU species is ≥ 175 individuals within the EAAA (Criterion 1a). Because the number of individuals recorded is far below this threshold, the species does not meet the conditions for triggering Critical Habitat. Criterion 1b, which relates to the hypothetical change of IUCN status from Vulnerable to Endangered, is not applicable in this case because the EAAA does not support the concentrations required to reach EN-equivalent thresholds. Therefore, the Dorcas gazelle does not trigger Critical Habitat in the EAAA.

5.2.7.2.2 Soemmerring's Gazelle (*Nanger soemmerringii*)

The Soemmerring's gazelle was evaluated within the same Terrestrial Mammal EAAA applied to the Dorcas gazelle, corresponding to a 3 km buffer surrounding the "Project Site" (Figure 5-22). This EAAA represents the ecologically relevant area where both species were regularly observed during baseline surveys and where project-related impacts are most likely to occur. As recognized in IFC PS6 training materials, overlapping EAAAs may be used for biodiversity values that share common habitat or display similar ecological requirements. Because the two gazelle species use the same desert with a grassland/shrubland matrix and show broadly comparable spatial behaviour, a shared EAAA is considered appropriate and avoids unnecessary duplication of spatial units.

The Soemmerring's gazelle (*Nanger soemmerringii*) (Photo 3) is a robust antelope species native to the Horn of Africa, with significant populations in Ethiopia, Somalia, and Djibouti. The species' global population is estimated at 6,000 - 7,500 individuals (IUCN SSC Antelope Specialist Group 2016 Apr 20). Survey data shows the EAAA supports roughly 93–224 individuals of this species, including a herd of 48 individuals observed on one occasion. The IFC PS6 threshold to trigger Critical Habitat for Endangered or Critically Endangered species is ≥ 30 individuals within the EAAA (Criterion 1a). Although this threshold is exceeded, Criterion 1 requires not only the numerical threshold but also that population declines within the EAAA would reasonably be expected to change the species' global Red List status to Endangered (Criterion 1b). Available global data does not indicate the EAAA represents a proportion of the population significant enough for such a status change – it would require the number of globally mature individuals to become less than 2,500. As a result, and following IFC guidance that Critical Habitat designation must rely strictly on species status and threshold conditions, the Soemmerring's gazelle does not trigger Critical Habitat in the EAAA (Table 5-21).



PHOTO 3: SOEMMERRING'S GAZELLE (PHOTO BY CHALA ADUGNA)

TABLE 5-21: CRITICAL HABITAT ASSESSMENT FOR THE SOEMMERRING'S GAZELLE (NANGER SOEMMERRINGII)

Critical Habitat Criteria	Threshold	Assessment	Critical Habitat
Criteria 1	20 individuals present in the EAAA	Total number of individuals was larger than the threshold, with one observation of a herd of 48 individuals. However, local population declines are not expected to reduce conservation status from VU to EN.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	Not applicable	Not applicable	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

5.2.7.2.3 White-backed Vulture (*Gyps africanus*)

The white-backed vulture (Photo 4) is an Old World raptor that, like other vultures, feeds on animal carcasses. Wide-ranging raptors and vultures were assessed using a Raptor & Vulture EAAA, defined as a 15 km radius around the "Project Site" (Figure 5-22). This EAAA reflects the larger spatial scale at which these species forage, soar and disperse, and incorporates the area surveyed for nests and flight activity. Because several screened-in raptor species utilize the same open desert landscape and exhibit overlapping movement

ecology, a common EAAA was adopted for this group, consistent with IFC PS6 GN6, which allows EAAAs to overlap entirely where values occupy shared habitat. The 15 km extent ensures that CriticalHabitat thresholds are tested at the correct ecological scale, while maintaining proportionality in the assessment effort.



PHOTO 4: WHITE-BACKED VULTURE (SOURCE: SHARP PHOTOGRAPHY)

Although not a significant threat compared with the other listed threats, collisions with power lines and wind turbines are a mortality risk factor for vulture species, including the white-backed vulture (Shema, 2019). Therefore, wind energy developments and associated grid infrastructure need to be planned and operated carefully to avoid adding unnecessary mortality to already declining populations.

The latest population assessment made by the IUCN dates to 1992 and estimated a global population of 270,000 individuals in 1992. The most recent data on this species' population indicates it has declined extremely rapidly, with a median estimate of 4.1% decline per year (range 2.5-5.4%), equating to a decline of 81% (range: 63-89%) over three generations (39.7 years) (BirdLife International 2021 Jul 6). This places the current global population estimate at around 70,700 individuals according to these estimates.

Criterion 1a from the IFC states that "areas that support globally important concentrations of an IUCN Red-listed EN or CR species ($\geq 0.5\%$ of the global population AND ≥ 5 reproductive units of a CR or EN species)" can trigger CriticalHabitat (IFC 2019). This means the EAAA should be estimated to contain 353 individuals of this species to trigger Critical Habitat criteria.

This species was observed 10 times in the EAAA, all of them in the month of October. Vultures were mainly seen in the VPs south of the train rail. The maximum number of individuals observed in a day was seven (October 8, 2024), while on other days two individuals were observed at most. All individuals were observed flying, which suggests the project site is not being used as a food source by the species. Moreover, no evidence of breeding or nesting sites were found in the EAAA.

Considering that each observation consisted of a few individuals, and these were only seen in October, this suggests the observed vultures consisted of a small group of individuals that did not reside in the EAAA. This species was not recorded in the previous bird surveys in 2021, which reinforces the previous hypothesis. Based on this data, it is unlikely the EAAA is occupied by at least 353 individuals with a regular presence, and thus the white-backed vulture does not trigger Critical Habitat thresholds (Table 5-22).

TABLE 5-22: CRITICAL HABITAT ASSESSMENT FOR THE WHITE-BACKED VULTURE (GYPS AFRICANUS)

Critical Habitat Criteria	Threshold	Assessment	Critical Habitat
Criteria 1	363 individuals present in the EAAA	Only 17 individuals were observed in the EAAA, far from the established threshold.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	707 individuals present in the EAAA on a cyclical basis	17 individuals were observed in October in the EAAA, far from the established threshold.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

5.2.7.2.4 Egyptian Vulture (*Neophron percnopterus*)

The Egyptian vulture (Photo 5) is a species with a broad geographic distribution, spanning Europe, Asia, and Africa. The Egyptian vulture was also assessed using the Raptor and Vulture EAAA, corresponding to a 15 km buffer from the “Project Site” (Figure 5-22). This EAAA encompasses the expected daily foraging ranges of the species and includes the area where both flight activity and potential congregation sites were evaluated. In line with international good practice for Critical Habitat Assessments in large arid landscapes, vulture species with overlapping ecological niches and similar spatial use were grouped within the same common EAAA. This avoids the creation of multiple artificial EAAs with identical boundaries while ensuring that all threshold analyses are carried out at the appropriate ecological scale.

The latest IUCN assessment places the global population at 18,600-54,000 individuals. For the species to trigger Critical Habitat in the EAAA, it must contain at least 93 individuals and five breeding pairs – criteria 1a for Critical Habitat by the IFC. The total number of individuals observed was nine individuals in autumn/winter. No evidence of breeding or presence of nesting sites were observed in the EAAA.

Contrary to the white-backed vulture, the Egyptian vulture has been recorded occasionally but regularly at the project site. Most of the observations were made in the morning, in the central area of the project (VPs 04, 05 and 06). Only one or two individuals were observed at a time. On one occasion, two individuals were observed eating carrion, suggesting the project site might be a food source for the species.

A study by Buechley and Şekercioğlu (2019), which tracked Egyptian vultures in the Middle East and East Africa, showed there is an area southwest of the project site where multiple individuals congregate, which signals a core activity area for the species. It is thus likely the individuals observed at the project site were visitors from this core area. This would explain the occasional but regular observations at the site.



PHOTO 5: EGYPTIAN VULTURE (PHOTO BY HAILU TILAHUN)

In conclusion, the EAAA is not occupied regularly by Egyptian vultures, and the total number of observations during biodiversity studies was not sufficient to trigger Critical Habitat. The evaluation of collision risk and other potential project impacts on the species is presented in the biodiversity impact assessment and did not form part of the Critical Habitat determination (Table 5-23).

TABLE 5-23: CRITICAL HABITAT ASSESSMENT FOR THE EGYPTIAN VULTURE (*NEOPHRON PERCNOPTERUS*)

Critical Habitat Criteria	Threshold	Assessment	Critical Habitat
Criteria 1	93 individuals present in the EAAA	Only 10 individuals were observed in the EAAA, far from the established threshold.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	186 individuals present in the EAAA on a cyclical basis	A total of 10 individuals were observed in autumn and winter. No signs of breeding were observed.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

5.2.7.2.5 Scissor-tailed Kite (*Chelictinia riocourii*)

The scissor-tailed kite (Photo 6) is found from southern Mauritania, Senegal and The Gambia in the west to South and North East Uganda and Kenya in the east. The Scissor-tailed kite was evaluated within the same Raptor and Vulture EAAA used for other wide-ranging aerial species, defined as a 15 km radius around the “Project Site” (Figure 5-22). Although the species shows a somewhat different seasonal pattern compared to vultures, its flight behaviour, breeding territory spacing, and foraging range occur within the same general landscape matrix. IFC PS6 GN6 recognizes that multiple biodiversity values may share a single EAAA where their distributions and ecological requirements overlap. For this reason, adopting a group EAAA for wide-ranging raptors is considered ecologically sound, proportionate, and consistent with recent Critical Habitat Assessments for large wind developments supported by international financial institutions.



PHOTO 6: SCISSOR-TAILED KITE (SOURCE: ALLAN DREWITT © CC)

According to Ferguson-Lees and Christie (2001), the species’ global population ranges from 10,001 to 100,000 individuals. However, a continuous decline in the global population now places the current estimate suggests approximately 46,000 to 100,000 birds, equivalent to 30,000 to 67,000 mature individuals (BirdLife International, 2021).

In the EAAA, the species was classified as a breeding migrant based on the biodiversity studies conducted. The first individuals were observed in May 2025 and the last individuals in September 2025, which points to a breeding season lasting four months. Additionally, eight active nests were observed in May 2025. Four of these nests were observed in the same tree and two of them had one egg each.

Under IFC PS6, Criterion 1a applies only to species listed as CR or EN and therefore does not apply to the scissor-tailed kite, which is listed as VU. Were it to apply, the EAAA needed to be regularly occupied by at least 150 mature individuals, which is not the case. For VU species, Criterion 1b may be triggered only if the loss of the biodiversity value within the EAAA would reasonably be expected to change the species' global Red List status to EN.

In the EAAA, bird and nest surveys recorded a maximum of 97 individuals – 81 during bird surveys and eight breeding pairs during nest surveys – a value that represents only a small fraction of the species' global population. This number is far below the magnitude required for the loss of the EAAA to have any meaningful influence on the species' global conservation status. For this reason, Criterion 1 is not triggered for the scissor-tailed kite (Table 5-24).

TABLE 5-24: CRITICAL HABITAT ASSESSMENT FOR THE SCISSOR-TAILED KITE (*CHELICTINIA RIOCOURII*)

Critical Habitat Criteria	Threshold	Assessment	Critical Habitat
Criteria 1	150 individuals present in the EAAA (1a) or decline of more than 20% of global population (1b)	Only 97 individuals were observed in the EAAA, far from the established threshold and global population estimates	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	300 individuals present in the EAAA on a cyclical basis	81 individuals and 8 breeding pairs were observed in spring and summer in the EAAA, not enough to trigger Critical Habitat.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

5.2.7.3 Criteria 4: Highly Threatened and / Unique Ecosystems

The IUCN is developing a Red List of Ecosystems, following an approach similar to the Red List for Threatened Species, and where formal IUCN assessments have been performed should use the Red List of Ecosystems for evaluation of Criterion 4. In cases where assessment by IUCN has not been performed, the next criteria to be used is of areas determined to be of high priority for conservation by regional or national systematic conservation planning.

The area where the Project will be developed and its immediate surroundings have not been considered for formal IUCN assessments and have not been identified as high priority for conservation by regional or national systematic conservation planning. The PAOI has five protected areas within its area of influence (see biodiversity baseline assessment for this information). The closest protected area is the Denbel-Ayisha-Adigala controlled hunting area (IUCN category IV), 30 km south of the PAOI. Ali Sabieh is the closest Key Important Area and is located 40 km northeast of the PAOI. Both areas do not contain rare, endangered, or unique ecosystems identified during surveys. Therefore, this criterion is not triggered for Critical Habitat.

5.2.7.4 Criteria 5: Key Evolutionary Processes

Key evolutionary processes require validation by experts. Surveyors have not identified key or unique evolutionary processes in the EAAA. The area is not considered sufficiently heterogeneous from similar and/or surrounding ecosystems to favour distinct evolutionary processes and promote potential environmental gradients.

Therefore, the area is not deemed to trigger Critical Habitat under Criterion 5.

5.3 Cultural Heritage Environment

The updated ESIA report (MDI, 2025) presented a cultural heritage baseline for the Project. However, the LRP developed in 2025 and updated in 2026 expanded the intangible cultural heritage baseline, identified additional elements of tangible cultural heritage and proposed measures to avoid impacts.

This section aims at complementing the ESIA (MDI, 2025) with the additional information gathered in 2025, in line with IFC PS and AfDB E&S OS.

5.3.1 Data Collection

The following activities were undertaken in 2025 to identify tangible and intangible cultural heritage as required by the IFC PS 8 and AfDB E&S OP 8:

- Qualitative focus groups discussions with local communities in the Aysha 01, Aysha 02, Dagago and Lasarat Kebeles conducted from 02 October 2025 to 07 October 2025, aimed at understanding intangible cultural heritage practices as well as use of cultural heritage sites.
- A Cultural Heritage Mapping exercise conducted from 28/08/2025 and 01/10/2025, aimed at identifying all burial and ritual sites located within the Project's lease area.
- Expert consultations undertaken between 18/10/2025 and 04/11/2025, aimed at understanding intangible cultural heritage practices amongst the Issa Clan. The interviewees included one specialist from the African Commission working group and four Ethiopia based organisations (Pastoralist Forum Ethiopia, Pastoralist Concern, the Somali Development Association and Ethiopian Minorities and Indigenous Peoples Rights Organization (EMIPRO)).

5.3.2 Description of the Cultural Heritage Environment

The ESIA report identified (10) modern Burial Sites within the Project Site as part of the survey undertaken. In addition, based on survey of nearby areas as well as stakeholder consultations, three ritual sites were identified within the PAol. One Ritual Site was identified just outside of the Project boundary to the west, and a historical and culturally significant site for local communities (known as Sitti Cultural Heritage Site - Las Harad) was located 4.4km to the west. These sites have social and cultural significance, as living heritage, for the local Issa community. The figure and table that follows provides additional details on the sites recorded.

As presented in the map below, three types of burials or grave markers are identified. The first type is Commoner's (ordinary) grave, which is usually represented by a dome or round shape tomb made of a pile of stones. The second type is leaders or elder's grave, which is usually represented by a circular cairn with a dome tomb in the middle of the circle. The third type is made for Issa war heroes that is usually characterized by a circular cairn with a dome tomb and two head stones inside the circle.

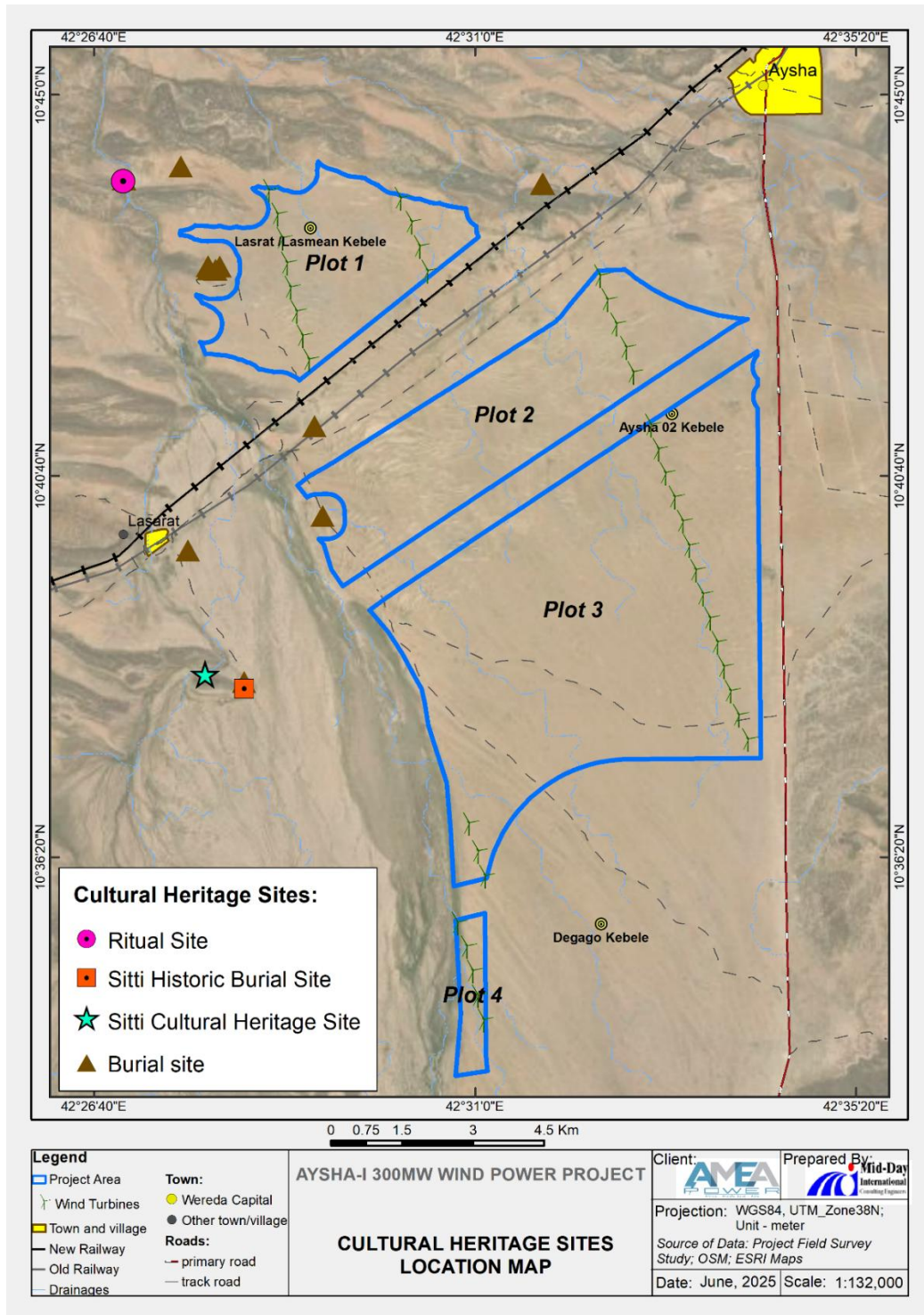


FIGURE 5-28: CULTURAL HERITAGE SITES

The table below shows the cultural heritage sites identified in the ESIA report.

Table 5.25: Cultural Heritage Sites Recorded within the Project Area and Surroundings

Site	Location	Description	Area
Burial Site #1	Within Project Boundary	More than 35 burial markers are observed in this site. Of these, about eight graves are circular cairn with 15m diameter and a dome tomb inside the circle. Most of them are ordinary Islamic graves, piles of stones made a dome shape grave. Only a couple of graves with head stones are observed in this site.	276m × 230m = 63,480m ²
Burial Site #2 (this site in particular is located outside of project boundary 2.8km to the west)	Within Project Boundary	More than 15 burial markers are observed in this site. Of these, three circular cairns with an average of 17m in diameter are visible. The rest are ordinary Islamic graves, piles of stones made a dome shape grave.	127m × 125m = 15,875 m ²
Burial Site #3	Within Project Boundary	About 10 burial markers are observed in this site. Of these, four are circular cairn with average diameter of 17m and the rest are ordinary Islamic graves, piles of stones made a dome shape grave.	45m × 35m = 1,575 m ²
Burial Site #4	Within Project Boundary	More than 20 burial markers are observed in this site. Of these, three circular cairns with an average of 17m in diameter, are visible. The rest are ordinary Islamic graves, piles of stones made a dome shape grave.	415m × 101m = 41,915 m ²
Burial Site #5	Within Project Boundary	More than 20 burial markers are observed in this site. Of these, four graves are circular cairn with 17m in diameter. The rest are ordinary Islamic graves, piles of stones made a dome shape grave.	96m × 60m = 5,760 m ²
Burial Site #6	Within Project Boundary	About 10 burial markers are observed in this site. Of these, two are circular cairn with 17m diameter and visible.	100 × 67 = 6,700 m ²
Burial Site #7	Within Project Boundary	About 12 burial markers are observed in this site. Most of the graves are ordinary Islamic graves and disturbed.	110m × 69m = 9,790 m ²
Burial Site #8	Within Project Boundary	More than 15 burial markers are observed in this site. Most graves are circular cairn with 15m in diameter and a dome tomb inside each circle.	140m × 120m = 16800 m ²
Burial Site #9	Within Project Boundary	More than 15 graves are observed. Most of them are ordinary graves with a couple of circular cairns.	478.50m × 27.2m = 13026m ²
Burial Site #10	Within Project Boundary	More than five circular cairns and a couple of ordinary graves observed in the site.	231.3m × 12.5m = 2,890m ²

Site	Location	Description	Area
Holye Ritual Site	0.2km west of Project Boundary	A ritual site (known locally as Holye) is located around a dry River. The site is surrounded by trees, which is unique to the area. In the site, a religious ritual is practiced yearly by local religious fathers and therefore has social and religious significance for local communities. Some graves are also observed inside the ritual site.	60m × 45m = 2,700 m ²
Sitti Cultural Heritage site (Las Harad)	4.4km west of Project Boundary	Sitti cultural heritage site is located between Aysha and Dire Dawa at a place called Las Harad, Sitti Hill in Sitti Zone of the Regional State. Today, it is observed a ruin structure with a number of grave markers and tombs in Sitti Hill. According to the oral tradition, some centuries back, Issa forefathers migrated from Zayla and gathered on the top of Sitti Mountain in today's Aysha Woreda, a place called Las Harad. Forty-four elders held twelve months long conferences on Mount Sitti in which the twelve Issa sub-clans were responsible to provide food for the elders in each month by turn. Finally, the elders came out of 362 unwritten legal codes called as "hera". In addition, since then the Issa/Somali leader (i.e. "Ugaas") is chosen from the Wardik sub-clan and has been assuming power in this historic site of Sitti Hill. Local elders claim that the ruin structure, which is made of locally available stone and lime in rectangular shape, was the place where the forty-four Issa elders had made their historic conference for 12 months and later, it became a Ritual Site for Issa leaders, Ugaas and a holy place for all Issa clans that is venerating yearly. Finally, informants also state that the graves around the ruin structure belong to Issa traditional leaders, Ugaas and war heroes who had buried at the holy site due to their inordinate services for Issa communities. Most burial markers of the site are circular cairns with large size about 15m radius, which are usually observed accompany with a dome tomb in the middle of the circle, and are oriented north-south.	819m × 395m = 322,715 m ²
Sitti Historic Burial Site	3.7km west of Project boundary	A large and historic grave yard. About 100 graves of circular cairns found.	806.4m × 29.3m = 23622m ²

The following additional cultural heritage resources were identified in the recent stakeholder consultation process, as documented in the LRP.

- Three ritual sites, of which 2 are located in Lasarat and 1 is in Aysha II (refer to Photo 8 to Photo 10). These sites are used for the following purposes:
 - The site in Aysha I is located in the village of Kelewle and it's used three times a year to hold religious festivals like Eid-al-Fitir, Eid-al-Adha and Mowlid.
 - One site in Lasarat is located in the village of Aligire and it has been surrounded by stones to be used as a mosque. It is used for praying as well as holding religious festivals like Eid-al-Fitir, Eid-al-Adha and Mowlid three times a year.
 - The other site in Lasarat is located in the village of Aligire as well and it's used by the sub-clan Sheika for gatherings which take place once a year. People from different areas, including Degego, Lasarat, Aysha, Dire Dawa and Djibuti travel to the site for this occasion and spend 23 days on this location, where they slaughter goats and cattle to pray for peace and prosperity.
- There are several intangible cultural heritage practices found across the Issa clan. According to the UNESCO World Intangible Cultural Heritage submission file and video (Ethiopian Heritage Authority 2023), the Issa enjoy their traditional dance Harimaadeee, also called Wilwile, traditional craftsmanship, games and wedding ceremonies. The Issa hold a unique oral tradition of the customary law, *Xeer Issa*, first drafted in the 16th century by the Issa leaders on a mountain in the Aysha zone of the Somali Regional State in Ethiopia. The *Xeer Issa* was recognised by UNESCO in 2024 in the Representative List of the Intangible Cultural Heritage of Humanity (UNESCO 2024). Somali people, including Issa, follow the Sunni Shafi'ite rite of Islam (Lewis, 1994).

Figure 5-30 indicates all cultural heritage sites identified by both the updated ESIA report (MDI, 2025) and the LRP. The intangible cultural heritage elements cannot be mapped as they are not physical structures.



PHOTO 7: BURIAL GROUND INCLUDING 8 GRAVES IN LASARAT



PHOTO 8: RITUAL SITE 1 IN LASARAT



PHOTO 9: RITUAL SITE IN 01 KEBELE



PHOTO 10: RITUAL SITE 2 IN LASARAT

FIGURE 5-29: CULTURAL HERITAGE SITES

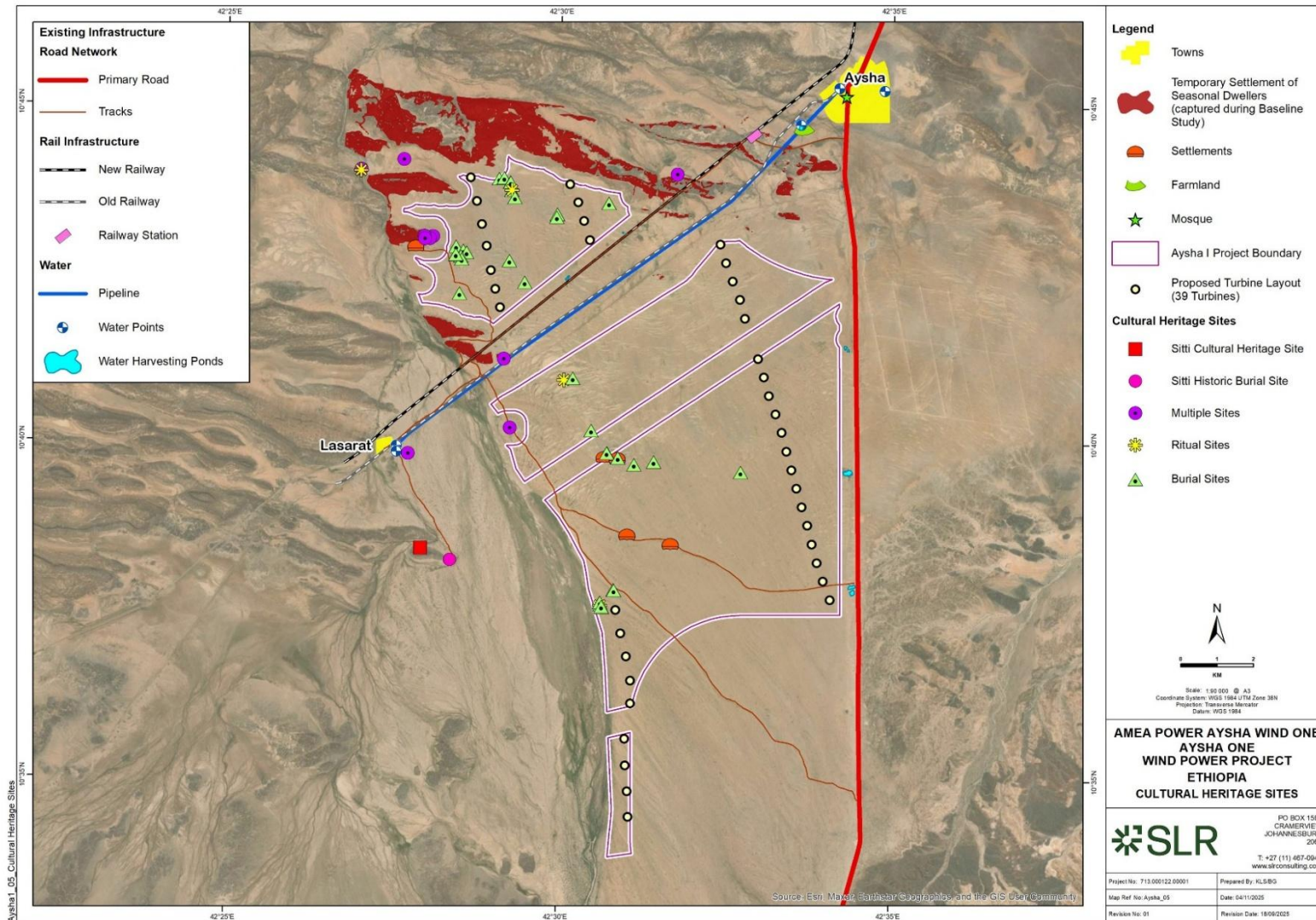


FIGURE 5-30: ALL CULTURAL HERITAGE SITES IDENTIFIED FOR THE PROJECT (2025 ESIA AND LRP)

5.4 Socio-economic Environment

The updated ESIA report (MDI, 2025) previously assessed the following for the Project in terms of the baseline for the socio-economic environment:

- Demographic Characteristics of the Aysha Woreda
- Social and Political Organisation
- Finding of the Sample Socio-economic
- Economic Activities of the Households
- Gender Assessment
- Household Income and Expenditure
- Access to Social Service
- Existing Social and Economic Services and Infrastructures

However, as identified in the Gap Analysis report (SLR, 2025), the following were subsequently undertaken as part of the SLIP process:

- LRP, including an updated socio-economic baseline and a framework for the implementation of livelihood restoration measures for the customary owners of the land leased to the Project.
- Indigenous Peoples Social Assessment, including the consideration of vulnerable groups and to conclude if a FPIC is required or not.
- Updated SEP.

Additional socio-economic baseline data was collected from the above processes. This section aims at complementing the ESIA (MDI, 2025), specifically for the socio-economic environment aspect in line with IFC PS and AfDB E&S OS.

5.4.1 Data Collection

Field investigations and engagement with local communities were undertaken for the preparation of this LRP in September and October 2025. During these activities, no permanent settlements or structures were observed within the lease area. The land is collectively managed by the Issa Clan and exclusively used by nomadic pastoralists who migrate seasonally for grazing.

The territory of the Issa Clan extends beyond Aysha Woreda and the Sitti Zone into neighbouring Djibouti and Somaliland. Migration to the PAOI varies depending on the availability of pasture and water, as well as access to livestock markets. Since the number of households using the lease area is highly variable across the seasons and years, the number and identity of households who will be present in the PAOI during construction and operation cannot be determined.

Local authorities and Issa Clan leaders confirmed that, since land and natural resources are managed collectively at the clan level, conducting a formalised census with the purpose of defining individual entitlements would not reflect the reality of local land management practices. Nevertheless, all households present in the lease area at the time of the survey were enumerated and surveyed. The socio-economic survey conducted therefore represents a snapshot in time, as the number of households using the site may vary from year to year. The 2025 survey recorded 161 households (909 household members) within the lease area, which is comparable to the 150 households identified during an assessment carried out in 2021¹⁰.

5.4.1.1 Desk-based Research

¹⁰ Source: (MID international & Eco Consult, 2022)

A mixture of desk-based research, expert and non-governmental organisations (NGO) interviews and data collection on site (quantitative and qualitative data) was undertaken. For the desk-based research, the following sources were reviewed:

- National legislation
- Academic literature
- Internet/media research
- Publicly available documents of International Financing Institutions
- Previous reports developed for the Project
- Past applications of World Bank, IFC and AfDB's policies on Indigenous Peoples in Ethiopia, Somalia and Djibouti were also sourced and reviewed.

The surveys discussed below were undertaken in 2025 to establish the socio-economic profile of the Issa clan members seasonally migrating to the Project lease area (also referred to as the PAOI) who were present in the land lease area at the time of the survey.

5.4.1.2 Expert and NGO Interviews as part of the Indigenous People Social Assessment

One expert interview and three NGO interviews were undertaken to inform this assessment. The summary of the interviews is presented in Table 5-26 below. Written communication was also exchanged with the EMIPRO in Ethiopia. However, EMIPRO focus is on groups in the South-west region on Ethiopia (Benishangul and Gambella) and they have not worked with any Somali clans.

TABLE 5-26: EXPERT AND NGO INTERVIEWS

Date	Interviewee	NGO / Other Affiliation
18/10/2025	Samuel Tilahun	Expert Member of the Working Group on Indigenous Communities/Population and Minorities in Africa of the African Commission on Human and Peoples' Rights'
29/10/2025	Tezera Getahun	Executive Director - Pastoralist Forum Ethiopia (PFE)
2/11/2025	Adamu Beyene	Emergency Programs Coordinator - Pastoralist Concern (https://www.pastoralistconcern.org/)
4/11/2025	Abdi Hassen	Liaison Officer at Aysha Woreda - Somali Development Association (https://sdaeth.org/)

5.4.1.3 Recent Consultation as part of the Livelihood Restoration Plan

A socio-economic survey and qualitative focus group discussions (FGDs) were conducted in September and October 2025. A total of 313 people, of which 33.5% were women, were engaged via these activities.

A quantitative socio-economic household survey was conducted from 30 August 2025 to 28 September 2025. The quantitative socio-economic household survey targeted 100% of the seasonal settlers present in the Project lease area (PAOI) at the time of the start of the survey. A total of 161 households were included in the survey, of which 46% were female. The survey gathered key information on the households' demographic details, livelihoods and migratory patterns, as well as their use of and attachment to the Project lease area.

Qualitative FGDs were conducted from 02 October 2025 to 07 October 2025. The survey targeted local authorities and community members and included gender-separate workshops. A total of 152 participants

were included in the FGDs of which 20.3% were females. As confirmed on site, all participants were from the Issa Clan.

A list of the meetings and activities conducted is provided in Table 5-27 below.

TABLE 5-27: LIST OF ENGAGEMENTS CONDUCTED AS PART OF THE LRP

Consultation Type	Consulted Stakeholder	Date	Subject of Consultation	No. of Participants
Socio-economic Survey	100% of seasonal settlers present in the Project lease area at the time of the survey	30/08/2025 to 28/09/2025	Socio-economic survey	161
Survey Subtotal				161
Interviews with Public Officials	Aysha Woreda Administration Officials	02/10/2025	Presentation of the Project and discussion of priority community needs	5
	Aysha 02 Kebele Administration Officials	03/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	3
	Dagago Kebele Administration Officials	05/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	6
	Lasarat Kebele Administration Officials	06/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	5
Men-only Focus Groups	Men Aysha 02 Kebele	05/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	85
	Men Dagago Kebele	05/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	15
	Men Lasarat Kebele	06/10/2025	Presentation of the Project and discussion on potential compensation and livelihood restoration options	2
Women-only Focus Group	Women Aysha 02 Kebele	03/10/2025	Presentation of the Project and discussion on Project and potential impacts and overview of gender roles	12
	Women Dagago Kebele	05/10/2025	Presentation of Project and potential impacts and overview of gender roles	6

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The focus groups aimed to understand the following for the Issa clan members interviewed:

- Identity, culture and history of settlement.
- Attachment to the Project lease area.
- Institutions, customs and decision-making structures.
- Use of the Project lease area and natural resources.
- Livelihood opportunities, constraints and vulnerability.

The locations of the focus group meetings are presented in Figure 5-31. Some photos from the discussions undertaken are presented in Photo 11 to Photo 14.



PHOTO 11: FOCUS GROUP WITH THE CLAN LEADERS IN AYSHA WOREDA



PHOTO 12: FOCUS GROUP WITH THE ADMINISTRATIVE AUTHORITIES IN DAGAGO KEBELE



PHOTO 13: FOCUS GROUP WITH MEN IN LAZARAT KEBELE



PHOTO 14: FOCUS GROUP WITH WOMEN IN 02 KEBELE

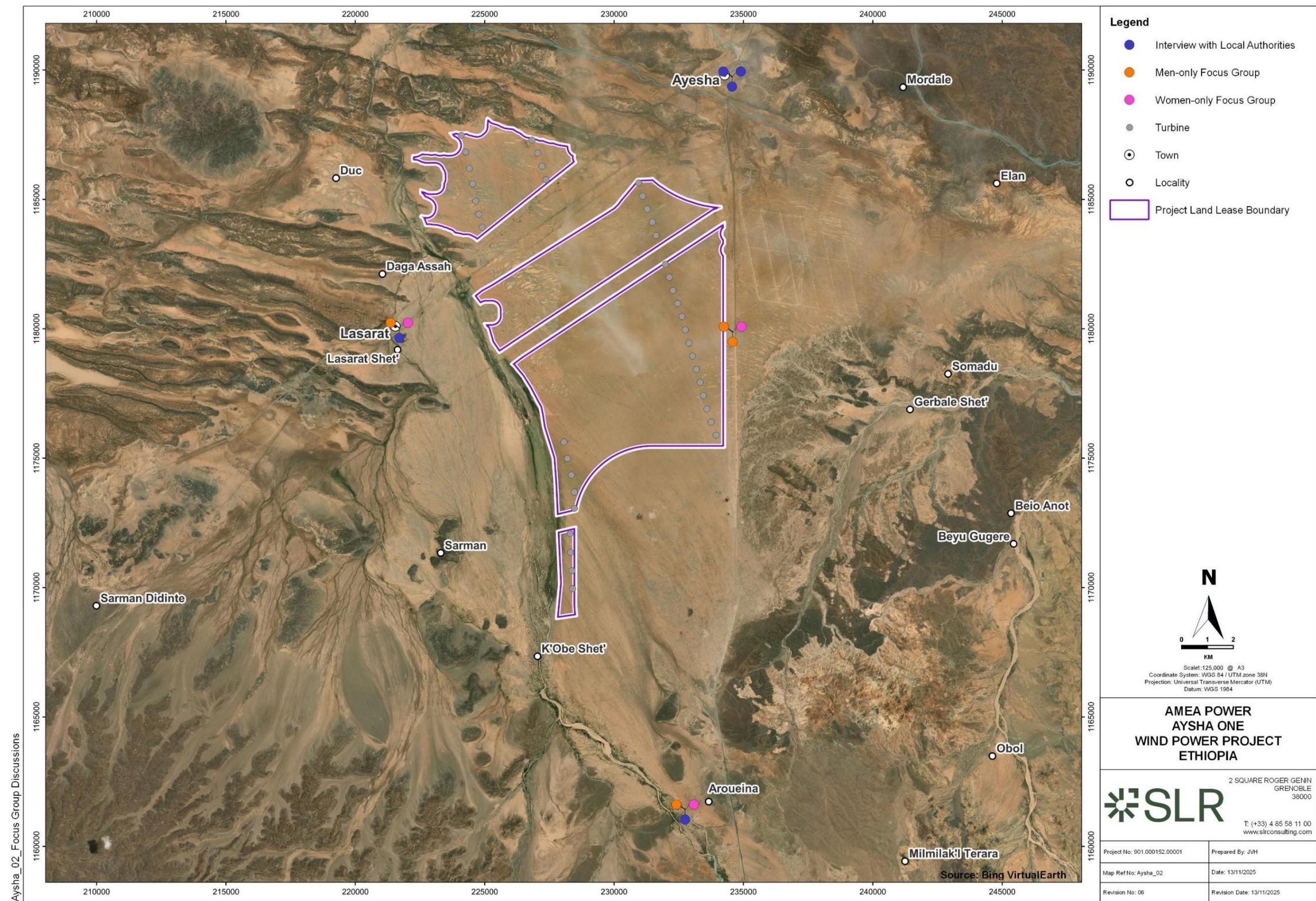


FIGURE 5-31: LOCATION OF FOCUS GROUP MEETINGS HELD DURING OCTOBER 2025

5.4.2 Surveyed Population's Baseline Profile

The following section describes the updated socio-economic baseline, as documented in the LRP.

Demographics

The land leased for the Project lies within the administrative authority of four kebeles: Lasarat, Dagago, Aysha I and Aysha II. As presented in Table 5-28 below, a total of 161 people were surveyed. The answers collected provide information on the respondent as well as their household members. A total of 909 household members, of which 46.4% were women, are therefore covered by the survey.

TABLE 5-28: BREAKDOWN OF SURVEYED PEOPLE BY KEBELE AND VILLAGE NAME

Kebele	Village	No. of Households	Percentage of Total Surveyed Population
Kebele 01	Kalawley	27	16.8%
Village Subtotal		27	16.8%
Kebele 02	Aagdalis	4	2.5%
	Biyo Ade	48	29.8%
Kebele Subtotal		52	32.3%
Dangago Kebele	Kud	33	20.5%
Kebele Subtotal		33	20.5%
Lasarat Kebele	Ali Gire	30	18.6%
	Geedgoble	19	11.8%
Kebele Subtotal		49	30.4%
Total		161	100%

As presented in Figure 5-32 and Figure 5-33, the wide majority of households surveyed (86%) are male-headed and include more than 5 members.

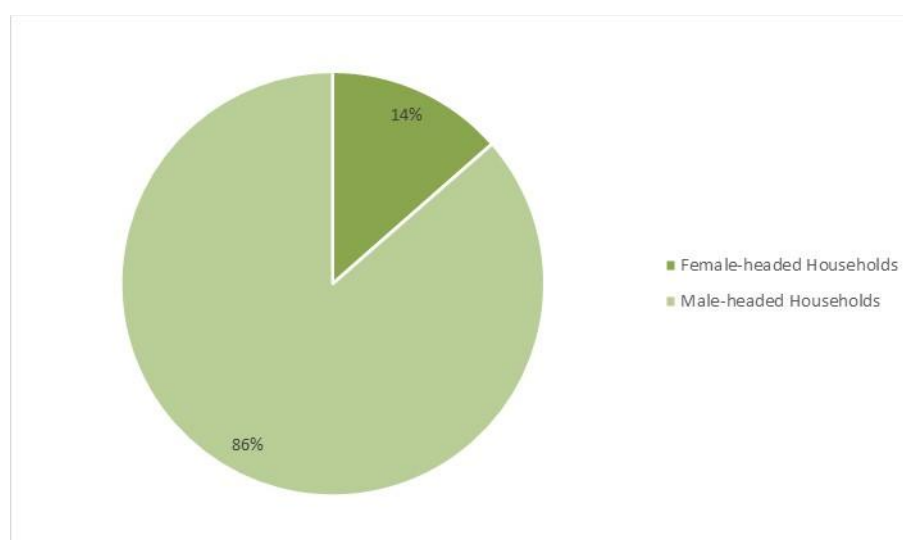


FIGURE 5-32: PERCENTAGE OF HOUSEHOLDS SURVEYED HEADED BY A MALE AND FEMALE

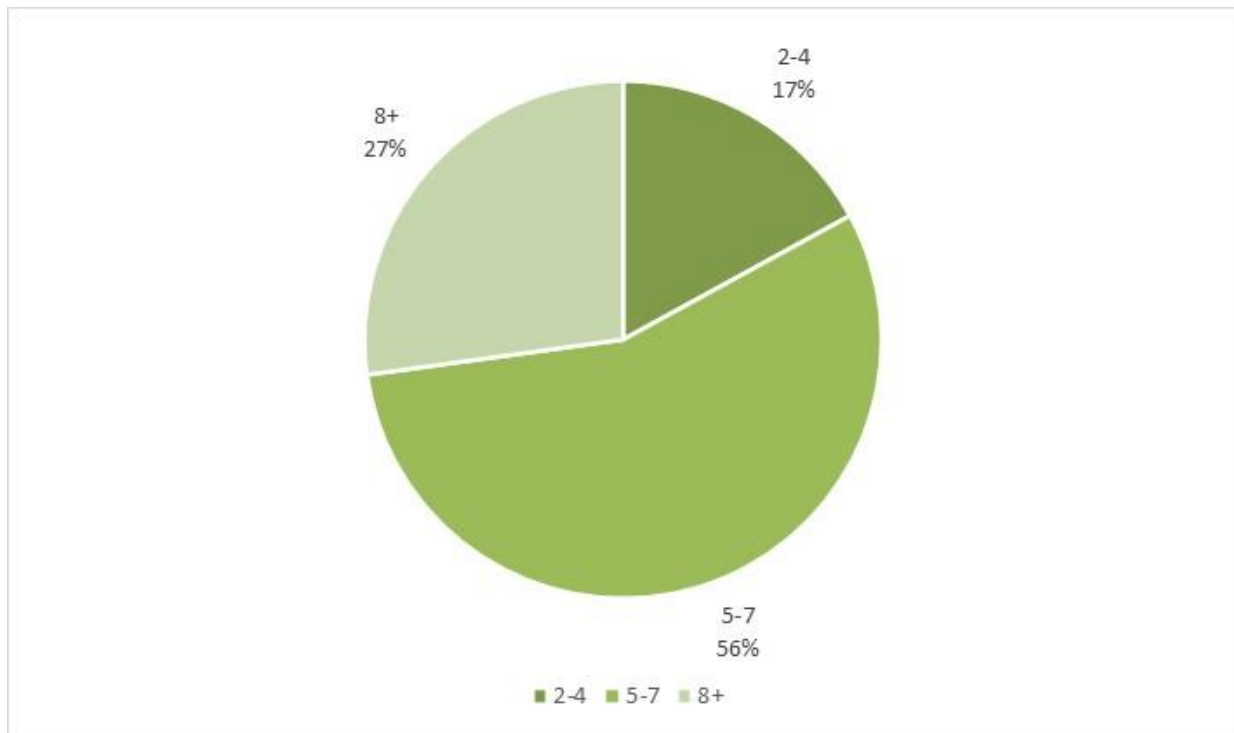


FIGURE 5-33: PERCENTAGE OF SURVEYED HOUSEHOLDS BY NUMBER OF HOUSEHOLD MEMBERS

5.4.2.1 Lineage and Social Organisation

The land is within the customary territory of the Issa Clan, which comprises six sub-clans: Elaye, Waladon (Hawleqade), Holle (Furlaba), Horrone, Urweyne, and Wardiq. These sub-clans are sub-divided further into 12 sub-sub-clans. According to the focus groups conducted in 2025, the Issa belong to the Dir clan family, one of the oldest groups in the area, and speak a Somali. Despite internal sub-divisions, it was reported that sub-clan members prefer to be identified as Issa to promote clan unity.

As other Somali groups, the Issa are organised according to a segmentary lineage system, which forms the core of their social structure. This system is hierarchical and can be categorised into clan family, clan, and lineages organised in mag-paying groups. At the top is the clan family, such as the Dir, which can trace genealogical ties up to 30 generations. The Issa clan itself, as a political and social unit, traces descent up to 20 generations and maintains a degree of territorial exclusivity without centralized governance. Within the clan, primary lineages - such as the six sub-clans of the Issa - serve as the distinct groups to which individuals most closely identify, typically spanning six to ten generations. The smallest functional unit is the mag-paying group, comprising a few lineages tracing back four to eight generations. This group is central to social obligations, including payment of mag, and regulates relations among members through Xeer, the Somali customary law.

According to the focus groups, in Somali clan-based social structure, Qabiil refers to a clan and constitutes a person's primary identity, influencing social life, governance, dispute resolution, and marriage practices. Most Somalis participating in the discussions reported being able to trace their paternal lineage across multiple generations through their Qabiil. In contrast, Jilib was consistently described as a functional community group rather than a genealogical clan, responsible for collective obligations such as blood price (diya) payments and providing mutual support in cases of serious incidents such as mutilation or murder. Participants indicated that all Issa sub-clans are theoretically represented at administrative levels from Zone down to village. However, the discussions highlighted significant population disparities among sub-clans, with the Elleye sub-clan reportedly comprising around 50% of the Issa population, while the Wardiq sub-clan is the smallest. The focus groups confirmed that the Issa supreme traditional authority, the Ugaz, is always selected from the smaller Wardiq sub-clan. At lower

administrative levels, participants noted that where a sub-clan has no members in a particular locality, Issa customary law allows members from other sub-clans to represent them, ensuring continued participation in governance.

5.4.2.2 Land Tenure

Land in the lease area is traditionally under collective ownership by all members of the Issa clan. The approximative customary areas of the main Somali clans, including the Issa who are part of the Dir clan, is presented in Figure 5-34.

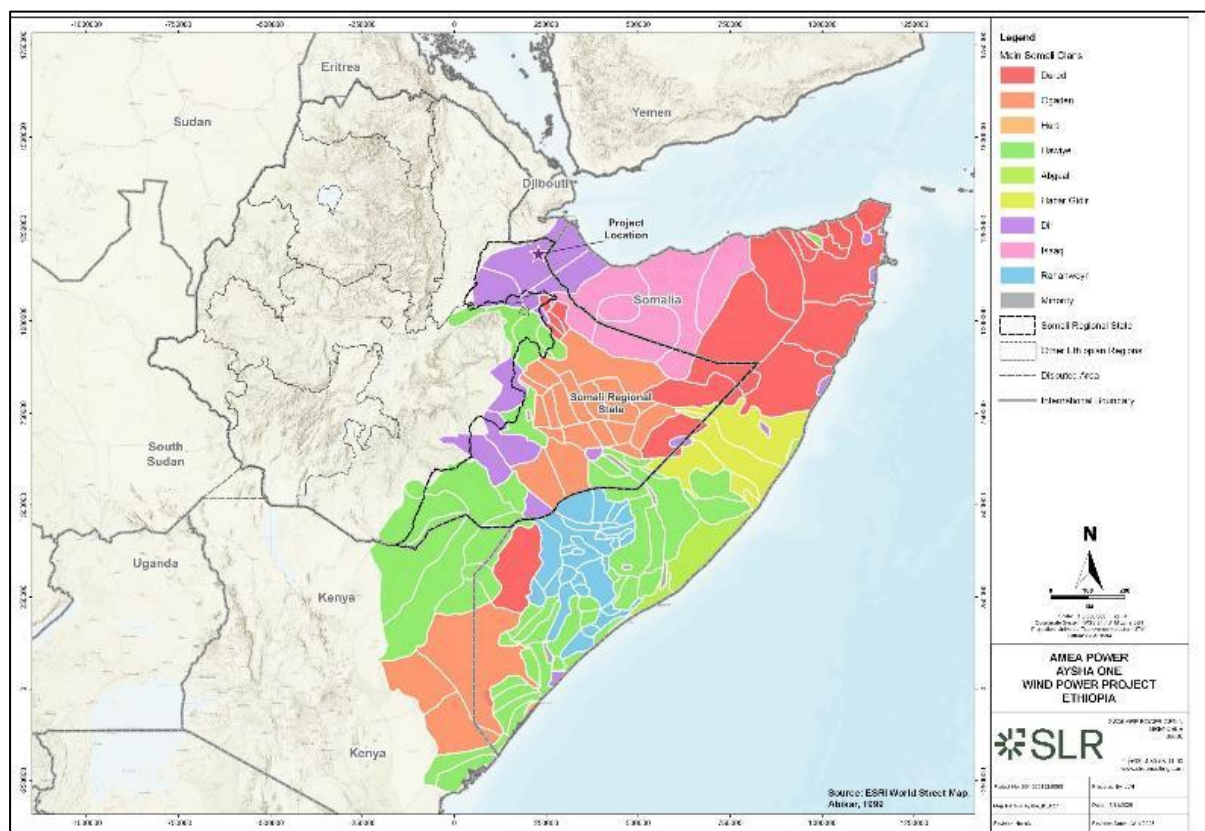


FIGURE 5-34: DISTRIBUTION OF SOMALI CLANS IN THE HORN OF AFRICA

According to the focus groups conducted in 2025, land and natural resources, particularly grass and water, across Issa territory in North-Eastern Ethiopia, Southern Djibouti, and Northern Somalia are held and managed collectively at the clan level. This collective ownership is intended to promote inclusivity and reduce disputes and competition among sub-clans, meaning that no Issa sub-clan has exclusive rights over the land it currently occupies. Unlike many other Somali clans, any Issa pastoralist can live, seasonally migrate, and graze animals anywhere within Issa territory by demonstrating affiliation to one of the six Issa sub-clans. Participants reported that clan leaders, together with pastoralists, maintain an informal land-use map guiding allocation for residential, grazing, religious, or other purposes. Grazing land can be accessed freely, but new seasonal migrants must request residential land from clan leaders, while established seasonal migrants are recognised and do not need to seek permission each time they arrive in a village.

5.4.2.3 Settlement

Within the four kebeles affected by the Project there are both permanent and temporary or seasonal settlements. Each kebele has a variable number of villages, generally between 3 and 5. However, focus groups and observations in 2025 confirmed that the lease area does not contain any permanent

settlements and is exclusively used by nomadic rural pastoralist from the Aysha Woreda as well as a smaller number of transhumant pastoralists travelling to and from Somaliland and neighbouring woredas via the lease area.

Within the four kebeles affected by the Project, most temporary settlements are small and generally include from 3 to 6 households, each with at least two make-shift houses. Some larger pastoralist villages can include 20 to 50 households (40 to 100 make-shift houses). Houses are generally spaced 100 to 150 m apart, and villages are located 5 to 10 km from each other.

All the temporary settlements observed in the lease area in 2025 were smaller in size and did not include any permanent houses. All shelters are temporary make-shift houses constructed from sticks and twigs and covered with plastic, rugs, and grass-woven mats. These shelters can be built in hours, easily dismantled, and transported for reuse, with assembly being primarily the responsibility of women. Clan elders, responsible for rural land management, categorize land into residential, grazing, and spiritual areas where graveyards can be placed. Although the terrain is mostly flat, slightly raised areas with some rocks, without compromising access to water, pasture, or markets, are preferred for constructing shelters.

5.4.2.4 Migratory Patterns

The Issa people are traditionally nomadic and practising transhumance herding on their traditional territories in Ethiopia, Djibouti and Somalia, with migratory movements mostly governed by grazing land and rainfall patterns. According to focus groups conducted in 2025, seasonal pastoralists typically migrate throughout the year in search of water and pasture for their livestock, both within Ethiopia and across borders into Djibouti and Somaliland. Within Ethiopia, their movements are concentrated in areas traditionally associated with the Issa clan, including Aysha Woreda and other locations such as Erer, Adigala, and Measo Woredas. These groups generally enter the PAOI and its surroundings following rainfall events, which provide essential grazing resources and water for their herds.

Among the 161 households surveyed in the PAOI, only two were permanently living in Aysha Woreda (but residing outside of the Project land lease part of the year), while the overwhelming majority 98.7%, were transhumant or seasonal migrants.

As shown in Figure 5-35, nearly all reported using the area during the months of June, July, August, and September. The number of people grazing in the area gradually declines from October, drops sharply in December, and begins to rise again in March.

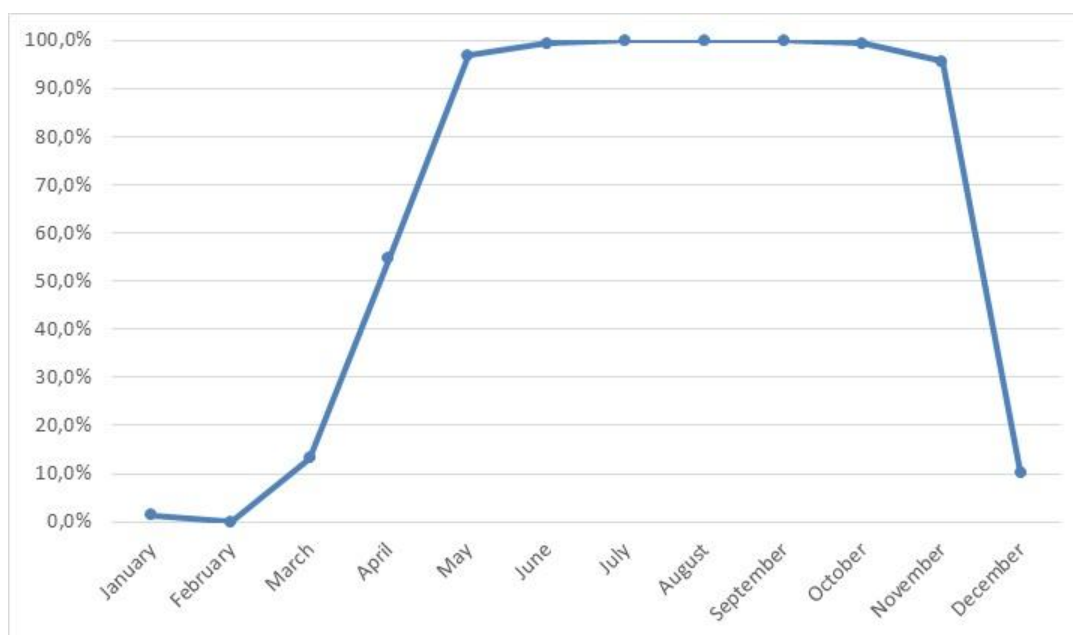


FIGURE 5-35: SURVEYED HOUSEHOLDS' SEASONAL MIGRATORY CALENDAR

The survey data indicate that migration is predominantly local, with most movements occurring within Aysha Woreda. Most people revolve around key grazing and water points and typically return to their places of origin or another place within the same or a neighbouring woreda after the seasonal grazing period.

As can be observed in Figure 5-36, most respondents (71.07%) are temporarily settling into the lease area as part of localised movements within Aysha Woreda, the majority of which are very localised within the four kebeles affected by the Project. A considerable percentage of respondents (23.9%) is also passing via the lease area as part of cross-border migrations to and into Somaliland, while only a small portion (5.03%) is migrating regionally, either from or to woredas neighbouring Aysha within Sitti Zone.

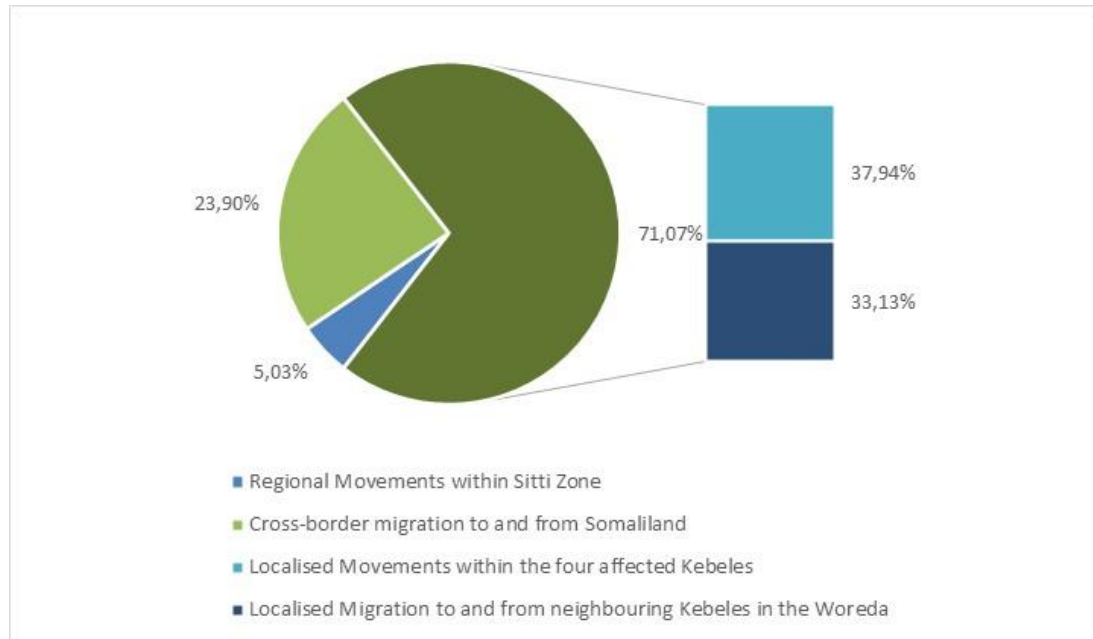


FIGURE 5-36: OVERVIEW OF MIGRATORY PATTERNS THROUGH THE LEASE AREA

Figure 5-37 provides more detail on the origin and destination of respondents found to be temporarily settled in the lease area in October 2025. Around 92.4% of them originate from Aysha Woreda, with the vast majority of them (78.2%) coming from within the four kebeles affected by the Project. Smaller proportions come from Somaliland (5.7%) and from other woredas in the Sitti Zone (1.9%). Among migrants originating from Aysha woreda, after settling in the lease area for a few months 77.9% migrate to other areas within the same woreda: around half of these (53.4%) originate from the four kebeles affected by the Project and will go back to one of these kebeles after their temporary stay in the lease area. A much smaller percentage (3.4%) move to other parts of Sitti Zone outside of Aysha Woreda, and 19.7% travel to Somaliland. All migrants coming from other woredas in the Sitti Zone (100%) do not stay in Aysha and tend to go back to their original woredas. In contrast, of those migrating into the lease area from Somaliland, 88.9% migrate to Aysha Woreda and 11.1% return to Somaliland.

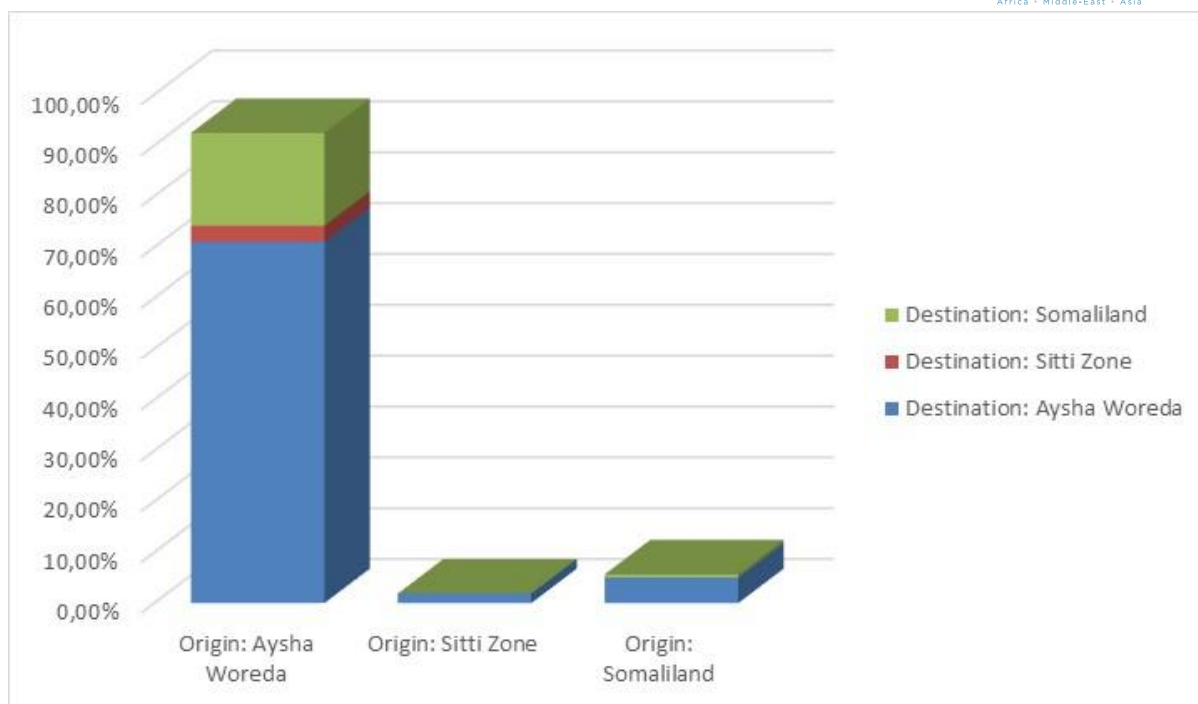


FIGURE 5-37: PERCENTAGE OF RESPONDENTS MIGRATING VIA THE LEASE AREA BY ORIGIN AND DESTINATION

Focus groups reported that migration is gradual, with a few households moving each day over 4 to 8 weeks. However, during droughts or extreme conditions, long-distance migrations are more likely to occur, sometimes transnationally into Djibouti or Somaliland within Issa territory. In long-haul migrations, only able-bodied family members and larger livestock migrate, leaving women, children, lactating animals, and smaller stock behind.

As shown in Figure 5-38, almost all respondents reported that they intend to return to the PAOI in their next migration. Around 29.7% of those would resettle in exactly the same place. For those who tend to resettle in the same place, for the wide majority (93.5%) proximity to grazing land and water resources and the perception of being a suitable place for living are the reasons for choosing this area. When asked for their second reason for resettling in the same place within the lease area, 37% and 22% respectively mentioned ancestral identity and emotional attachment.

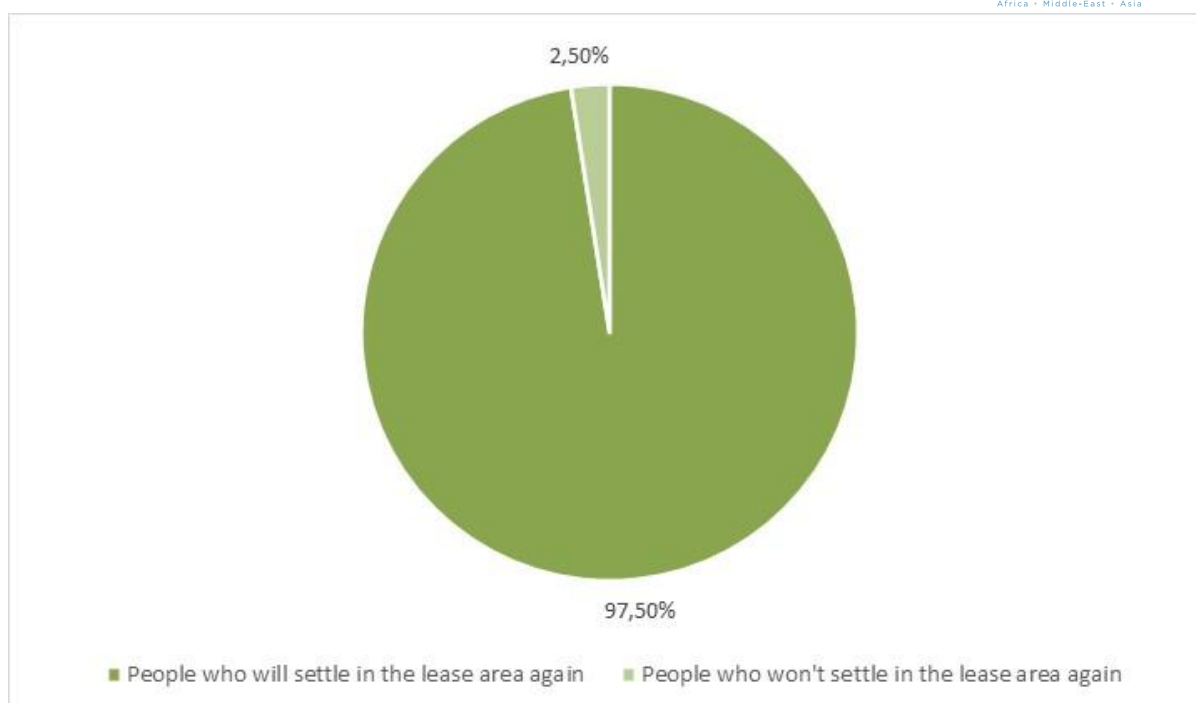


FIGURE 5-38: PERCENTAGE OF RESPONDENTS BY DECISION TO RESETTLE IN THE PAOI IN THEIR NEXT MIGRATION

5.4.2.5 Livelihoods

Pastoralism is the predominant livelihood amongst the surveyed population as well as the wider Issa Clan. All respondents indicated that livestock rearing is their most important source of livelihood. The vast majority (96.7%) reported having no secondary income source, while a small proportion (2.5%) engage in fuelwood and charcoal production, and only one respondent (0.6%) reported having formal employment.

Every household surveyed owns livestock. On average, respondents own 7 camels, 5 cattle, 64 sheep, 64 goats, and 4 donkeys, with male-headed households generally possessing more livestock, particularly for goats and sheep (Figure 5-39). Based on livestock ownership, the estimated average annual income per household is estimated to be 137,803, with male-headed households accounting for 89% of the total income reported.

Livestock are primarily treated as market assets rather than sources of subsistence. The survey revealed that on average, over 70% of livestock products are used for sale, while only about 25% are kept for household consumption. This trend is consistent across both male- and female-headed households (Figure 5-40).

All respondents reported grazing their animals on communal land, though a smaller portion (19.2%) also make use of hillside or riverside areas. In terms of water sources for livestock, 84% rely on ponds, 50% use traditional wells (ella), and 26% draw water from the Ethiopia- Djibouti water pipeline. A few households also reported using rivers.

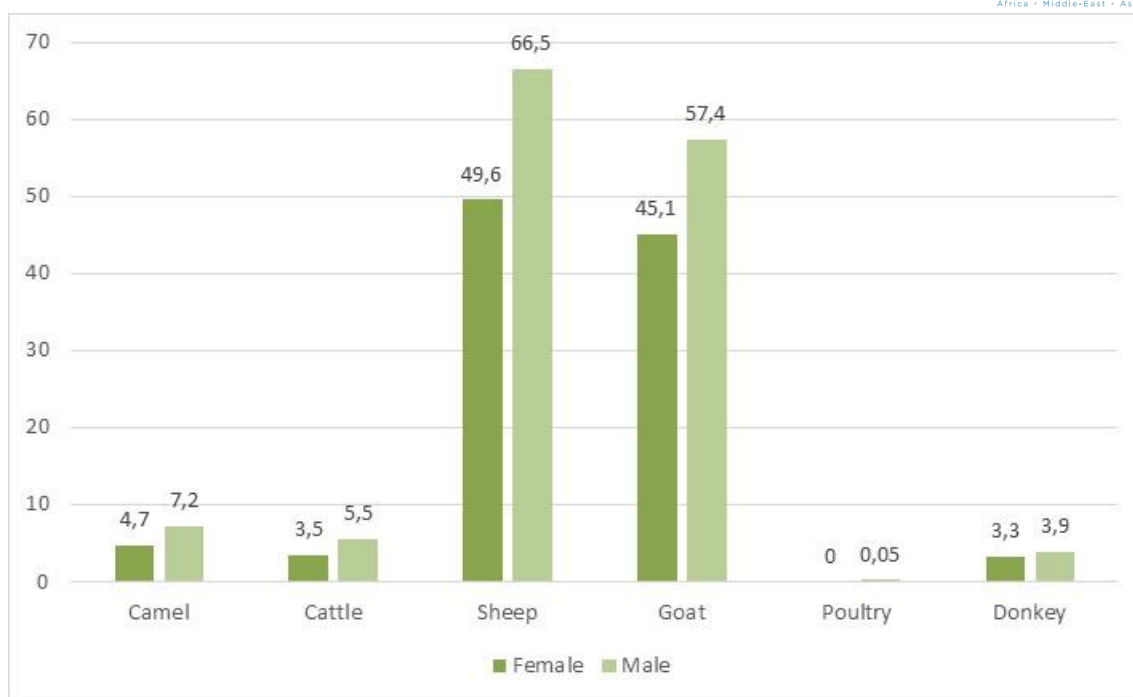


FIGURE 5-39: AVERAGE NUMBER OF ANIMALS OWNED BY HOUSEHOLD HEAD GENDER

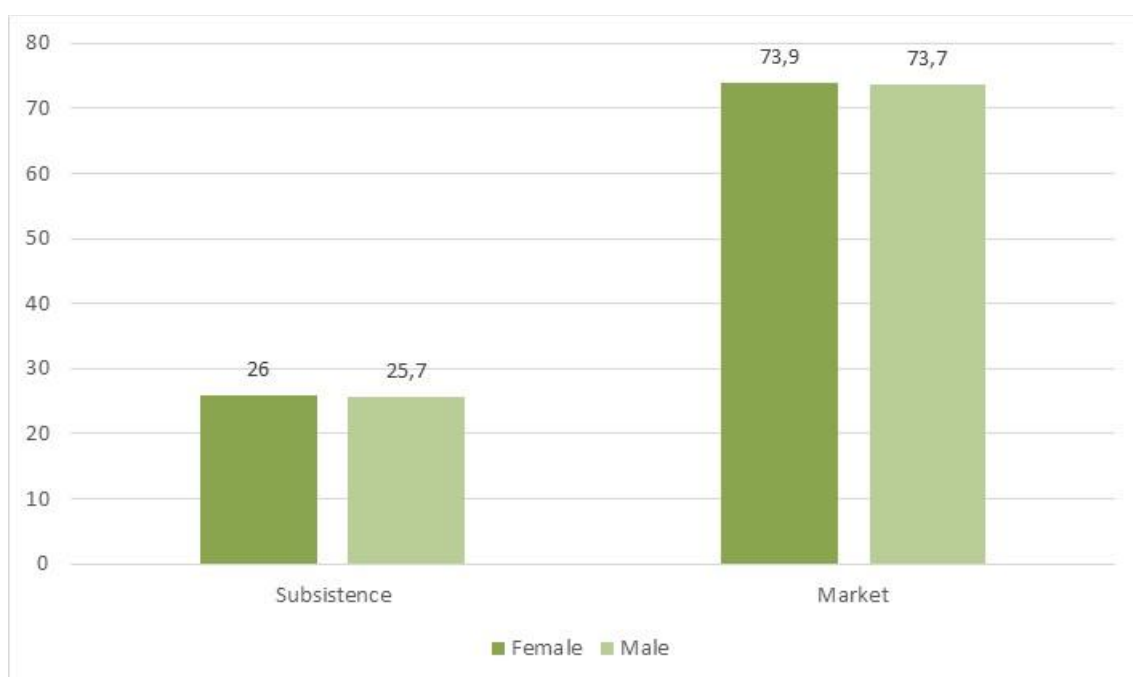


FIGURE 5-40: PERCENTAGE OF SURVEYED HOUSEHOLDS BY TYPE OF ANIMAL USE, BROKEN DOWN BY HOUSEHOLD HEAD GENDER

Despite the surveyed population's reliance on livestock, 93.2% of households stated that their livelihoods are not sufficient to support them throughout the year, with most respondents citing drought and animal disease as main culprits. As shown in Figure 5-41, almost all (91%) of respondents identified drought as the main livelihood constraint, followed by shortage of pastoral land (74%) and animal disease (70.5%). One respondent identified Wangay trees as a main livelihood constraint, as they occupy land that could otherwise be used for farming and grazing. On average, each respondent lost around 37 goats and sheep, 1-2 cattle and camel in the past 12 months due to drought. Focus groups further reinforce this claim,

continuously bringing up the issue of unreliable water supply systems and the decrease of pastureland representing a huge threat for pastoralist livelihoods. Focus groups further reinforced this claim, as the issue of unreliable water supply systems and the decrease of pastureland were continuously brought up as a huge threat for pastoralist livelihoods. Water supply was reported to be largely dependent on the Ethiopia-Djibouti water supply line which is highly unreliable and sometimes unsafe according to people. It was also reported across kebeles that multiple water pumps are broken.

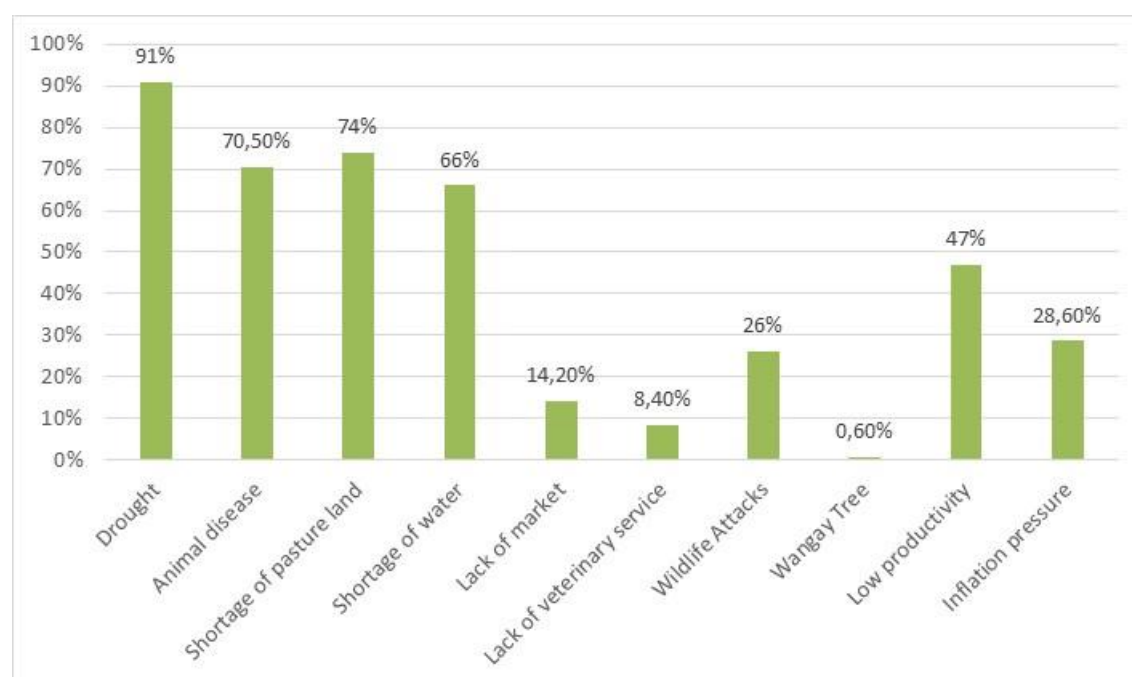


FIGURE 5-41: LIVELIHOOD CONSTRAINTS MENTIONED BY RESPONDENTS

5.4.2.6 Community Health

The majority of survey respondents (64.6%) reported that at least one household member had experienced an illness in the past 12 months. The most commonly reported conditions were cough and cold and malaria, suggesting a high burden of communicable and vector-borne diseases. Other notable conditions included gastric problems and pneumonia (Figure 5-42). In terms of age distribution, the majority of cases occurred among individuals aged 18–59 years and 6–17 years, while fewer cases were reported among those aged 60 years and above. All affected reportedly received medical treatment, reflecting positive treatment-seeking behaviour among households.

Gender-disaggregated data show that both male and female members were affected, with slightly higher illness reporting among female-headed or mixed-gender households. Females reported more cases of malaria and gastric illnesses, whereas males experienced a marginally higher frequency of respiratory infections and coughs. This variation may be attributed to differences in occupational exposure, daily activities, or health-seeking practices between genders. Malaria and respiratory infections, such as coughs and colds, were the most prevalent illnesses among both women and men.

Regarding health-seeking behaviour, most respondents (69.4%) sought treatment at health centres, followed by private clinics (11.2%) and health posts (9.7%). Only a small proportion (3%) reported seeking care from traditional healers, suggesting a general preference for formal healthcare facilities over traditional or informal sources of treatment (Figure 5-43).

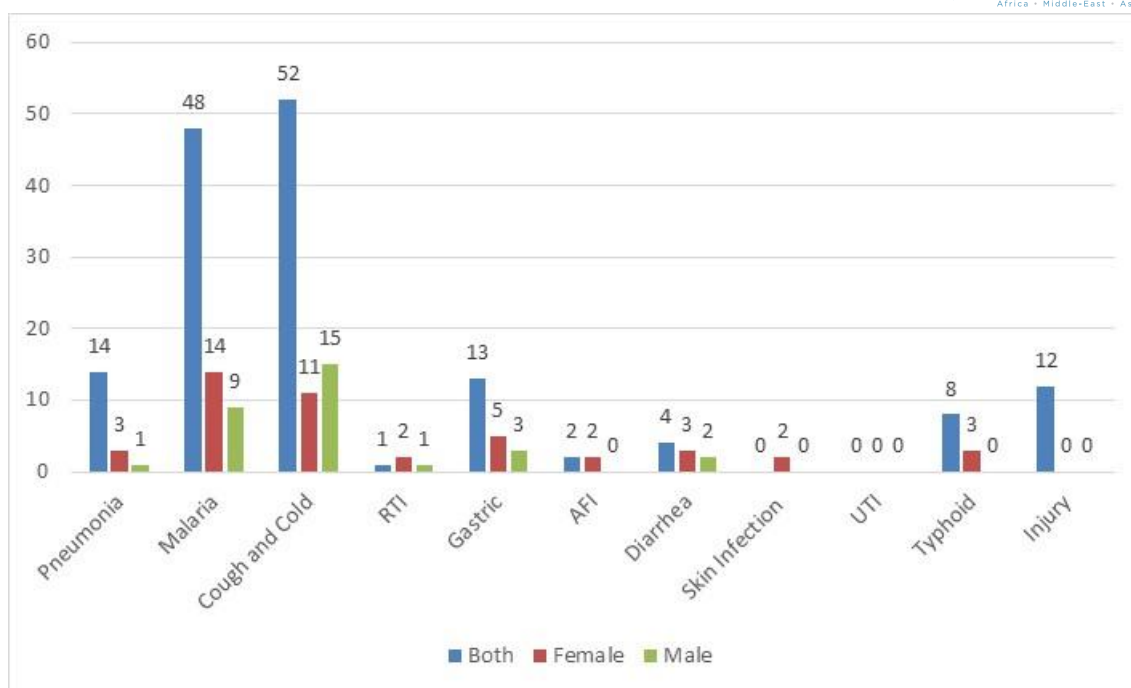


FIGURE 5-42: ILLNESSES REPORTED IN THE PAST 12 MONTHS

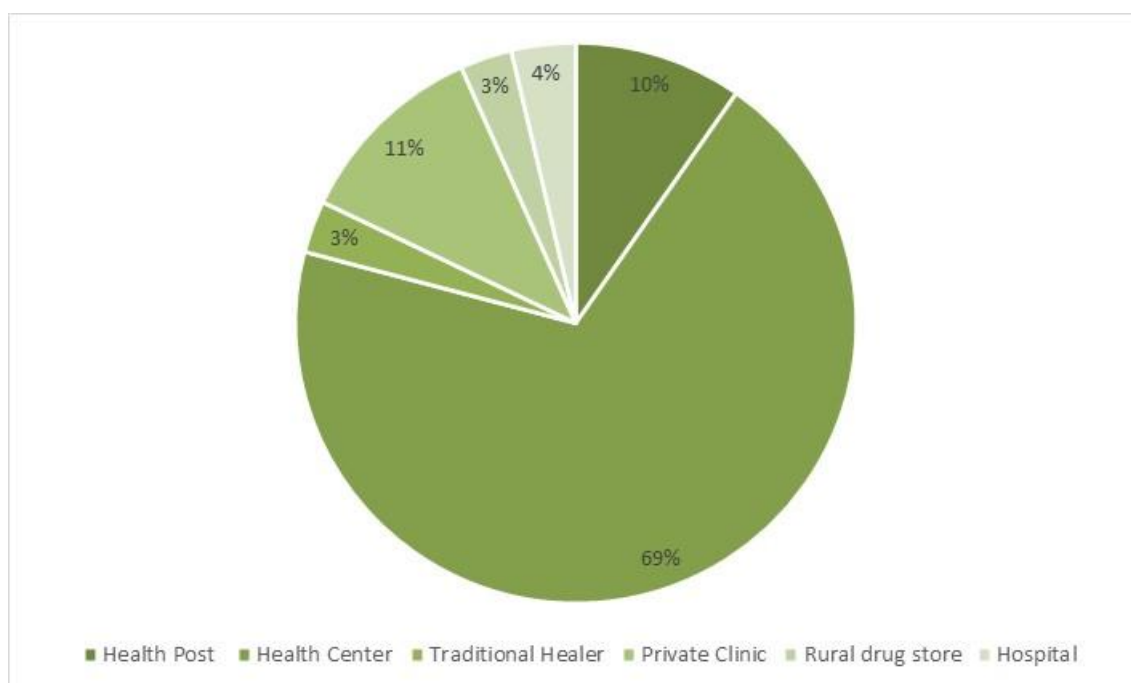


FIGURE 5-43: PERCENTAGE OF RESPONDENTS BY HEALTH-SEEKING BEHAVIOUR

Although reliance on health facilities is high, accessibility remains a major challenge. Among respondents who sought treatment at health facilities, three-quarters (75%) reported that it takes more than an hour and a half to reach the nearest facility, posing a significant risk in the event of health emergencies and potentially delaying timely medical intervention.

5.4.2.7 Housing

Housing facilities within the surveyed population are presented in Figure 5-44.

Most households reside in structures built from temporary or semi-permanent materials (refer to Figure 5-45) which are fully mobile (refer to Figure 5-46). Specifically, 98% of respondents reported the main house walls are constructed using thread, textile, plastic and wood, while the rest reported using wood alone. Similarly, most roofs are made of thread, textile, or plastic materials (96%), with only 6 households relying on grass or thatch.

Over half of households (52.8%) reported using an open space for cooking, while 42.9% cook within the main house, and only households (4.3%) have a separate kitchen.

Sanitation conditions remain limited. All respondents reported practicing open defecation, indicating the complete absence of toilet facilities across surveyed households.

In terms of lighting, the majority of households (95.6%) reported using torch batteries, while 39.8% use wood fires, and a small number (4 households) reported having solar lanterns.

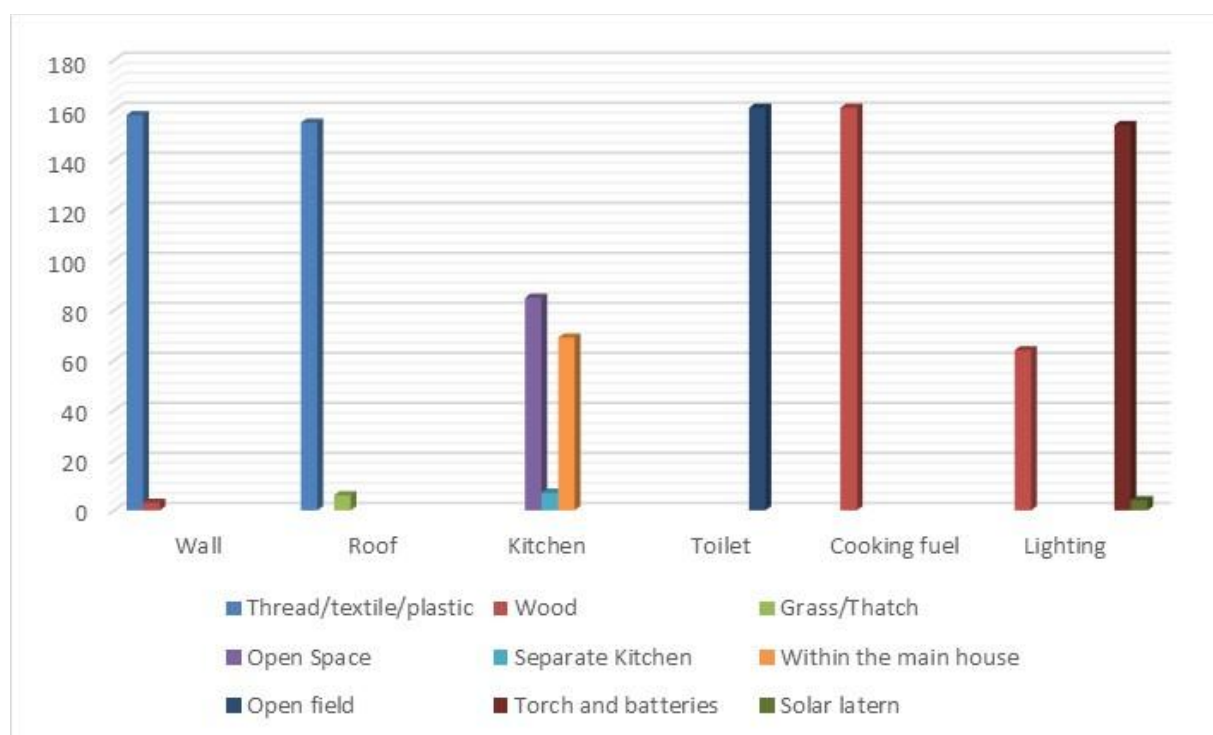


FIGURE 5-44: PERCENTAGE OF RESPONDENTS BY HOUSING FACILITIES AVAILABLE



FIGURE 5-45: EXAMPLE OF PASTORALIST SHELTER IN THE LEASE AREA (SOURCE: (MDI, 2025))



FIGURE 5-46: PASTORALIST FAMILY MIGRATING OUT OF THE LEASE AREA WITH MOVABLE HOUSING TRANSPORTED BY CAMELS (SOURCE: (MDI, 2025))

5.4.2.8 Gender

Gender relations among the Issa clan in the PAOI are shaped by a combination of Issa customary law (Xeer), Islamic principles (Sharia), and pastoralist traditions. According to the focus groups conducted in

2025, while the Issa share similarities with other Somali clans, their gender dynamics are influenced by their history as one of the oldest inhabitants of the region, their predominantly pastoralist livelihood, and their transnational territorial setting.

The Issa follow a patrilineal clan system in which clan identity and inheritance are passed through men. Officially, women have recognised inheritance rights, though these are sometimes constrained by customary practices favouring male lineage continuity.

According to Xeer, men are the primary participants in legal and political matters. For example, Diya (blood money) payments are negotiated between male representatives of lineages. Women's rights and protection are ensured collectively by the clan, but their direct participation in disputes is limited. Despite these gendered restrictions, women and girls are culturally respected, and harassment of women is a serious offense under customary law, punishable without requiring the victim's testimony. Although women hold limited formal authority, elder women often have significant informal influence within households and kin networks. They may serve as advisors or mediators in family disputes and occasionally represent women's interests in male-dominated community meetings, such as sub-clan gatherings. Women participate in community activities, but their decision-making power remains limited. Within households, it is culturally normative for women to seek permission from their husband or father before making financial or other significant decisions.

Focus group participants reported that female genital mutilation remains common, though the most severe forms, such as infibulation, have declined. Polygamy and early marriage are also practiced, and many families prioritise household duties over formal education for girls. Exogamous marriage, or marrying outside the immediate lineage, is widely practiced among Issa sub-clans. This custom strengthens alliances between clans and sub-clans. Livestock is traditionally given by the groom's family to the bride's family as a sign of respect and alliance.

According to the survey and focus groups, men are primarily responsible for herding livestock, trade, and decision-making at the household and community level. They serve as the public representatives of the family and clan. Women, on the other hand, are mainly responsible for domestic chores, including preparing food, caring for children and the elderly, constructing and maintaining make-shift shelters, and processing dairy products. Women also manage smaller livestock, such as sheep and goats, and oversee household economic activities. Women-only focus groups confirmed that women also engage in activities such as making ropes, selling goats, and other income-generating activities to support household needs. The socio-economic survey revealed that more men (53%) than women (47%) are engaged in income-generating activities. Furthermore, male-headed households (87.4%) report higher participation among both male and female members compared to female-headed households (12.6%). This suggests that male-headed households have greater access to economic opportunities or resources that enable more household members to engage in income-generating activities, while female-headed households face barriers such as limited access to capital, land, or labour force.

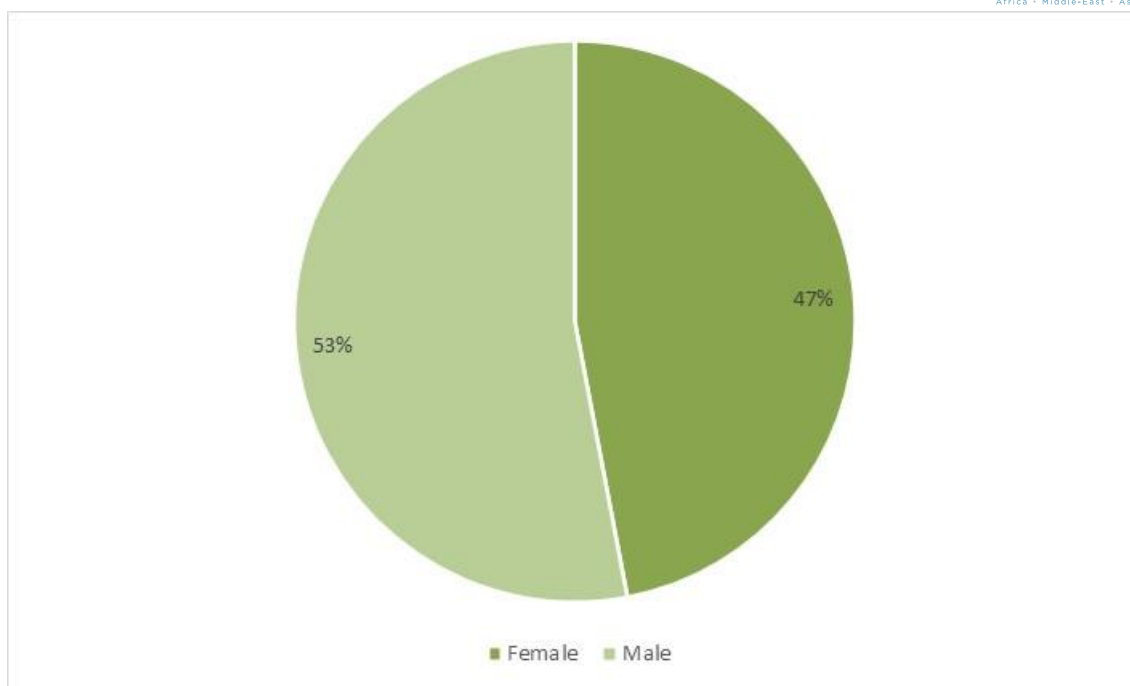


FIGURE 5-47: PERCENTAGE OF HOUSEHOLD MEMBERS ENGAGED IN INCOME GENERATING ACTIVITIES BY GENDER

Women generally have greater control over smaller livestock, such as sheep and goats, while men manage larger animals. Male-headed households generally own more animals than women-headed households, with a difference of almost 20% for goats and sheep. In addition to herding, most women earn income through small-scale trading, selling vegetables, clothes, utensils, tea, coffee, and chat, while some rear goats and sheep for milk production and sale.

In addition to engaging in income-generating activities, women continue to shoulder the primary responsibilities within the household. Approximately 90% of respondents reported that women - particularly wives and girls - are responsible for fetching water for the household. This task often requires substantial time and effort, as over half of respondents (55.7%) reported that it takes more than 90 minutes to reach a water source. The significant time spent on water collection adds to women's already heavy workload, reducing the time available for education, income-generating activities, and rest. It also exposes them to physical strain and safety risks, particularly when water sources are located far from their homes.

Finally, marriages are often polygamous and follow traditional customs, where men may marry up to four wives and provide dowries in the form of cash, cattle, camels, or small livestock. It was reported that most girls do not attend school, as early marriage is often preferred over formal education.

5.4.2.9 Decision-making

According to focus group discussions conducted in 2025, decision-making within the Issa community is rooted in customary governance structures. The Issa follow Xeer Ciise, their oral customary law, defines social order, regulates access to resources, and guides dispute resolution and reconciliation. Leadership is organised around three main institutions: the Guudi (assembly of elders) overseeing social, political, and economic affairs, the Gande, which reviews the legality of community decisions, and the Ugaas, the supreme authority who represents unity and fairness. Decisions are made collectively through consultation among male elders at various levels, from the local jilib (clan unit) to the council of elders. Most issues, such as land allocation or grazing access, are handled locally, but the Ugaas and his council can provide guidance on broader, strategic matters. Traditional leaders also work in close coordination with local government authorities to manage land and resource disputes.

During women-only focus groups, women reported having limited decision-making power in the community. While they are encouraged to participate in community activities and consult on decisions, it is culturally normalised for men to have a say in decision-making. Tefera *et al.* (2016) confirms that the

customary law (Xeer), excludes women from decision-making (Women are legally “irresponsible” according to Xeer (Maaheys), and in a group of vulnerable persons (Maati), to protect. Moreover, according to Tefera *et al.* (2016), women can only be involved in decisions about resources that are used on a daily basis.

5.4.2.10 Vulnerable Groups

According to the AfDB’s Integrated Safeguard System, vulnerable group refers to ‘a population of individuals who may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project’s benefits. This group is also more likely to be excluded from, or unable to participate fully in, the mainstream consultation process and as such may require specific measures and/or assistance to do so. Depending on the specific context of the Project, vulnerable groups may include, among others, female-headed households, the landless, the elderly, youth and children, persons with disabilities, groups who are marginalised on the basis of ethnicity, religion, language, as well as sexual orientation and gender identity, and highly vulnerable rural minorities, including groups referred to as indigenous peoples in some contexts. Vulnerability is not an inherent characteristic of people and does not occur in a vacuum. Women, for instance, are not inherently more vulnerable than men, but discrimination, entrenched social roles and attitudes, poverty, and lack of access to decision-making can weaken their resilience and render them vulnerable to project risk and adverse impacts. Vulnerability is thus context-specific and is to be understood through the interplay of three factors: (i) exposure to risk and adverse impacts; (ii) sensitivity to risks and impacts; and (iii) adaptive capacity’ (African Development Bank, 2023).

Focus groups and the socio-economic survey both revealed that the whole population seasonally migrating to the Project lease area is quite vulnerable due to their dependence on grazing on a land which has been increasingly affected by drought and loss of vegetation. Focus groups revealed that the livelihoods of all pastoralist communities are extremely unreliable and can only support families for around half of the year, relying on government benefits and other forms of informal support mechanisms to get through the year.

In the socio-economic survey, 61% of respondents reported receiving assistance via the Productive Safety Net Programme (PSNP), a national benefit scheme providing direct support in the form of cash as well as access to remunerated public works. Out of the 98 respondents identified as PSNP beneficiaries, 84 were from male-headed households. All of the people who reported receiving assistance did so in the form of the public works component. During focus groups, it was explained that the number of PSNP beneficiaries has gone down due to change in legislation. Consequently, the number of people currently supported by the scheme is much lower than what it used to be.

Based on the information shared during focus groups, the following groups are identified as subject to higher-than-average levels of vulnerability:

- Women-headed households, which tend to own less animals and therefore have less assets. Additionally, women-headed households tend to have less access to decision-making platforms. The number of women-headed households using the lease area during the 2025 surveys was 23, representing 14% of all surveyed households.
- Households headed by anyone who’s physically impaired due to old age, sickness or disability, due to their lower mobility and ability to earn sustainable livelihoods.

5.4.2.11 Project Knowledge and Perception

The wide majority of respondents (89.4%) reported being aware of the Project because of social media as well as clan leaders, as shown in Figure 5-48.

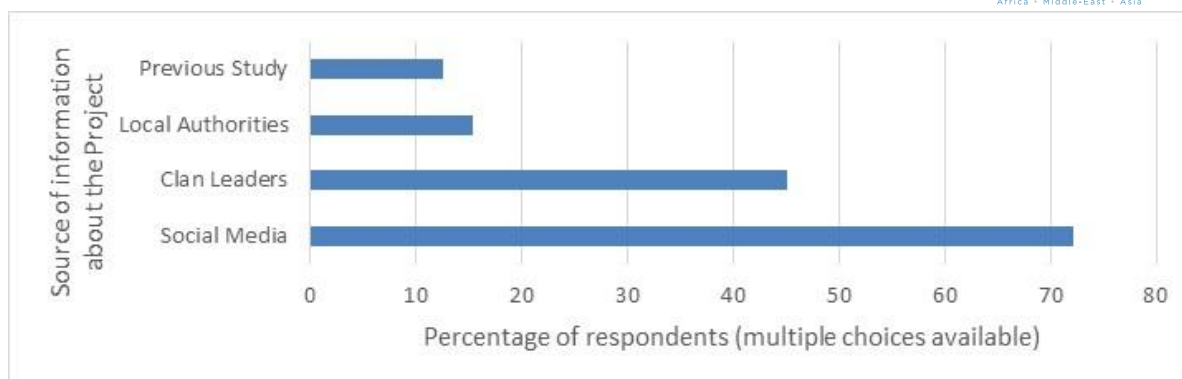


FIGURE 5-48: PERCENTAGE OF RESPONDENTS BY SOURCE OF PROJECT INFORMATION

Most people (89%) reported expecting job opportunities from the Project, followed by access to electricity (25%), improvement of the national electricity network (19%) and expansion of infrastructure (14%). A small percentage of respondents also mentioned expansion of urban centre and increase of services including water. Additionally, seven respondents believed that the Project wouldn't provide any benefits.

Most respondents (94%) were aware that the Project will impact collective lands. However, a high number of respondents expressed concerns about potential significant impacts, including loss of grazing land (52%), displacement (52%) and damage to private property and social services (21%). Only 2% of respondents thought that the Project may have an aesthetic impact.

Overall, the wide majority of respondents (80.8%) reported support of the Project.

5.4.3 Description of the Social Groups Affected by the Project

The following section describes the updated socio-economic baseline, as documented in the Indigenous Peoples Social Assessment.

5.4.3.1 Description of the Local Social Context

The Project is located in the Asyha Woreda or the Sitti Zone in the Somali Regional State of Ethiopia. The PAOI is within the territories of four kebeles (the lowest level of administrative unit in Ethiopia): Lasarat, Dagago, Aysha I and Aysha II. The social investigations and engagement with the local communities have confirmed that the communities affected by the Project are all part of the Issa Clan of the Somali people.

Ethiopia's population is highly diverse, containing over 80 different ethnic groups. The Somali People have been described as "one of the larger ethnic and linguistic minority groups in Ethiopia" (Ibrahim and Ali 2022). With more than 6,5 million people, they would represent the third largest sociolinguistic group in the country.

Sitti zone is located in the Somali Regional State and counts 4,445,219 inhabitants, (Ethiopian Statistical Service 2007, p. 80), out of which 97% are Somali people (ibid.). In the Sitti zone, home of the Issa Clan, around 96% of inhabitants are Somali (Central Statistical Authority 1994).

5.4.3.1.1 Somali Regional State

The Somali Regional State is the second largest region in Ethiopia in terms of area. Until its first-ever district elections in February 2004, Zonal and woreda administrators and village chairmen were appointed by the regional government. In the 2004 local elections, each woreda elected a council including a spokesman, vice-spokesman, administrator, and vice-administrator. These councils have the responsibility of managing budgets and development activities within their respective districts (Hagmann and Khalif 2011).

The Somali Regional State is one four regions (Afar, Somali, Benishangul-Gumuz, and Gambella) designated as 'Developing Regional States' by the federal government due to their limited access to socio-economic

development. It is also recognised as one of the pastoralist and agro-pastoralist areas recognised by the government.

5.4.3.1.2 Somali People

The Somalis are one of the largest peoples inhabiting the Horn of Africa, across four recognized states: Republic of Somalia, south-east Ethiopia, Djibouti and north-east Kenya (Figure 5-49). The Somali also have an important diaspora Middle East, North America, Western Europe, African Great Lakes region, Southern Africa and Australia.

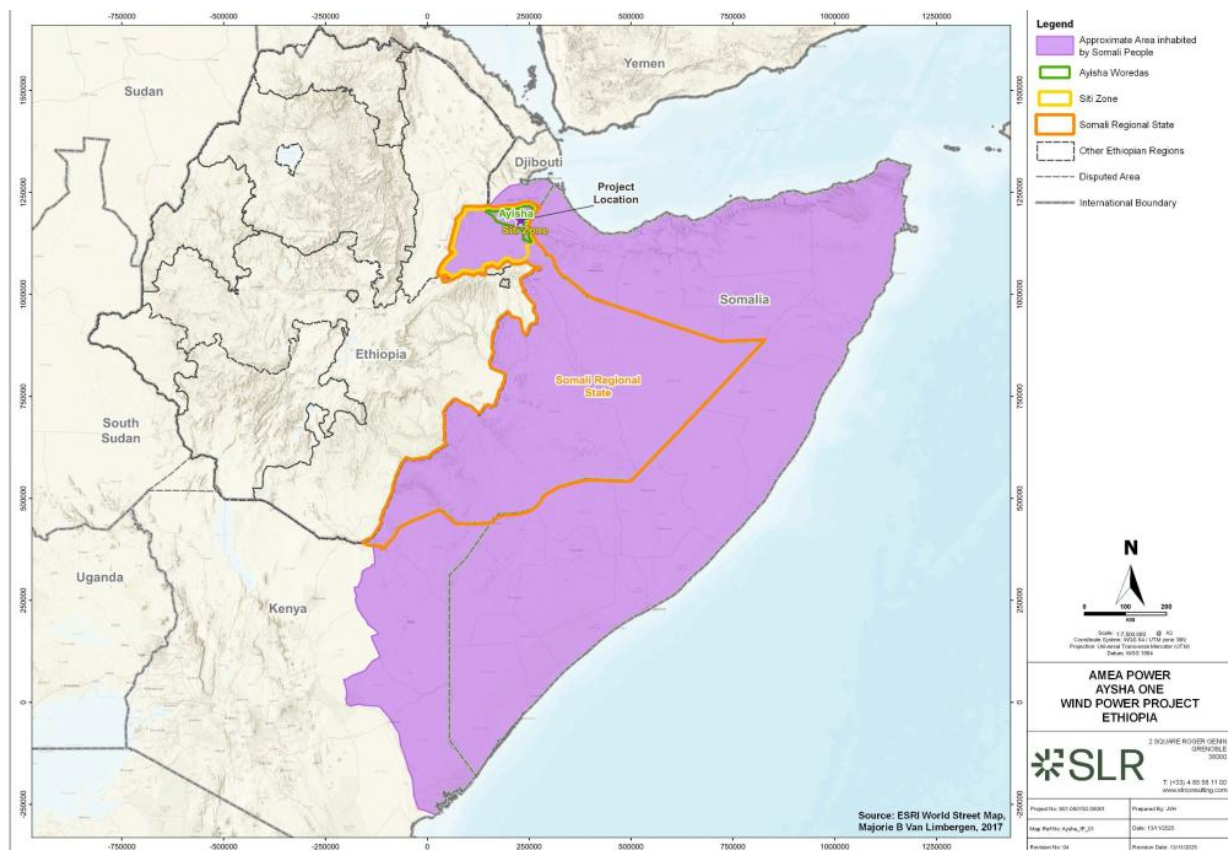


FIGURE 5-49: APPROXIMATE AREA INHABITED BY SOMALI PEOPLE

Ancient sources identify the Somali people in the horn of Africa back to the 12th century (Marina Tolmacheva 2016), and even the Greeks and Romans sources (Lionel Casson 1989).

During the 14th century, a significant number of Somalis converted to Islam through interactions with Arab communities from across the Red Sea. Following this religious transformation, they commenced a southward migration from the arid steppes, ultimately establishing themselves within and beyond the boundaries of what has historically been referred to as Somaliland (Lewis n.d.). The Somali region was incorporated into what was then the Abyssinian Empire in the closing years of the 19th century (Khalif and Doornbos 2002). Following Somalia's attainment of independence in 1960, border disputes and internal unrest in the Ogaden region (now the Somali Region) re-emerged (Ibrahim and Ali 2022). In 1991, Ethiopia established an ethnic federal system that recognises ethnic autonomy, reflected in the 1994 Constitution. The constitution aspires to achieve ethnic autonomy and equality while maintaining the state (Habtu 2003).

The social and political organisation of Somali society is based on patrilineal kinship known as 'clan'. Membership or belongingness to a particular clan is defined genealogically by tracing descent from a common ancestor (Lewis and Samatar 1999). Clan members are governed by a social contract which defines the terms of the collective unity within and between clans. In terms of genealogical hierarchy, the

Somali society is organised along patrilineal lines that start with Clan-Family at the top, followed by Clans, Sub-clans.

The Somali people are mainly divided among five patrilineal clans, the Hawiye, Darod, Isaaq, Rahanweyn and Dir (Hinds 2013). Certain clans are traditionally classed as noble clans, referring to their pastoral lifestyle in contrast to the sedentary "Sab" (Lewis and Samatar 1999). The noble clans are the Dir, Darod, Hawiye and Isaaq. Figure 5-50 shows the distribution of the main Somali clans.

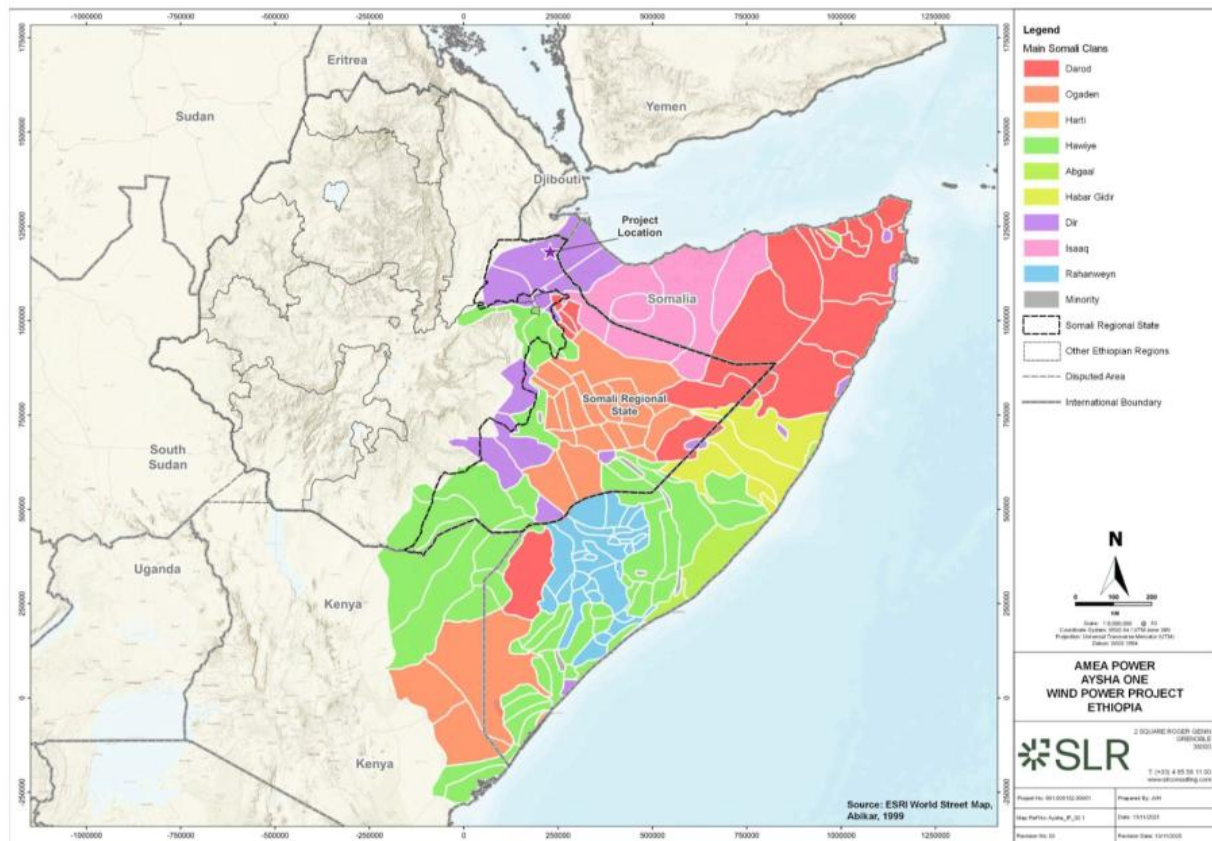


FIGURE 5-50: MAIN SOMALI CLANS

5.4.3.1.3 Issa Clan

The Issa Clan is one of the four main lineages of the Dir Clan. The Issa clan is making up the majority of the population in Ethiopia's Sitti zone (Tadele 2004). The Gurgura and Gadabursi subclans of the Dir clan are also present in the Sitti Zone, as well as other Somali clans. The population in Aysha Woreda is almost exclusively made by the Issa Clan. Interviews performed confirmed that the Issa clan territory encompasses the totality of Aysha Woreda. Geographically, the Issa clan extends beyond Ethiopia into Djibouti and Somaliland (Figure 5-51).

Field investigations confirmed that all villages in the PAOI and pastoralists using the PAOI are part of sub-clans of the Issa Clan. Therefore, the Issa Clan will be the focus of the next section.

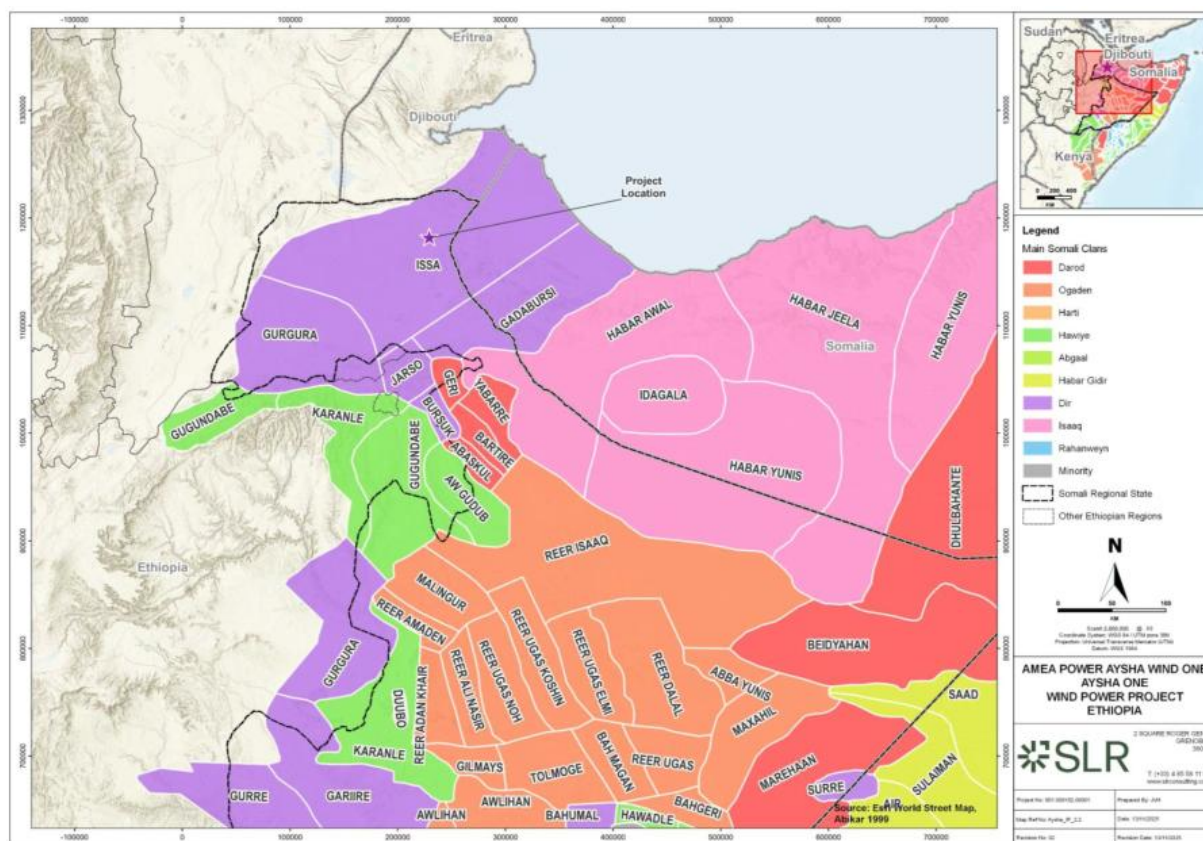


FIGURE 5-51: SOMALI CLANS IN THE PAOI

5.4.3.2 Overview of the Issa Clan

5.4.3.2.1 Historical Context of the Issa in Aysha Woreda

The local Issa people are either sedentary member of the clan based in one of the towns/villages affected by the Project; Aysha town, Lasarat Village and Dagago Town, or seasonal pastoralists migrating in and out of the area. Focus groups discussions with the local elders confirmed the following historical context:

Aysha Town: The then small village of Aysha started to emerge as an important pastoralist settlement following firstly, the construction of the Ethio-Djibouti Railway in the early 20th century, and secondly, establishment of a military outpost to monitor developments that were taking place by European colonial powers ruling the neighbouring countries of Djibouti (French), Somaliland (British), and Somalia (Italy). Reportedly, Aysha grew into a small town until it was interrupted when many of its residents lost their lives during a military operation led by the Ethiopian Imperial military, allegedly for residents (Issa clan) supported the de-colonialisation of Somalia and the subsequent unification of Somaliland with the mainland Somalia in 1960. According to elders, it took a considerable amount of time for Aysha to recover from the shock. Thanks to its strategic location (45 km from Ethio-Djibouti border) and the fact that Issa clan members are also based in neighbouring Djibouti and Somaliland, cross-border trade could flourish, and the town grew fairly rapidly over the past 2 to 3 decades. Now, Aysha is the capital of the Woreda and, as explained by clan leaders, it is growing much faster due to extensive infrastructure development projects in the area.

Lasarat Village: Reportedly, Lasarat is over 120 years old. Its birth, history, and development is directly associated with the construction and operation of the Ethio-Djibouti Railway. It was established as a Railway service station with a handful houses built as an accommodation for Railway staff. Although it is still a small village with an estimated population of about 1,000 (200 households), it grew into an urban-like settlement as a result of market demand for goods and services created by the Railway staff and their families.

Dagago Town: Lying at the cross-roads of the Ethio-Djibouti Railway and Highway and only about 30 km inland from Ethio-Somalia border, cross-border trade, illicit trade in particular, is the main reason behind the establishment and subsequent development of the small town of Dagago. While pastoralism remains the main livelihood of the rural residents, trade in general and illicit trade of goods in particular, continues to be the lifeline for urban residents of Dagago town. Today, Dagago is the second largest town in Aysha Woreda.

5.4.3.2.2 Issa Relationship with Mainstream Ethiopian Society

Due to the historical context, the local Issa clan leaders shared during FGDs that past relationships of Issa Clan and sub-clans in the PAOI to “mainstream” Ethiopian society is mixed. This is because, historically, there were a number of skirmishes with Ethiopian Defence Forces. As Issa leaders shared during site investigations, the worst incident was the one that took place around 65 years ago, which took lives of dozens of Issa and as such is still in the memories of many Issa elders.

Nonetheless, as reported during the focus groups discussions, ever since the re-constitution of the Ethiopian state into an ethno-linguistic federal state, relationship with the central government as well as mainstream Ethiopian society has improved remarkably; and the Issa Clan and wider ethnic Somalis in Ethiopia are enjoying relative autonomy and self-rule within the larger Ethiopian state and society.

5.4.3.2.3 Recent Afar-Somali Conflict

In 2014, the federal government redrew the boundary between the Somali and Afar regions. As a result, the Somali Region lost three kebeles (wards, or smallest administrative unit in Ethiopia) to the Afar Region (Reuters 2021) in the eastern part of Sitti zone. These villages would have been villages from the Issa Clan. Since then, they have been trying to get the villages back into the Somali region. A 2014 agreement granting these kebeles “special status” failed to resolve the issue due to opposition from Issa Clan leadership (OCHA 2021).

The disputed kebeles contain important resources, including the Awash River, as well as key transport routes such as the highway and railway linking Addis Ababa to Djibouti. Since 2018, violent clashes over control of these assets have intensified, with major confrontations occurring amid heightened political tensions during the 2021 national elections and in the period that followed. (Ethiopia Peace Observatory 2024). Continued violence has resulted in severe humanitarian consequences, including over 29,000 displaced people and at least 30 Afar security personnel killed in January 2021 (OCHA 2021).

Clashes continued until March 2024, when the Ethiopian Islamic Affairs Supreme Council initiated another round of peace talks, which led to a ceasefire agreement on 18 April 2024 (Ethiopia Peace Observatory 2024). The Council asked that the regional governments of both Somali and Afar regions fulfil their responsibilities in sustaining the ceasefire. Further official high-level meetings in Addis Ababa with representatives of both regions were organised in September 2024 to identify the root causes of the conflicts and developing collaborative solutions.

5.4.3.2.4 Religion and Cultural Heritage

As other Somali groups, the Issa Clan follow the Sunni Shafi’ite rite of Islam (Lewis 1994, p. 140). Site investigations in 2025 found three ritual sites used by the local Issa, and 10 burial sites in the lease area. Two of the ritual sites are used for religious festivals like Eid-al-Fitr, Eid-al-Adha and Mowlid. The third ritual site is also a burial site. The sub-clan Sheika, along with his family and members, gather from different areas such as Degego, Lazarat, Aysha, sometimes Dire Dawa and Djibouti, meet once a year and spend 2-3 days at the site, where they slaughter goats and cattle, and pray for peace and prosperity in the area. Refer to Chapter 5.3 for detailed information.

According to the UNESCO World Intangible Cultural Heritage submission file and video (Ethiopian Heritage Authority 2023), the Issa enjoy their traditional dance Harimaadeee, also called Wilwile, traditional craftsmanship, games and wedding ceremonies.

The Issa hold a unique oral tradition of the customary law, Xeer Issa (or Xeer Ciise in Somali), first drafted in the 16th century by the Issa leaders on a mountain in the Aysha zone of the Somali Regional State in

Ethiopia. The Xeer Ciise was recognised by UNESCO in 2024 in the Representative List of the Intangible Cultural Heritage of Humanity (UNESCO 2024).

5.4.3.2.5 Socio-Economic Context

Refer to section 5.4.2.

5.4.3.2.6 Issa Identity and Social Structure

FGDs showed that Issa people have a strong Issa identity. During FGDs, a unique feature among Issa was shared: “Once Issa, always Issa”, which means that an Issa remains Issa once he/she is born into an Issa family. Culturally, no Issa is allowed to change his Issa identity irrespective of circumstances including citizenship outside the Issa clan territory.

According to the qualitative social surveys in 2025, sub-clan leaders (at lower echelons) maintain contact and details of physical addresses of their sub-clan members mainly for two reasons: (a) safety of clan members, and (b) to expedite collection of blood money from or payment of it to eligible clan members wherever their current residence may be.

The social structure of the Issa, as well as other Somali clans, is organised upon a lineage system and clanship (Lewis 1994). The Clan-family is generally the highest level of clanship structure, and can count up to 30 generations to common ancestor (Austrian Red Cross 2009, p.8). The Clan (Quabill in Somali) (often around 20 generations), is the highest political unit, has some territorial properties and is often led by a clan leader. The most clearly defined descent group within the clan is the ‘primary lineage,’ which refers to the lineage an individual identifies with, typically tracing ancestry back six to ten generations (ibid.). Finally, the most basic social unit is the mag-paying group (also called the diya-paying group, Jilib in Somali), counting around four to eight generations, although the genealogy is not as important as collective responsibility in this level of social structure. Their social and political relations of the Issa are governed by the aforementioned customary Somali law, called the xeer (ibid.).

The Issa clan (quabill) is further divided into six sub-clans: Ceeleeye, Walaaloon, Holle, Wardiiq, Horoone, Uurweyne, and further 12 sub-clans, as shown in Table 5-29 (Site investigations, 2025). Nonetheless, sub-clan leaders on site argued that in the interest of maintaining unity at the highest clan (Issa) level, sub-clans are less important than the main clan or clan family, Issa.

TABLE 5-29: STRUCTURE OF THE ISSA CLAN (CONFIRMED DURING SITE INVESTIGATIONS)

The Issa Community (Beelwaynta ciise)	
6 families and 12 homes (6 da reer iyo 12 ka aqal)	
Six Families	Twelve “homes” (i.e. sub-clans)
Ceeleeye	Muuse
	Mamaasan
Walaaloon	Yuusuf
	Iilde
Holle	Mahadle
	Saaciib
Wardiiq	Rumawaaq
	Wakhtishiil
Horoone	Geel walaal
	Habar Walaal

The Issa Community (Beelwaynta ciise)	
Uurweyne	Fiqi
	Cabdalle

As reported during FDGs, marriage within the Issa community is strictly exogamous, requiring individuals to marry outside their sub-clan. This practice is governed by the Xeer Ciise. Beyond its social function, marriage often serves as a strategic mechanism for fostering and reinforcing alliances between sub-clans and other clans, both within the Somali ethnic group and beyond. Such unions play a significant role in maintaining inter-clan cohesion and promoting broader social and political stability.

5.4.3.2.7 Political Structure and Customary Law (the Xeer)

As mentioned above, political relations in Somali clans, are governed by the Somali customary law, the Xeer (Austrian Red Cross 2009, p. 9). All four main nomadic Somali clans respect their own version of a xeer. The xeer can be described as a Somali “social contract” to manage relations between the nomadic clans (Renders 2007), used in dispute management, settlement and reconciliation (Austrian Red Cross 2009, p.10). Xeer Ciise (Xeer of the Issa) is an oral customary law that was first compiled in the sixteenth century and is a manifestation of the Issa identity (Girmaye 2023).

The Xeer Ciise has three institutions, the Guudi, the Gande and Ugaas. The Guudi is the assembly of elders, dealing with social, political and economic matters of community (Iye and Holl 2024, p. 105). The Gande acts as a “constitutional court”, it controls the constitutionality of decisions of the Guudi (ibid.). The Ugaas (also known as Ugaz) mainly has a judicial role, he is a “symbol of law” (ibid.). Lower levels of elders usually represent the jilib (mag-paying group). Decision making is led by male clan elders, their role, apart from dispute resolution, is to regulate access to shared resources such as grazing land and water (Austrian Red Cross 2009). Most issues are handled at a grassroots level, for example land allocation (Tefera et al. 2016), but the Ugaas and council of elders will make strategic decisions on land (ibid.).

In comparison to other Somali clans, local elders confirmed that it is common for the Somali clans to also have clan leadership (e.g. Sultan) but often at the level of sub-clan or sub-sub-clan or even lower. Issa have their Ugaas as their one and only supreme leader at the highest level (Site investigations, 2025). Tefera et al. (2016) adds that in comparison to other Somali clans, the Issa clan's customary institutions have remained well-preserved.

The legacy of centuries-long opposition between highlands Ethiopia and the Somali region have during a long period kept the Somali social and political structures separated from the Ethiopian State. Ethiopia was historically divided into provinces, based on ethnic and linguistic specificities. The current system of administrative regions was introduced in 1992 by the Transitional Government of Ethiopia and was formalised in 1995 when the current Constitution of Ethiopia came into force (Wubneh, 2017).

Since the end of the 1990's and the promotion of a new “ethnic federalism” by the Ethiopian Government, the specificities of the Somali social and political institutions have been recognised by the Ethiopian Government and have started to be integrated into the formal governance system. The guurti (guudi) elders were incorporated into regional and local administration of the Somali Regional State from year 2000 (Hagmann 2007; Hagmann and Khalif 2011). The elders' role is to advise the government in matters of peace and mediate clan conflict (ibid.). In 2000, the transitional federal government has set out rules to ensure four main Somali clans are represented in the regional government structures, and the Dir Clan (of which the Issa are part of) was one of these four clans (Austrian Red Cross 2009).

Site findings confirm that in Aysha Woreda, mainstream administration (Gudoomiye) works closely with traditional governance representatives (Site investigations, 2025), the structure of collaboration is presented below (Figure 5-52). There are clan representatives or elders at all echelons of the formal administrative structure. Key community level decisions are made by local officials only after close consultations with and consent from clan leaders or their representatives at level of authority.

The Regional law (Proclamation no. 128/2013) also recognises customary institutions in the Somali Regional State, and stipulates that land disputes should be managed through customary institutions, with the regional government having the duty to support such institutions (The Somali Regional State, 2013).

The Somali Regional State Rural Lands Administration and Use Proclamation No. 128/2013 establish legal rights for pastoralists and agropastoralists to access and use communal grazing lands, while recognising their customary tenure systems.

Moreover, as confirmed by site investigations, local “mainstream” administration of the local kebeles is entirely led by members of the Issa clan. Article 56 of the Somali Regional State Constitution (Somali Regional State 1994) stipulates that The State Council shall, in accordance with this constitution, establish elders’ and clan leaders’ Councils.

Issa leaders are also elected and represented in the federal and regional government.

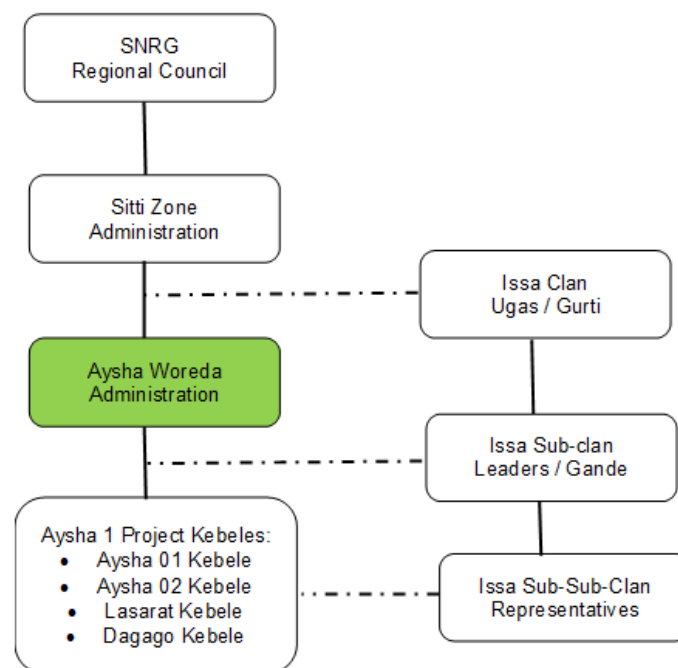


FIGURE 5-52: GOVERNANCE STRUCTURE IN THE SOMALI REGIONAL STATE, INCLUDING CUSTOMARY INSTITUTIONS

5.4.3.2.8 Customary Land Ownership

The Somali Clan can be considered both as a territorial unit and as a political unit (Lewis, 1994). Land is acquired through either peaceful occupancy of unoccupied territory or through military operations. Lewis (1994, p. 89) points out that the present distribution of Somali land is a result of a series of tribal wars. Tribal land is under collective ownership. Focus groups discussion on site confirmed that land (including grass and water) is collectively owned by all members of the Issa clan. The Issa Clan members interviewed explained this is unique to the Issa, as other Somali clans’ collective ownership would be limited to sub-clans (tribal sections and their sub-divisions as explained by Lewis (1994, p. 90)), and not the clan as a whole. Collective ownership of land among Issa is also enshrined in their customary law – Xeer Ciise. This is confirmed by Tefera *et al.* (2016), showing that according to Xeer Ciise, all members of the Issa clan are entitled to equal rights of access and use over communal resources and clan-owned land, without discrimination based on geographic origin. Issa individuals from districts such as Shinille, Aysha’a, or Erer may freely utilise the grazing lands in Afdem without restriction or inquiry. This practice stands in contrast to other Somali clans, where such inclusive rights are not customary and resource management tends to occur at more localised, sub-clan levels.

The results of the socio-economic survey carried out in 2025 shows that the respondents are attached to their customary land: the majority of respondents stated “impact on communal land” as the biggest anticipated negative impact due to the Project. Finally, when asked about the value of the land leased area during the surveys, the third most popular answer was “emotional attachment (ancestral land).”

Interestingly, the Issa clan leaders further shared during FGDs that although Issas own and occupy a distinct contiguous geographic area stretching over three national governments, territoriality is less important among Issa sub-clans. Unlike many other Somali clans, less emphasis on territoriality among Issa sub-clans is allegedly meant to ensure durable peace through promoting inclusivity of the Issa clan not only between its own sub-clans, but also between Issa and other Somali clans and sub-clans.

According to findings from site (2025), clan leaders, as well as pastoralists, apply a form of unwritten land-use map to guide the allocation of land use as residential, grazing, religious or spiritual, and other uses. Moreover, there are two mechanisms for managing access to land among Issa. In urban areas, access to land (residential, business, investment, etc.) is managed through formal Woreda Administration mechanism in consultation with sub-clan leaders. In rural areas, allocation of land rights is an exclusive jurisdiction of sub-clan leaders. Access to grazing land does not require any permit by sub-clan leaders. However, residential land requires a form of green-light from sub-clan leaders. Although it remains less clear to outsider inquirers, it appears that there is a form of land use strategy adopted by sub-clan leaders, as they have categorised rural land into residential and grazing land. According to Issa sub-clan leaders, as long as an Issa trace back his/her lineage to one of the six sub-clans of Issa, he/she can live and work in any land that is inside the Issa territory. In rural areas, sub-clan leaders allocate land (residential, grazing, etc) to sub-clan members on-demand.

5.4.3.2.9 Language

According to the 2007 census, Somali was spoken by 6.5% of the Ethiopian population, and it is the third main language, after Oromo (33.8%) and Amharic (29.3%). In the Somali Regional State, Somali is the mother tongue for 97% of the population. Somali became an official language in Ethiopia in February 2020 (PCGN for GOV UK 2024). Finally, article 5 of the Ethiopian Constitution states that All Ethiopian languages shall enjoy equal state recognition. Moreover, Article 6 of the Somali Region Constitution sets out Somali as the working language of the State (Somali Regional State 1994).

The Somali language is regulated by the Regional Somali Language Academy, an intergovernmental institution established in June 2013 in Djibouti City by the governments of Djibouti, Somalia and Ethiopia. It is officially mandated with preserving the Somali language (COMESA RIA 2015).

The Somali language is classified within the Cushitic branch of the Afroasiatic family, specifically, Lowland East Cushitic in addition to Afar and Saho (Lewis 1994). The Somali Dialects are broadly divided into three main groups: Northern Somali, Benadir and Maay (Andrew Dalby 1998; Lamberti 1986). The geographic distribution of these main dialects is given in Figure 5-53.

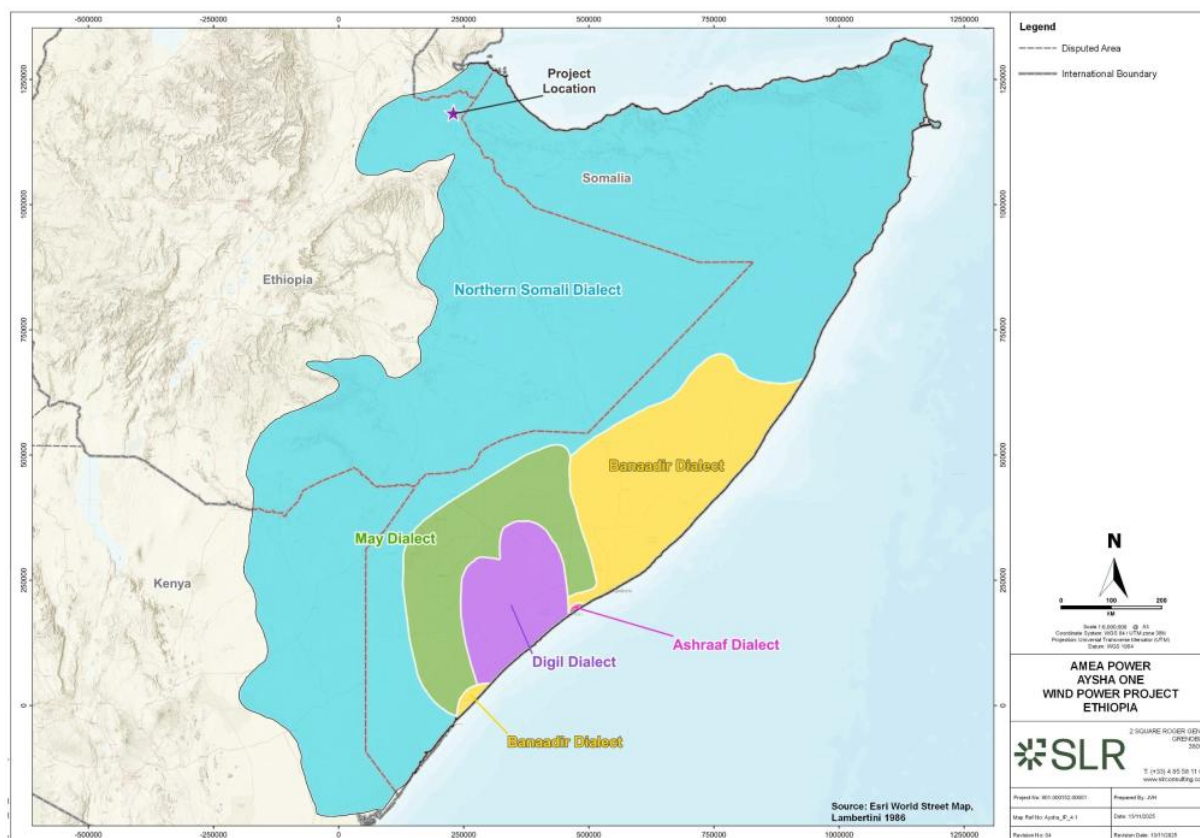


FIGURE 5-53: DISTRIBUTION OF MAIN SOMALI DIALECTS

Northern Somali forms the basis for Standard Somali (Andrew Dalby 1998; Lamberti 1986). Most of the classical Somali poetry is recited and composed in the Northern Somali dialect. It is spoken by the majority of the Somali population with its speech area stretching from Djibouti, and the Somali Region of Ethiopia to the Northern Frontier District. Lamberti subdivides Northern Somali into three sub-dialects:

- Northern Somali proper or Af-Maxaa-tiri, also referred to as standard 'northern' Somali or Northern Somali in the proper sense (European Association of Somali Studies and Somali Studies International Association 2001; Lamberti 1986). spoken in the northwest'
- The Darod group (spoken in the northeast and along the eastern Ethiopia frontier); and
- The Lower Juba group (spoken by northern Somali settlers in the southern riverine areas).

The spatial distribution of the sub-dialects of Northern Somali is given in Figure 5-54.

The FGDs on site confirmed that the Issa Clan members in the PAOI do speak the Northern Somali dialect. They also confirmed that the three sub-dialects of Northern Somali are mutually intelligible, despite some minor differences in vocabulary.

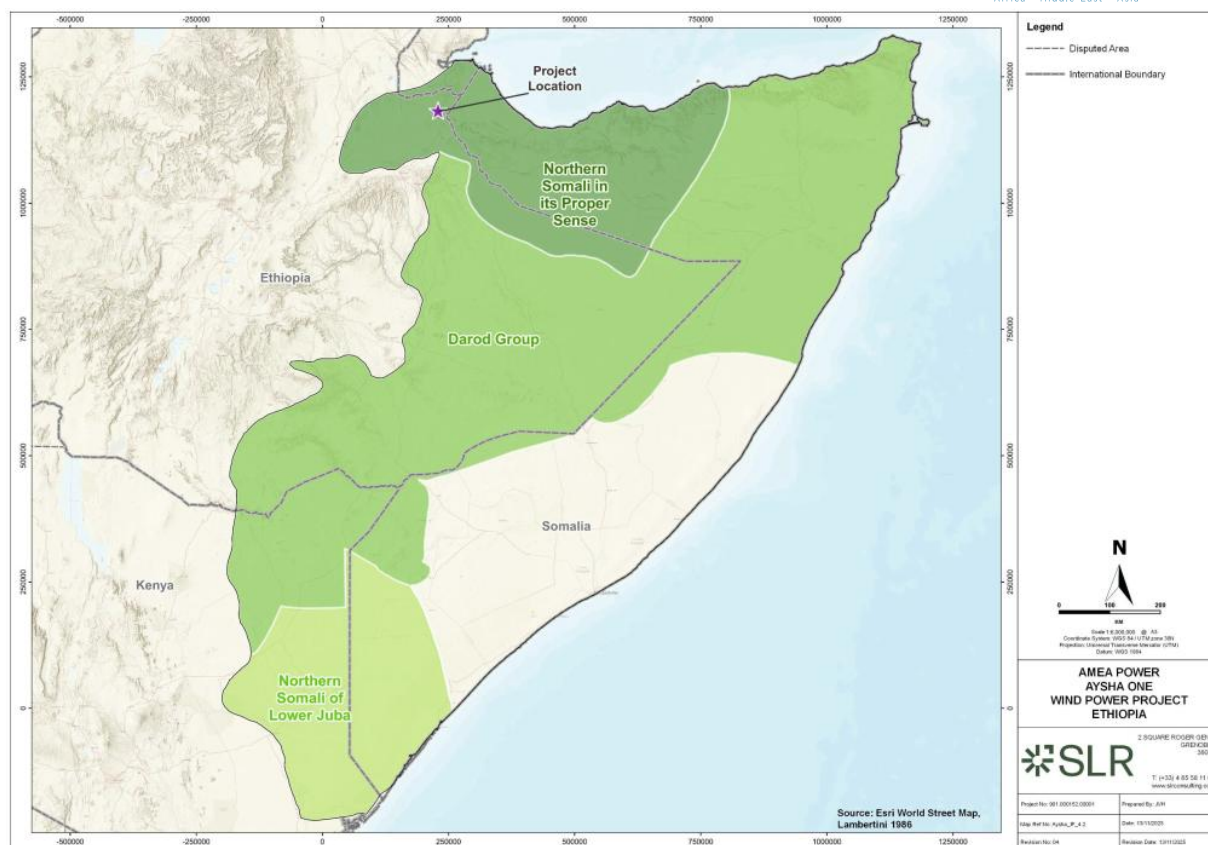


FIGURE 5-54: DISTRIBUTION OF SUB-GROUPS OF NORTHERN SOMALI DIALECT

5.4.4 Analysis of the Four PS7 Characteristics

To determine whether IFC PS7 and AfDB E&S OS 7 apply to the Project, it is necessary to assess whether the Issa Clan is a distinct social and cultural group possessing the following characteristics in varying degrees:

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

Each of these four characteristics must be assessed separately, with no single characteristic carrying more importance than the others. In line with recognized GIIP, this assessment is based on (i) a review of the information available, and (ii) direct consultation with the relevant groups to understand whether they exhibit the applicable characteristics.

It is worth adding that Ethiopia is a multi-ethnic state and it is difficult to define precisely “mainstream society” in Ethiopian context. At the country-level, the term mainstream society can refer to populations residing in the densely populated central Ethiopia (highlands). In the Somali Regional State, the Somali people are the mainstream society.

5.4.4.1 Identification as a Distinct Group and Recognition of this Identity by Others

5.4.4.1.1 Self-identification:

The Issa have a strong identity, and identify themselves as a distinct social group, the Issa Clan. The Issa are indigenous to the PAOI, and they have been using the land in Aysha Woreda for centuries. Their identity is recognised by other groups.

Reportedly, Somalis (including Issa) feel generally excluded from the highland parts of the country in Ethiopia and feel as a distinct social group.

5.4.4.1.2 Recognised by others:

The Ethiopian Constitution recognises the rights of Nations, Nationalities and Peoples and defines it as “a group of people who have or share large measure of a common culture or similar customs. The Somali People are one of the ethnic groups recognised by the Ethiopian Government. Issa are part of the Dir clan, which is one of the four main clans in Somalia, considered “mainstream society” in Somalia and in the Somali Regional State in Ethiopia.

The first characteristic does apply to the Issa Clan.

5.4.4.2 Collective Attachment to Ancestral Territories or Areas of Seasonal Use or Occupation

The Issa Clan holds customary land rights over territories in the Somali Regional State in Ethiopia, Djibouti and Northern Somali. Their customary land tenure and land management practices are more collective than other Somali groups, according to the literature review, the NGO interviewed and focus group discussion with the affected communities' members. Collective ownership of land among Issa is also enshrined in their customary law – *Xeer Ciise*.

Communal land and territories owned by the Issa are essential for their nomadic pastoralist livelihoods as a significant source of grazing land and water. This was expressed by the interviewees during the socio-economic survey performed in 2025.

The second characteristic does apply to the Issa Clan.

5.4.4.3 Institutions Separate from those of the Mainstream Society

Somali Clans have their own customary political institutions, the Xeer. The Issa Clan have their own version of these customary institutions, enshrined into the Xeer Ciise (Xeer of the Issa) recognised by UNESCO in 2024 in the Representative List of the Intangible Cultural Heritage of Humanity.

However, these institutions nowadays do not function separately from the formal sociopolitical system, both at the federal level and in the Somali Regional State:

- Article 56 of the Somali Regional State Constitution (Somali Regional State 1994) stipulates that The State Council shall, in accordance with this constitution, establish elders' and clan leaders' Councils.
- The Somali elders (guurti) were incorporated into regional and local administration of the Somali Regional State from year 2000, and the federal government has set out rules to ensure four main Somali clans are represented in government, including the Dir Clan of which the Issa are part of.
- The Regional law (Proclamation no. 128/2013) also recognises customary institutions in the Somali Regional State and stipulates that land disputes should be managed through customary institutions, with the regional government having the duty to support such institutions.
- The Somali Regional State Rural Lands Administration and Use Proclamation No. 128/2013 establish legal rights for pastoralists and agropastoralists to access and use communal grazing lands, while recognising their customary tenure systems.

- In Aysha Woreda, mainstream administration (Gudoomiye) works closely with traditional governance representatives and there are clan representatives or elders at all echelons of the formal administrative structure. Key community level decisions are made by local officials only after close consultations with and consent from clan leaders or their representatives at level of authority.
- Issa leaders are also elected and represented in the federal and regional government.
- Under the Ethiopian Constitution, marriage through customary institutions such as Xeer is respected in national law

While the national legislation may provide for the recognition of customary rights and traditional institutions, there is insufficient evidence that such integration occurs effectively in practice, particularly in relation to Project-related decision-making. This includes the granting of the Project land lease, for which community consultations did not demonstrate that traditional Issa Clan institutions and decision-making structures were fully or meaningfully engaged. Based on site engagement observations, there are indications that, in practice traditional institutions operated distinctly from the formal governance system.

Therefore, the third characteristic does apply to the Issa Clan.

5.4.4.4 Distinct Language

The Issa people speak the Northern Somali dialect of the Somali language, which forms the basis for Standard Somali. Somali is one of the official languages in Ethiopia, and the official language for the Somali Regional State. Somali is the main language for 97% of the population in the Somali Regional State.

The fourth characteristic does not apply to the Issa Clan.

5.4.4.5 Conclusion

With the above criteria, PS7 / OS7 is applicable to the Project. The Project recognises that IFC PS7 paragraph 7 and Guidance Note GN6 allow for flexibility in the application of characteristics and that the absence or partial manifestation of one characteristic, such as language, does not preclude Indigenous Peoples / HVRM status where other defining characteristics are clearly present.

5.4.5 Free Prior and Informed Consent (FPIC)

According to IFC Guidance Note 7 on Indigenous People, certain circumstances require that Free, Prior, Informed and Consent (FPIC) is achieved by a Project. This Project triggers the requirement FPIC since it will be developed in a customary land belonging to the Issa Clan. The Project has developed a Benefit Sharing Framework which details the principles of engagement to obtain FPIC. It also has a schedule of when consultations with the affected local communities will occur during the construction and operation phases. It also details the people to be consulted to provide consent. The Project has also taken measures to ensure that the HVRM affected by the project receive social and economic compensation for the use of their land. This is detailed in the Benefit Sharing Framework and the Livelihood Restoration Plan. The development will affect the communities located in, or using the land and natural resources in four kebeles (the lowest administrative unit in Ethiopia) in Aysha Woreda. Due to this land restriction caused, the Project has determined the applicability of IFC PS7 and AfDB OS7.

5.4.5.1 Benefit Sharing Framework

The Project has developed a Benefit Sharing Framework which outlines the benefit sharing programs that will be shared equitably with the Issa Clan, the customary landholders identified as Highly Vulnerable Rural Minorities (HVRM), in line with IFC PS7 and AfDB OS7. The framework complements the ESIA and Livelihood Restoration Plan and establishes an approach for ongoing Free, Prior and Informed Consent (FPIC) process throughout pre-construction, construction, and operations, respecting Issa traditional governance structures and ensuring inclusive participation of elders, women, youth, and vulnerable

groups. It is based on extensive consultations conducted since 2020 and sets out principles, governance arrangements, consent procedures, an implementation roadmap, and a monitoring plan. Indicative benefit-sharing initiatives include community infrastructure, electrification, social facilities, environmental restoration, and local employment, while livelihood impacts are addressed separately under the LRP. The framework is supported by Benefit Sharing Programs and an estimated budget aligned with community priorities and lender requirements.

5.4.6 Sensitive Receptors within the PAOI

The PAOI comprises a diverse mix of rural land uses that are highly sensitive to external disturbances. It includes scattered settlements occupied by both seasonal and permanent dwellers, as well as Lasarat Village, where irrigated plots support small-scale subsistence farming. Extensive communal grazing lands also provide critical resources for pastoral communities that rely on livestock rearing. The area is traversed by major transport infrastructure, most notably the Ethio–Djibouti Toll Road, a key trade corridor carrying an estimated 250–300 heavy vehicles per day.

The additional baseline studies identified sensitive receptors (SRs) in terms of noise impacts and shadow flicker impacts as discussed below.

5.4.6.1 Shadow Flicker SRs

Potential SR locations may encompass dwellings, residences, or communities that could be affected by shadow flicker resulting from wind turbines.

Shadow flicker occurs when the sun passes behind the wind turbine and casts a shadow several hundred meters away from the turbine's location. As the rotor blades rotate, shadows pass over the same point causing an effect known as 'shadow flicker'. Shadow flicker only occurs under specific environmental conditions which must also align for flicker to occur which include position and height of the sun, wind speed, direction, cloudiness, and position of the turbine to a sensitive receptor. There are three conditions which must be met in order for shadow flicker to occur:

- The sun must be shining without cloud cover;
- The wind turbine must be between the sun and the observer; and
- The observer must be within the shadow of the wind turbine.

Excessive shadow flicker can be a source of nuisance and could create a disturbing indoor environment to the occupants of those buildings especially when casted through windows of buildings that directly face the turbine with no obstructions in sight (trees, hills, etc.).

The IFC EHS Guideline for Wind Energy states that where there are nearby receptors, commercially available software can be used to model shadow flicker in order to identify the distance to which potential shadow flicker effects may extend.

Generally, shadow flicker can be modelled in WindPRO. WindPRO is considered to be an industry standard software program for WTG shadow flicker calculations. The software incorporates the turbine sites and surrounds and simulates the path of the sun over the course of the year and assesses at intervals the potential shadow flicker at a given receptor (domestic dwelling). The software gives a conservative estimate of the number of hours per year that shadows could be cast by the rotation of the turbine blades.

Human settlement in the region is predominantly characterised by migrant and/or seasonal inhabitants who establish temporary housing structures at optimal sites on a temporary or seasonal basis. Therefore, there are no formal dwellings or permanent residences within the PAOI defined for the Shadow Flicker Assessment. Nevertheless, certain locations have been broadly classified as "villages" or "settlements" based on limited evidence of prior occupation. The town of Aysha and Lasarat Village are significantly outside the PAOI, and residents are not anticipated to experience any shadow flicker impacts due to the Project.

The ESIA report (MDI, 2025) notes that "scattered" dwellers are primarily located in the northern sector of the PAOI, where the landscape is predominantly characterised by rocky outcrops and surface stones.

Given that there are multiple sites in this area that may have been occupied at some point by temporary or seasonal dwellers, sample sites have been selected on the southern edge of the rocky outcrop area for inclusion in the baseline. The potential SRs within the Shadow Flicker Assessment PAOI .

A shadow flicker screening assessment was undertaken for the Project to determine the need for detailed flicker modelling assessment using WindPRO software. The study is based on the following information:

- Potential Sensitive Receptor (SR): Potential sensitive receptors have been identified within the vicinity of the proposed wind farm area that include Aysha town and Lasarat village. Aysha is located approximately 4.2km north east from the closest wind turbine, while Lasarat is located approximately 2.8km south west from its closest wind turbine. The dwellers within the area are not considered sensitive receptors given that these receptors are migrating, do not have permanent settlements and live in temporary housing structures – therefore residency areas are not permanent. In addition, seasonal dwellers do not mind moving some small distances within the site in general to areas that are less affected by shadow flicker.
- Three ritual sites within the Project lease area that could potentially be sensitive to shadow flicker impacts. One of these sites is outside in the shadow flicker study area and has been excluded from this assessment. The remaining sites are as follows:
 - Ritual Site 01 - located in the village of Kelewle and it's used three times a year to hold religious festivals like Eid-al-Fitir, Eid-al-Adha and Mowlid.
 - Ritual Site 03 - located in the village of Aligire and is used by the sub-clan Sheika for gatherings which take place once a year. People from different areas, including Degego, Lasarat, Aysha, Dire Dawa and Djibuti travel to the site for this occasion and spend 2-3 days on this location, where they slaughter goats and cattle to pray for peace and prosperity. This ceremony is usually initiated when demand arises due to some sort of crisis such as conflict, drought, epidemics or the death of influential personalities.

General arrangement and layout drawings of the wind farm, including topography was considered in the model. The worst-case turbine layout and specifications were considered and taken into account for the preliminary screening assessment. Several turbine layout and specifications were considered for the Project. For the preliminary screening assessment "Option 1" was considered given that it represents the worst-case scenario since it: (i) includes turbine located on the boundary of the Project site and therefore considered to have the closest turbines to nearby sensitive receptors (Aysha and Lasarat) when compared to the other options and therefore highest potential for shadow flicker; (ii) has the highest number of turbines which consists of 72 turbines each of 5MW capacity; and (iii) proposed wind turbines for the Project have the largest rotor diameter and thus highest potential to create shadow flicker impacts with a 162m rotor diameter.

The assessment takes a conservative approach whereby possible settlement locations and / or selected sample points representing seasonal dweller sites and the identified ritual sites have been identified as receptor locations to provide a worst-case scenario of potential shadow flicker impacts on receptors in the area. Nine potentially sensitive receptor sample locations were identified in the shadow flicker study area for input into the model. It should be noted, however, that sample locations that are more than 2.1 km from the nearest turbine are not expected to experience any shadow flicker impact and have been excluded from further assessment.

The model sets the maximum default distance to calculate shadow flicker exposure to 2 km from a turbine based on the German national requirements. At distances beyond 2 km, the model assumes that shadow exposure dissipates before reaching SRs. A companion guide to an English Planning Policy Statement states that shadow flickers are unlikely to occur within distances of ten times the rotor diameter of the wind turbine. As the proposed wind turbines rotor diameters are 162m, this means that at distances larger than around 1.6km significant impacts from shadow flicker effects are unlikely. As noted in the figure below, based on the proximity of Aysha, 4.2km northeast from the closest wind turbine, and Lasarat, located approximately 2.8km south west from its closest wind turbine, no shadow flicker impacts are anticipated at the sensitive receptors. A conservative 2km buffer was generated around the turbines as presented in the figure below which clearly illustrates that sensitive receptors are outside this zone.

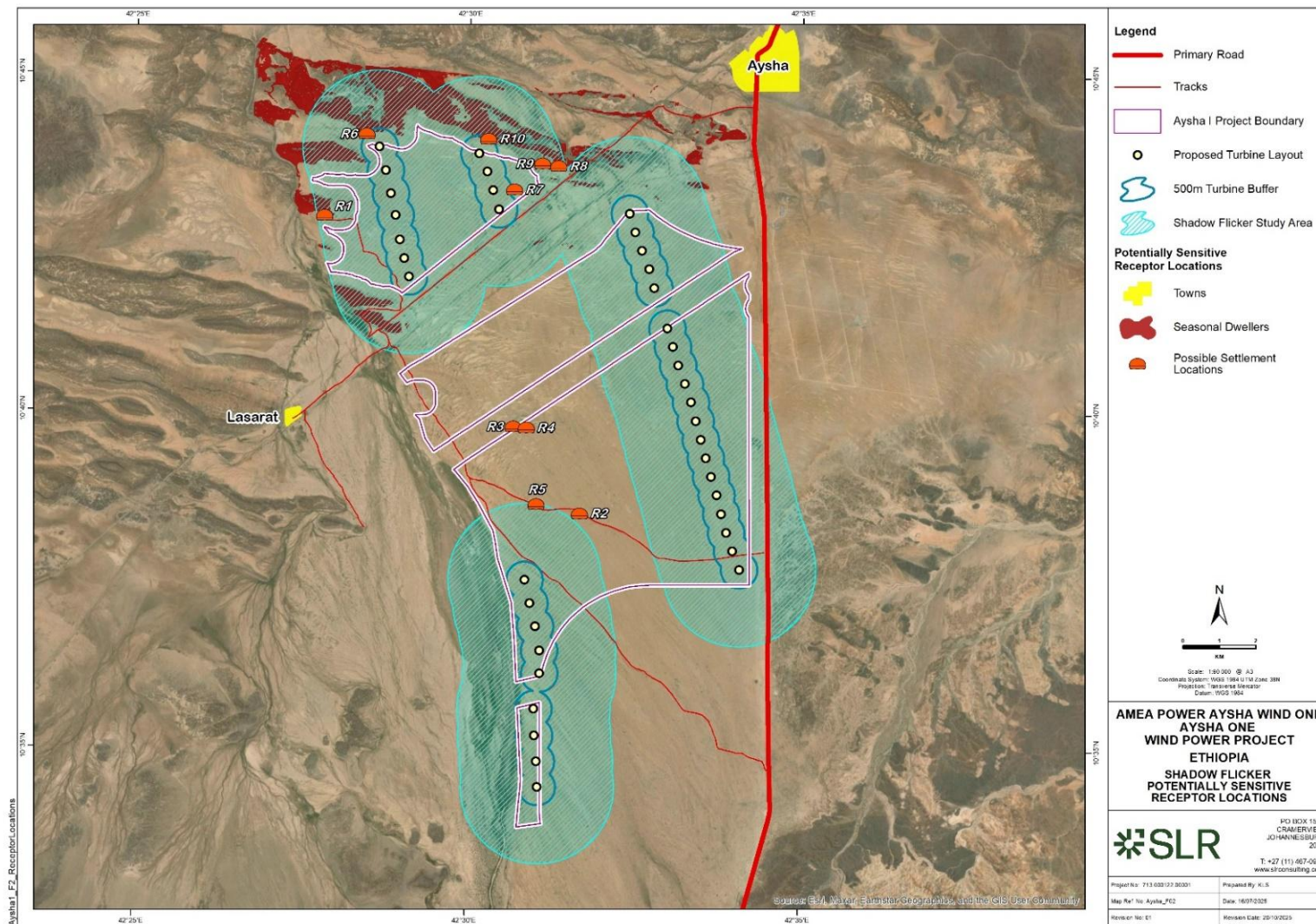


FIGURE 5-55: SRs WITHIN THE SHADOW FLICKER ASSESSMENT PAOI

5.4.6.2 Noise SRs

WBG EHS Guidelines for Wind Energy requirements indicate that noise propagation modelling should focus on receptors within 2 km of the core PAOI. However, this may extend further where sources are low in frequency, but best practice call for focus on the “nearest” receptors as the most affected due to sound attenuation with distance.

The SRs within the Noise Assessment PAOI are indicated in Figure 5-56.

FIGURE 5-56: SRs WITHIN THE NOISE ASSESSMENT PAOI

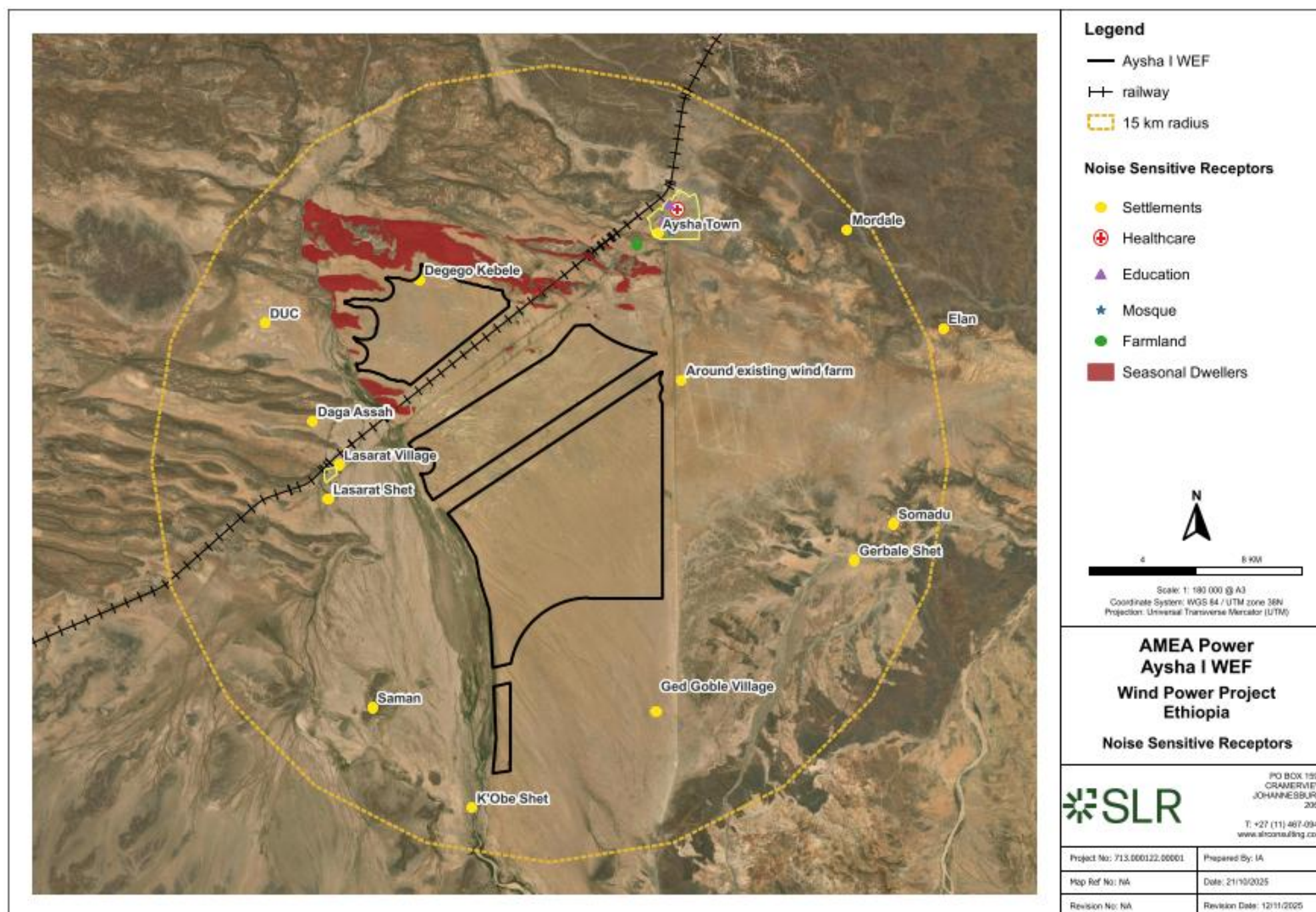


FIGURE 5-57: SRs WITHIN THE NOISE ASSESSMENT PAOI

6 STAKEHOLDER CONSULTATION AND ENGAGEMENT

This section provides an overview of all the stakeholder engagement undertaken for the Project to date.

The updated ESIA report (MDI, 2025) included the Project's stakeholder consultation and engagement. However, as identified in the Gap Analysis report (SLR, 2025), the following was subsequently undertaken as part of the SLIP process:

- Livelihood Restoration Plan, including updated socio-economic surveys and focus group discussions.
- Indigenous Peoples Social Assessment, including updated socio-economic surveys, focus group discussions and expert and NGO interviews.
- Updated Stakeholder Engagement Plan.

This section aims at complementing the ESIA (MDI, 2025), specifically for the stakeholder consultation and engagement aspect in line with IFC PS and AfDB E&S OS.

6.1 Purpose, Objectives and Principles of Stakeholder Engagement

The purpose of stakeholder engagement is to develop and sustain robust relationships that are essential for effectively managing the environmental and social impacts of a project. This process entails creating a constructive relationship with external stakeholders during the entire lifecycle of the Project. Main aspects of the purpose include:

- Establishing trust and obtaining a "social licence" to operate.
- Facilitating the expression of views and concerns by stakeholders, particularly those in affected communities.
- Incorporating these perspectives into project decisions and mitigation measures.
- Minimising project risks and increasing the likelihood of success by recognising issues and refining design.

The objectives for effective stakeholder engagement include the following:

- Enhancing the environmental and social performance of clients via efficient management systems.
- Revealing relevant project details to impacted communities and other stakeholders. Promoting meaningful consultation and engagement with affected communities during the Project.
- Ensuring suitable responses to complaints and external communications.
- Notifying affected individuals about how their concerns have been addressed.
- More thoroughly identifying and assessing environmental and social risks and impacts.

The main principles of stakeholder engagement are:

- **Proportionate Engagement:** The degree of engagement ought to correspond with the risks and phase of the Project.
- **Inclusivity and Respect:** The procedure should be inclusive, enabling all stakeholders, including marginalised groups, to engage without discrimination.
- **Information Transparency and Timeliness:** Relevant information must be shared in an accessible, timely, and culturally suitable manner. Engagement should commence early in the Project.
- **Two-Way Communication and Consideration:** The process should promote open dialogue and commit to taking stakeholder feedback into account, showcasing its impact on decisions.

- **Freedom from Coercion:** Consultation must be devoid of manipulation, interference, coercion, or intimidation.
- **Documentation and Reporting:** The engagement process and the feedback obtained should be documented and reported.
- **Accountability:** Clients are responsible to the affected communities and should establish a clear grievance mechanism.

6.2 Summary of the National Framework and Lender Policies in terms of Stakeholder Engagement

6.2.1 Ethiopian Legislative Requirements

According to the FDRE Constitution, Article 92: “People have the right to full consultation and to the expression of their views in the planning and implementation of environmental policies and projects that affect them directly.” Consultation is, therefore, a fundamental constitutional right and requires that consultations are undertaken with the Project Affected Communities.

Furthermore, the EIA Proclamation No. 299/2002” and associated EIA Guidelines require that projects undergoing a comprehensive EIA study should include the participation of potentially affected groups. It is the proponent’s responsibility to produce an EIA that is likely to produce a trans-regional impact has been undertaken in consultation with the communities. Furthermore, the Authority needs to ensure that the community has been consulted with, and their view incorporated in the EIA, prior to the study being evaluated. The Authority or the relevant regional environmental agency shall make any environmental impact study report accessible to the public and solicit comments on it.

6.2.2 Lenders Policies and Applicable Standards

6.2.2.1 International Finance Corporation Performance Standards

Stakeholder engagement under IFC PS 1 is a continuous process to manage environmental and social risks, requiring a project to identify stakeholders, disclose relevant information, consult with affected communities, provide a grievance mechanism, and report to them. The process should be tailored to the Project’s specific risks, impacts, and development phase. A SEP needs to be developed and implemented, scaled according to the Project risks and impacts and tailored to the characteristics and interests of the affected communities. The consultation process must consider the language preference of the Communities, their decision-making process and the needs of disadvantaged and vulnerable groups. A grievance mechanism needs to be established to receive and facilitate the resolution of the Affected Communities’ concerns and grievances about the client’s E&S performance.

The Project is required to comply with international safeguard standards on land acquisition and involuntary resettlement as outlined by IFC PS5. In addition to addressing displacement impacts, PS5 also emphasises the need for meaningful stakeholder engagement throughout the resettlement planning and implementation process. Affected persons must be engaged in a transparent, inclusive and participatory manner during the planning and implementation of land acquisition, compensation, resettlement and livelihood restoration measures. Relevant information must be provided in a timely and accessible format, opportunities must be provided to participate in decision-making processes, and access to a culturally appropriate and responsive grievance mechanism must be given.

IFC PS7 recognises that Indigenous Peoples (IPs) are distinct social and cultural groups whose identities, traditions, and attachment to land, territories, and natural resources differ from mainstream society, and who are often among the most marginalised and vulnerable populations. Their economic, social, and legal status frequently limits their ability to defend their rights and interests in land and resources, rendering them particularly vulnerable to the adverse impacts of development projects. PS7 also acknowledges that

properly designed and implemented projects can also create opportunities for IPs to participate in, and benefit from, development activities.

Where IPs are potentially affected, developers are required to establish and maintain an ongoing relationship with affected communities through ICP throughout the Project life cycle. In addition, developers are required to demonstrate how FPIC was obtained. Consultation needs to be undertaken in a culturally appropriate manner, including the use of indigenous languages (where necessary), and allow adequate time for collective decision-making. Mitigation and compensation measures must be developed collaboratively with affected Indigenous Peoples and delivered in a culturally appropriate and timely manner. These measures must be set out in a stand-alone Indigenous Peoples Plan or incorporated into a broader community development plan. Lastly, projects must establish grievance mechanisms that are culturally appropriate, transparent, accessible, and allow for the effective redress of community concerns, as well as participatory monitoring systems to track implementation performance and the effectiveness of agreed measures.

6.2.2.2 African Development Bank Operating Standards

The AfDB OS7 uses the term ‘Highly vulnerable rural minorities’ (HVRM) to refer to specific socio-cultural minority groups in rural areas whose culture and life are vitally and sustainably dependent on natural resources and/or landscapes of their living environments, and whose cultures and quality of life are under threat whenever the features of these resources or landscapes are substantially deteriorated. They include minorities qualified as indigenous people under national legislation, traditional pastoralists, or nomadic groups.

Where HVRM may be affected by a project, OS7 requires developers to ensure that engagement is culturally appropriate, inclusive, and continuous throughout the Project life cycle.

6.3 Data Collection

Stakeholder consultations to date have been undertaken in three rounds. The first round was carried out in tandem with the ESIA in March 2020, a second round was undertaken in April to early May 2025 and the last consultation was done in October 2025. The consultation involved community members including women, youth and influential community elders. In terms of consultation with local government officials is concerned, meetings were held with key officials and relevant elected representatives at Woreda and Kebele levels.

FGDs was the main method adopted for these meetings. The FGDs were conducted with members of cross-sections of project-affected communities and their Woreda and Kebele leaders. It was carefully planned and conducted to cover key issues and included presentation of the Project, its intended objectives, the location, its ownership as well as the need for consultation. It also included identification of the Project impacts on the Issa-Somali community in general and the Aysha town and the surrounding communities in particular, natural resources and distinct social and cultural rights, collective cultural resources, events and activities which may be affected. Details of the proposed mitigation measures were also provided. The consultation meetings also allowed for the identification of additional requirements and key issues of concerns that need to be considered as part of the Project.

6.3.1 Stakeholder Identification

Participants for the FGDs were selected from all three rural settlements within the Kebeles. The meetings were attended by representatives from the Issa lineage leaders, elders, women, and youth members. The participants were reached through their respective Kebele leadership and clan leaders. Additionally, members from the Woreda sector offices and Kebele Administration were present at some of the meetings. The selection of participant groups was conducted to ensure that the attitudes and perspectives of the entire community were adequately represented.

6.3.2 Meeting Venue

Meetings were conducted at the communities preferred meeting venue and time. Woreda and Kebele level meetings were held in their respective offices.

Language

The medium of communication for all the consultation meetings with members of the Issa-Somali community was *Somaligna*, the local language so all participants were able to articulate their concerns.

Engagements conducted with the community were led and facilitated by local experts, but a local interpreter was used for the benefit of both the community and the local expert.

6.3.3 Consultation Record

The minutes of all meetings were recorded and kept as evidence, as well as for further information processing. Photos of meeting sessions were taken with the consent of participants.

6.4 Project Disclosure

6.4.1 Meetings with Affected Parties

A total of eighteen (18) consultations were conducted during the first round of consultations, involving over a hundred and fourteen (114) participants. This included fourteen (14) targeted meetings which involved over sixty (60) participants with officials at the Federal, Woreda and Kebele level and of four (4) FGD with the local community, involving fifty-four (54) individuals residing in and around the PAOI.

During the second round from April to early May 2025, a total of nine (90) consultation meetings were conducted. Four (4) of these consultation meetings were conducted with the local authority (Woreda and Kebele administration) and five (5) consultations were held with local people and community members residing in Project impacted Kebeles. Of the five (5) public consultation meetings, two (2) were conducted with women groups residing in Project impacted Kebeles. Concerning participants' number, about a hundred and three (103) people were consulted, of which twenty-three (23) of them were local officials at Woreda and Kebele administration levels, while eighty (80) of the consultation participants were community members.

Table 6-1 provides a summary of the consultations undertaken for the first round in March 2020 the second round in April and early May 2025 and third round in April 2026.

TABLE 6-1: SUMMARY OF CONSULTATION GROUPS, DATE AND NUMBER OF PARTICIPANTS

No.	Date	Consultation Group	Number of Participants
1st Round Consultation March 2020			
1	21 Apr 2020	ESIA Directorate/Environment, Forest and Climate Change Commission	1
2	17 Jan 2020	Environment and Climate Change Directorate/ Ministry of Water Irrigation and Energy	4
3	24 Jan 2020	Woreda Administration Officials	4
4	23 Jan 2020	Woreda Capacity Building Office	3
5	23 Jan 2020	Woreda Cooperative Office	3
6	23 Jan 2020	Woreda Trade, Industry & Transport office	3
7	24 Jan 2020	Woreda Water Resources Office	3
8	24 Jan 2020	Woreda Livestock & Pastoral Development office	3
9	24 Jan 2020	Woreda Agriculture & Natural Resources office	3
10	27 Jan 2020	Woreda Women & Children Affairs Office	3

No.	Date	Consultation Group	Number of Participants
11	27 Jan 2020	Woreda Health Office	3
12	29 Jan 2020	Woreda Administration Cabinet Members	19
13	25 Jun 2020	Lasman Kebele Public Officials	6
14	17 Jun 2020	Aysha 02 Kebele Public Officials	3
15	27 Jan 2020	Clan Leaders and Elders of Aysha 02 Kebele	7
16	17 Jun 2020	Clan Leaders and Elders of Aysha 02 Kebele	11
17	25 Jun 2020	Clan Leaders and Elders of Lasman Kebele	6
18	25 Jan 2020	Lasman Kebele Community Members (Youth)	29
Total Participants - 1st Round			114
2nd Round Consultation between 25th April – 3rd May 2025			
1	30 Apr 2025	Aysha Woreda Administration	4
2	29 Apr 2025	Lasman Kebele Administration	7
3	27 Apr 2025	Aysha 02 Kebele Administration	5
4	30 Apr 2025	Dhagago Kebele Administration	7
5	26 Apr 2025	Lasman Community Members	15
6	28 Apr 2025	Aysha 02 Community Members	19
7	30 Apr 2025	Dhagago Community Members	16
8	28 Apr 2025	Lasman Women Community Members	12
Total Participants – 2nd Round			103
3rd Round Consultation between 25th April – 3rd May 2025			
1	15 th - 22 nd April 2026	Separate Meetings with Clan and Sub-clan Leaders, Women Groups, Youth Groups, Local Administration.	160

A summary of the FGD held in October 2025 is provided in Table 5-27. The aim of these FGDs was to get an understanding with regards to the following for the Issa clan members seasonally migrating to the Project lease area:

- Identity, culture and history of settlement.
- Attachment to the Project lease area.
- Institutions, customs and decision-making structures.
- Use of the Project lease area and natural resources.
- Livelihood opportunities, constraints and vulnerability.

6.4.2 Meeting with Indigenous Peoples/ Highly Vulnerable Rural Minority

Following the assessment and determination of the Issa Clan Highly Vulnerable Rural Minority (HVRM), AMEA Power Aysha Wind One Project conducted additional targeted consultation meetings with Clan and Subclan leaders, and separately, with women leaders and youth of each project affected kebele/village administration (Aysha 1, Aysha 2, Dagago, and Lasarat) from 15th to 21st April 2026. Besides, consultation meetings were also conducted with key kebele and woreda administration officials. The additional consultation is therefore conducted with the objective of confirming the requirements for Free, Prior, and Informed Consent (FPIC) have been met through Good Faith Negotiations (GFN), in compliance with IFC PS7 and AfDB OS7.

The aim of consultative meetings with traditional men leaders (clan leaders and sub-clan leaders) was:

- Discuss and agree on the preferable form of the consent process and documentation, and who will be giving consent during each phase of engagement.
- Remind them on the project land lease agreement and the permanent loss of customary land, and LCG,
- Consult and disclose the provisions of the LRP, Benefit Sharing Framework, SEP, ESAP, and the intent to sign a formal Agreement
- Receive and answer inquiries they raise on Aysha Windfarm projects as well as obtain their views, opinions and suggestions about the project and its impacts.

No.	Date	Consultation Group	Number of Participants
AYSHA 1 Additional Consultation April 2026			
1	15 April 2026	Clan and sub-clan leaders	12
2	15 April 2026	Women elders	6
3	15 April 2026	Youth Group	17
4	15 April 2026	A joint deliberative assembly clan leaders, women, and youth group	25
5	15 April 2026	Kebele administration	1
AYSHA 2 Additional Consultation April 2026			
7	16 April 2026	Clan and sub-clan leaders	9
8	16 April 2026	Women elders	4
9	16 April 2026		5
10	16 April 2026	A joint deliberative assembly clan leaders, women, and youth group	16
11	16 April 2026	Kebele administration	1
Dagago Additional Consultation April 2026			
12	16 April 2026	Clan and sub-clan leaders	7
13	16 April 2026	Women elders	4
14	16 April 2026	Youth group	10
15	16 April 2026	A joint deliberative assembly clan leaders, women, and youth group	19
16	16 April 2026	Kebele administration	1
Lasarat Additional Consultation April 2026			
17	21 April 2026	Clan and sub-clan leaders	12
18	21 April 2026	Women elders	10
19	21 April 2026	Youth group	16
20	21 April 2026	A joint deliberative assembly clan leaders, women, and youth group	15
21	21 April 2026	Kebele administration	1
Woreda Additional Consultation April 2026			
22	15 April 2026	Key Woreda Head officials	2
23	22 April 2026	Aysha Woreda People Council Representative Head	1
Total Participants			160

6.5 Main Findings of the Consultations

The following sections present the summary of the public consultations held at different locations with different segments of the community in the PAOI.

6.5.1 Findings of Consultations with Woreda Public Officials

The main purpose of consultative meetings with local authorities was to inform local authorities about the Project and to solicit their buy-in and support to the Project as well as obtain their views, opinions and suggestions about the Project and its impacts.

The comments and concerns raised by Woreda officials during the first round of consultation are summarised in Table 6-2.

TABLE 6-2: KEY COMMENTS AND CONCERNS OF WOREDA PUBLIC OFFICIALS (1ST ROUND)

E&S attribute	Comment	Response
Community Consultations	Communities and clan leaders in other development projects were not consulted or engaged throughout the Project development. Therefore, for this Project, stakeholders emphasised on the importance of consulting and creating awareness with local clan leaders (and ultimately local communities in PAOI).	As discussed in the sections below, consultations were undertaken with communities and clan leaders as part of the ESIA process. In addition, the ESIA report shall identify additional consultations and engagement efforts that should be undertaken by the Project Company throughout the Project duration, including those with local communities. In addition, the SEP identifies in detail such consultation and engagement efforts that should be undertaken by the Project Company.
Land Use	The Project will be located on vast grazing land and livestock movement corridors used by six districts. Hence, grazing lands, bush and shrub lands (trees) would be affected during construction which in turn would affect the grazing lands in the area. In addition, based on the above compensations for land allocation for other development projects in the area as well as compensation to affected communities for lost communal resources were not paid. Stakeholder also suggested that Project Company should aim to plant trees around the Project to replace those trees to be affected by the Project.	Such impacts were studied and assessed as part of the ESIA and appropriate management measures to address this issue were identified. In addition, the Project Company is committed to implementing a fair and transparent compensation measures for land use as applicable for the Project, and in accordance with local and regional requirements.
	The Project boundary may extend into the town expansion zone as per the approved master plan and other infrastructures located within the PAOI.	Information on town expansion zones was obtained and the Project boundary avoided such areas.
	Project boundary may affect nearby agriculture farms.	Information was obtained and the Project boundary avoided such areas.
Infrastructure and utilities	The Project may affect the water harvesting ponds located onsite, and other infrastructure elements located in the PAOI.	Such impacts were studied and assessed and appropriate measures were identified.
Socio-economics	Other development projects did not provide any community development support. Stakeholders stated that Project Company	Such impacts were studied and assessed, and appropriate recommendations were identified.

E&S attribute	Comment	Response
	should consider the provision of social development projects such as water supply, health centres, school and agricultural support. Project should provide job employment opportunities to local communities with priority to youth. Provide special support to women in the PAOI, even though, the vulnerability of women in Aysha district are in a better position compared to the other Woredas.	In addition, it is worth mentioning that the Project Company is committed to implementing a social responsibility program and providing priority for employment for local communities through a structured approach and this was further discussed in the updated ESIA report (MDI, 2025).
Air Quality and Noise	The Project construction activities will result in generation of dust and noise which could affect nearby communities.	Such impacts were studied and assessed and appropriate measures were identified.
Public Health and Safety	Project will entail during the construction phase an influx of relatively larger number of works which might cause disease transmission like HIV and AIDs	Such impacts were studied and assessed and appropriate measures were identified.
Other	EHS measures in other development projects were not considered or taken into account to include in particular inappropriate waste management measures (such as inappropriate disposal of wastewater generated) and inappropriate health and safety provisions onsite.	Such impacts were studied and assessed and appropriate measures were identified.

6.5.1.1 First Round of Consultation with Kebele Officials

During March 2020, consultations were held with the Aysha 02 and Lasman 01 Kebele officials. The beneficial impacts that Project would bring to Woreda in general and the local community in particular, were discussed, including:

- Access to reliable electricity service;
- Job opportunities for local communities to include in particular local unemployed youth;
- New business and market opportunities for local goods and services from additional demand for locally produced goods and services to local communities; and
- Expansion and provision of social service infrastructure facilities through access to basic social services such as water, health, schools, roads, etc. as part of a social responsibility program to be implemented by the Project Company.

Some concerns were raised by the attendees are a summary thereof is provided in raised by Table 6-3.

TABLE 6-3: KEY COMMENTS AND CONCERNS OF KEBELE OFFICIALS (1ST ROUND)

E&S Attribute	Comment	Response
Land Use	As the PAOI is a predominantly pastoralist community, families migrate out of the area during dry seasons and return back to the Kebele when the rain start. Thus, the Project could take a portion of land where migrant pastoralists set up their houses seasonally which in turn could disrupt their regular movement patterns.	Such impacts were studied and assessed as part of the ESIA and appropriate management measures to address this issue were identified.

E&S Attribute	Comment	Response
	Project is located on communally owned grazing land. The Project Woreda possesses considerable livestock population. The Project affected land forms part of rangeland on which sheep and goats, cattle, camels and donkeys owned by local communities browse and graze seasonally.	
	Project boundary may affect nearby agriculture farms.	Information was obtained and the Project boundary avoided such areas.
Infrastructure and utilities	There are some water points and water ponds located within the proposed project boundary. These water points are important source of drinking water for the local people as well as their livestock. This water points may be affected during implementation of the Project.	Such impacts were studied and assessed and appropriate measures were identified.
	Participants expressed their fear that existing access road and footpath that serve to connect villages in the area may be affected. The access roads and footpaths in the area are also important route to the pastoralist communities especially during seasonal migration where large number of livestock move from one place to another in search of pasture and water.	Such impacts were studied and assessed and appropriate measures were identified. In addition, the Project Company is committed to providing better and safer alternative roads (as part of the internal road network to be developed for the Project) that will connect throughout the PAOI with the nearby villages.
Archaeology and Cultural Heritage	Participants stated that there are burial sites in and around the Project boundary which could be affected by the construction activities.	Such impacts were studied and assessed and appropriate measures were identified.
Biodiversity	Participants stated that different wild animals are present in and around the Project boundary. The construction of the Project will impact and disturb the wildlife.	Such impacts were studied and assessed and appropriate measures were identified.
Socio-economic	Project should provide community development support. Stakeholders stated that Project Company should consider the provision of social development projects such as provision of electricity, installation of water points for human and livestock's, construction of access roads and provision of health facilities.	Such impacts were studied and assessed and appropriate recommendations were identified.
	Project should provide job employment opportunities to local communities with priority to youth.	In addition, it is worth mentioning that the Project Company is committed to implementing a social responsibility program and providing priority for employment for local communities through a structured approach and this was discussed in the updated ESIA report (MDI, 2025).
Other	They identified several health and safety risk during the construction phase which most importantly include from previous experience in other infrastructure development projects: (i) risks from open pits; (ii) risks from dust and noise.	Such impacts were studied and assessed and appropriate measures were identified.

6.5.1.2 Second Round of Consultation with Woreda and Kebele Officials

Based on previous experiences of similar projects and other infrastructure development projects in their Woreda, and from their continuous interaction with community members, the Woreda officials relayed several longstanding requests from residents of affected Kebeles that remain unmet particularly following the previous Aysha II Wind Farm Project. They strongly recommended that the following development needs be prioritised and fulfilled under the Project to ensure fair benefit-sharing and community support:

- **Lasman / Lazarat Kebele:** The local officials indicated that proper access road and healthcare facilities is a critical issue for residents of Lasman/Lazarat Kebele. The community has long advocated for a health centre and an all-weather road, fundamental to improving health outcomes and market accessibility, especially given the remote nature of the area. Therefore, upgrading the existing access road to Lasman Kebele and the health post found in the Kebele to Health Centre is priority need of the of the local people in Lasman Kebele.
- The other proposed benefit that the local officials consulted for Lasman Kebele is related to Cultural Heritage Site at “*Sitti Mountain*”. According to the officials Sitti Mountain is a place of social, historical and spiritual significance for the Project communities and the wider Issa clan of Somali stock. Therefore, the local officials recommended that the Project support the preservation and promotion of this site through infrastructure investments such as road construction and visitor facilities. Not only would this honour the cultural identity of the local population, but it could also serve as a source of tourism revenue for the Woreda.
- **Aysha 02 Kebele:** The consulted local officials explained that even though Aysha 02 Kebele is a part of Aysha town administration, there is no primary school (grade 1 to 8) in the Kebele. Kebele residents have repeatedly requested for the construction of a primary school serving grade one through eight. Viewing access to quality education as a fundamental right and a powerful tool to break the cycle of poverty, particularly in pastoralist and semi-urban settings where girls’ education is often at risk due to distance and lack of facilities. The consulted officials identified the provision of a primary school as main priority area of intervention for Aysha 02 Kebele.
- **Dhagago Kebele:** Dhagago is another Project impacted Kebele in the Woreda that overlooked by previous studies related to the Project. According to the local officials, lack of access to clean and reliable potable water, which affects both human health and livestock well-being, is the most pressing community need of the Dhagago Kebele and officials urged that the Project integrate water supply infrastructure as part of its community development initiatives for this Project impacted Kebele.

Thus to summarise, the Aysha Woreda administrators reiterated their administrative and political support for the Project. However, they urged the Project Company and government stakeholders to ensure that the development is inclusive and responsive to the needs of local communities. By addressing the community’s long-standing requests for education, water, health, and infrastructure, and by respecting traditional land use systems, the Project can foster a sense of ownership and partnership among local residents.

6.5.2 Findings of Consultations with Local Community Members

In 2020, community consultations were planned to be held with various sub-groups within the community, including clan leaders, elders, religious leaders, community member, women and the youth. However, the clan leaders informed the ESIA teams that they could only conduct meetings with them. Therefore, the consultation meeting was carried out with clan leaders and elders in the community representing both Project impacted Kebeles (i.e. Lasman 01 and Aysha-02 Kebele).

6.5.2.1 First Round of Consultations with Local Community Members

Key comments and concerns of the consultations held in 2020 with the community members is presented in Table 6-4.

TABLE 6-4: KEY COMMENTS AND CONCERNS OF COMMUNITY GROUPS (1ST ROUND CONSULTATION)

E&S Attribute	Comment	Response
Community Consultations	They requested that there should be frequent consultation and discussion mainly with clan leaders and community elders to prevent conflicts and opposition against the Project.	The ESIA report shall identify some of the additional consultations and engagement efforts that should be undertaken by the Project Company throughout the Project duration, including those with local communities. In addition, the SEP identifies details such consultation and engagement efforts that should be undertaken by the Project Company.
Land Use	The land take requirement for the construction of the Project would affect the pastoralist seasonal settlement areas. The land use of the Project boundary is grazing land that the community members use for livestock pasture. They stated that the land that would be required for the construction of wind turbine foundation and access road would be lost for good. This potential impact of the Project on grazing land unless mitigated is believed to aggravate by affecting the already shrinking grazing land available in the area.	Such impacts were studied and assessed as part of the ESIA and appropriate management measures to address this issue were identified.
Air Quality and Noise	The Project construction activities will result in generation of dust and noise which could affect nearby communities.	Such impacts were studied and assessed and appropriate measures were identified.
Infrastructure and utilities	According to the clan leaders, there are water points and water ponds located within the Project boundary that are used by the local community for domestic propose as well as their livestock. These sites may be affected by and during the construction activities. Some members expressed concerns from increased accident from construction traffic	Such impacts were studied and assessed and appropriate measures were identified. Such impacts were studied and assessed and appropriate measures were identified.
Socio-economic	Project should provide community development support. Stakeholders stated that Project Company should consider the provision of social development projects such as provision of electricity, installation of water points for human and livestock's, construction of access roads and provision of health facilities Project should provide job employment opportunities to local communities with priority to youth.	Such impacts were studied and assessed and appropriate recommendations were identified. In addition, it is worth mentioning that the Project Company is committed to implementing a social responsibility program and providing priority for employment for local communities through a structured approach and this will be further discussed in the ESIA report.
Health and Safety	From experience, implementation of the proposed wind farm Project in the area potentially would expose the local community and their livestock to increased risks from unprotected pits excavated for tower foundation. According to the clan leaders,	Such impacts were studied and assessed and appropriate measures were identified.

E&S Attribute	Comment	Response
	from similar development projects (i.e. road, transmission line and Aysha-2 Wind Farm Projects) many cattle have fallen into unprotected pits and died. In the past, this has been a constant source of conflict between contractors and the local community.	
Waste Management	Some members expressed concern from potential impacts from inappropriate waste management measures (such as inappropriate disposal of wastewater generated)	Such impacts were studied and assessed and appropriate measures were identified.

6.5.2.2 Second Round of Consultation with Local Community Members

The study team conducted public consultation meetings with community members residing in all three Project impacted Kebeles. A total of three (3) consultation meetings were held with community members and more than fifty (50) participants presented in the discussion sessions.

Community members in Lasman and Aysha 02 Kebele were found to be well informed about the Project, as they had previously been contacted by the team and had come to the meetings. However, community members in Dhagago Kebele had no prior information about the Project. Detail Project related information was, therefore, provided to the community members who had limited knowledge and information about the Project.

The community members expected that the Project would bring various benefits to the community, including employment opportunities for the youth, enhancing power production capacity of the country and community development in terms of provision of water, access road, upgrading and provision of school and health facilities.

However, concerns that were identified by the community member included the following:

- The Project would impact the grazing land in the area;
- The Project will result in loss of seasonal pastoralist settlement area;
- Certain farmland owned by private individuals would be impacted on;
- Existing infrastructure will be impacted on;
- The Project will impact water ponds;
- Turbine flicker will impact on the people and the livestock; and
- There will be an increase in the influx of workforce from different areas.

6.5.3 Consultation with Women

Two (2) consultation meetings were conducted with members of the women's group, which included female household heads, youth, and students living in the Lasman and Aysha 02 Kebeles. In total, thirty (30) female community members participated in these consultation meetings. The women consulted had some awareness and information regarding the Project. The study team provided updated information about the Project during each consultation session and initiated discussions related to the Project.

It was observed that the livelihoods of women in Aysha 02 Kebele are predominantly business-oriented, with many engaged in petty trade and small-scale business activities, as their Kebele is situated within the Aysha town administration. The women consulted in Lasman Kebele highlighted that their livelihoods are primarily reliant on pastoralism, with cattle, goats, camels, and donkeys grazing on communal pasturelands located within the PAOI, as well as in other parts of the Project Woreda and beyond its boundaries.

The women identified the following benefits from the Project:

- Improved electricity access;
- Employment opportunities;
- Opportunity for income generating activities;
- Market opportunity for business activities the local women currently running; and
- Enhancing the country's power production.

However, the adverse impacts identified by the women included:

- Impact on grazing land;
- Restriction to traditional grazing areas;
- Land degradation due to construction activities;
- Cultural conflicts with In-migrant workers; and
- Dust, noise and accidents.

6.5.4 Other Consultations and Engagement Activities

Other key consultations undertaken throughout the ESIA are summarised in the Table 6-5, along with the objective and outcomes.

TABLE 6-5: OTHER CONSULTATION AND ENGAGEMENT ACTIVITIES UNDERTAKEN

Entity	Objective
Ethiopian Broadcasting Authority	Discuss potential impacts on radio and TV infrastructure and obtain information as required.
Ethio-Telecom	Discuss potential impacts on telecommunication infrastructure and obtain information as required.
Ethiopian Wildlife and Natural History Society	Discuss outcomes related to baseline on biodiversity, birds and bats and discuss potential impacts anticipated for the Project.
Bird Life International – Africa Office	Discuss outcomes related to baseline on birds and discuss potential impacts anticipated for the Project.

6.5.5 Findings of the Third Round of Consultations

As discussed in section 5.4.1.3, qualitative FGD were conducted from September to October 2025. The consultations targeted local authorities and community members and included gender-separate workshops. The main purpose of the third round of consultation was to obtain a better understanding of the cultural heritage within and around the PAOI to identify all burial and ritual site located within the Project's lease area.

Furthermore, the consultations were done to provide a better insight into the socio-economic environment of the people in the PAOI. The survey gathered key information on the households' demographic details, livelihoods and migratory patterns, as well as their use of and attachment to the Project lease area (PAOI). Refer to section 5.4.2 for a discussion of the findings of the socio-economic environment.

6.5.5.1 Engagement During the Preparation of the Livelihood Restoration Programme

As discussed in section 5.4.1, the September to October 2025 consultations formed part of the engagement for the LRP. A quantitative socio-economic household survey was conducted from 30 August 2025 to 28 September 2025. Qualitative FGDs were conducted from 02 October 2025 to 07 October 2025.

A list of the meetings and activities conducted is provided in Table 5-27.

6.5.5.2 Proposed Engagement for the Implementation of the LRP

Stakeholder engagement during LRP implementation will ensure transparency, participation, and accountability throughout the process. Once the LRP is approved by the lenders, it will be disclosed to communities as well as the wider public. Specific provisions for this disclosure. Engagement activities will continue throughout implementation into one year after the start of operation. Routine activities will include community meetings, coordination with local authorities, grievance management, and periodic reporting to stakeholders to share progress and results.

The survey conducted in 2025 flagged that most respondents would rather be engaged via clan leaders (49.1%), Kebele officials (42.2%) and 8.07% (Woreda officials), as opposed to the Project (0.6%). This shows the importance of ensuring that local authorities are regularly engaged by the Project and included as facilitators in all stakeholder engagement activities.

When engaging with community members, the Project will ensure that women are actively encouraged to join consultations and where possible conduct women-only meetings to ensure that women's views and opinions are fully taken into the account. The presence of children will be allowed in meetings and public disclosure sessions so that women with childcare responsibilities are encouraged to participate.

A list of stakeholder engagement activities to be implemented as part of the LRP is presented below in Table 6-6.

TABLE 6-6: STAKEHOLDER ENGAGEMENT ACTIVITIES REQUIRED FOR THE IMPLEMENTATION OF THE LRP

Phase	Activity	Responsibility	Indicative Timing
Construction	Introduction meetings with woreda and kebele authorities and Clan leaders to discuss next steps in LRP implementation, grievance management and stakeholder engagement	Social Manager	As soon as hired
	Public disclosure of LRP to authorities and communities in the four affected kebeles	Social Manager	Public disclosure of LRP to authorities and communities in the four affected kebeles
	Online disclosure of lender-approved LRP on the Project Developer's website	Social Manager	Immediately after lenders' approval
	Workshops with authorities in the four affected kebeles to select livelihood restoration and community development interventions	Social Manager in collaboration with local authorities	Pre-construction
	Workshops with a sample of vulnerable households and authorities to select livelihood restoration support measures for vulnerable groups	Social Manager in collaboration with local authorities	Pre-construction
	Identification of service providers for the selected livelihood restoration and community development interventions	Social Manager in collaboration with local authorities	Pre-construction
	Engagement with communities to present construction safety areas, access restrictions, and any required relocation support	Social Manager and HSE Manager	At least three months before the start of construction

Phase	Activity	Responsibility	Indicative Timing
Construction and Operation	Continuous engagement with authorities and community members	Social Manager	Throughout implementation of LRP and construction activities until one year after the end of construction
	Continuous management of grievances related to livelihood impacts and restoration	Social Manager and CLOs	Throughout implementation of LRP and construction activities until one year after the end of construction
Operation	Conduct an LRP evaluation survey	Social Manager	One year after the end of construction
	Engagement with communities to present turbine safety areas and associated restrictions before operation	Social Manager	Before start of operation
	Continuous monitoring of turbine safety areas and community safety awareness	Social Manager	Throughout operation

6.6 Disclosure of Information

6.6.1 Project Disclosure

Information disclosure involves delivering information about the Project to the Affected Communities and ensuring access to such information by other stakeholders. The information should be in appropriate language(s) and accessible and understandable to the various segments of the Affected Communities. The timing and the method of disclosure may vary depending on national law requirements, the characteristics and needs of the Affected Communities, the type of assessment involved, and the stage of the Project's development or operation but should be as early as possible.

After the initial screening, timely disclosure of information should include as a minimum:

- Purpose, nature, and scale of the Project;
- Duration of proposed Project activities;
- Risks to and potential impacts on such communities and relevant mitigation measures;
- Envisaged stakeholder engagement process; and
- Grievance mechanism.

It should disclose information to Affected Communities about the Project's potential benefits and developmental impacts, if it is expected that it would not unnecessarily create unrealistic expectations.

Disclosure of information is normally expected as part of the process of identification of impacts and risks, but if the Project is expected to create ongoing impacts and risks to the Affected Communities, the Project Company should continue to provide information during the life of the Project.

The information will be disclosed in relevant local languages and in a manner that is accessible and culturally appropriate, taking into account any specific needs or groups of the population with specific information needs.

Taking the above into account, the Project Company intends to provide all relevant information to the public and which will include but not limited to the following:

- The updated ESIA report (MDI, 2025) and this SLIP;
- The SEP; and
- Non-Technical Summary (NTS)

The above will be provided at the Project Developer's website at the following link <https://www.ameapower.com/>. In addition, soft copies can also be made available to stakeholders via direct contact with the Project's Community Liaison Officer (CLO) as provided below.

In addition, hard copies of the above will be available at the following locations. These documents will remain in the public domain for the duration of the Project, and will be updated as appropriate.

- Aysha 02 Kebele
- Lasman 01 Kebele
- Aysha Woreda

Throughout the Project, all stakeholders can contact the Project Company through the contact details provided below.

Contact Details for the Public

CLO – Project Company

- Mr. Isse Usman / Telephone: +251 915008682

6.6.2 Livelihood Restoration Plan Disclosure

Once the LRP is approved by lenders, it will be disclosed as follows:

- The Project Company will organise one public session in each of the four affected kebeles to present the key elements of the LRP, including restoration measures, community development program, channels for grievances, key contacts and next steps. Notices of these sessions will be distributed via clan leaders and kebele officials to all of the people settled into the PAOI at the time of the disclosure. Any feedback gathered during these sessions will be recorded as part of the Project's Grievance Mechanism (GM). These sessions will be repeated every three months until the start of active construction, in order to cover any new settlers that may be affected by the Project's land use restrictions.
- Printed copies of the LRP translated into the local language will be distributed to the offices of regional and woreda authorities, Issa Clan leaders, and local kebele offices within the four affected communities, where they will be accessible for public review.
- The LRP will be uploaded to the Project Company's website, providing a publicly accessible electronic version. The website disclosure will include a summary in the local language.

Given that the site will experience frequent movements of people, the Project Company's Social Manager will continue engaging with local communities and authorities on an ongoing basis after the disclosure of the LRP.

6.7 Stakeholder Engagement Plan

Stakeholder Engagement is an on-going process that involves stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and on-going reporting to Affected Communities. A SEP has been developed and will be implemented that is scaled to the Project risks and impacts and development stage and be tailored to the characteristics and interests of the Affected Communities and key stakeholders.

The SEP for the Project describes the planned stakeholder consultation activities and engagement process and includes the following:

- Define the Project's approach to future stakeholder engagement;
- Identify stakeholders within the area influenced by the Project;
- Profile identified stakeholders to understand their priorities;
- Propose an action plan for future engagement with identified stakeholders; and
- Set out the grievance/Project complaints mechanism.

The SEP is presented as a standalone document and is attached as in the appendices.

Table 6-7 identifies the stakeholder engagement strategy and plan to be implemented during the planning, construction and operation phase of the Project. Stakeholders relevant to the Project are identified, the objective of consultation with each group, the communication methods and tools, time frame and responsible entity for undertaking such consultations.

TABLE 6-7: STAKEHOLDER ENGAGEMENT PLAN

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
Stakeholders who may be directly or indirectly affected by the Project				
Communities of Aysha 01, Aysha 02, Dagago and Lasarat	Public disclosure of LRP to authorities and communities in the four affected kebeles	Public disclosure session including the dissemination of non-technical summary leaflet in Somali, Amharic and English. Printed copies of the LRP summary will be distributed to the offices of Aysha woreda authorities, and local kebele offices within the four affected communities, where they will be accessible for public review. Notices of these sessions will be distributed via clan leaders and kebele officials to all of the people settled into the PAOI at the time of the disclosure. Any feedback gathered during these sessions will be recorded.	Immediately after lenders' approval To be repeated every three months until the start of active construction	Social Manager
	Workshops with a sample of vulnerable households and authorities to select livelihood restoration support measures for vulnerable groups	Workshops	Pre-construction	Social Manager in collaboration with local authorities
	Engagement with communities to present construction safety areas, access restrictions, and any required relocation support	Workshops and one-on-one engagements	At least three months before the start of construction	Social Manager
	Continuous engagement with community members, including: Updates on the Project, including environmental and social issues Training and regular updates on the grievance mechanism Details on the Social Development Plan	Workshops and one-on-one engagements with land users	Quarterly during planning phase Quarterly during construction phase Semi-annually during operation phase	Social Manager
		Prepare leaflet in Somali, Amharic and English language with key updates on Project as explained (Project status, E&S performance, grievance mechanism implementation, emphasise that pastoralist activities can be undertaken within area, etc.). Leaflet to be available at key local community platforms in the affected kebeles. Where relevant, include community spaces used by the elderly and women. This could include for example the Women Affairs Cabinet Office.	Quarterly during planning phase Quarterly during construction phase Semi-annually during operation phase	Social Manager
		Meetings and consultations with seasonal dwellers within the lease area	Weekly/bi-weekly basis as applicable during their arrival period onsite April – October	Social Manager
	Conduct an LRP evaluation survey	Survey with all users of the lease area	One year after the end of construction	Social Manager
	Engagement with communities to present turbine safety areas and associated restrictions before operation	Workshops and one-on-one engagements	Before start of operation	Social Manager
	Community safety awareness sessions on operational safety areas around turbines	Workshops and one-on-one engagements	Throughout operation	Social Manager
Stakeholders who may participate in the implementation of the Project				
Investor/Lender	Updates on the Project including environmental and social issues (e.g. environmental performance, grievance mechanism implementation, etc.)	Individual/Internal Meetings (if required)	To be determined	Project Company
Stakeholders who may have a possibility to influence and make decisions on implementation of the Project and/or may have an interest in the Project				
Central and Local Government Entities				
Environment, Forest and Climate Change Commission (EFCCC)	Coordinate to hire a private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction Once before operation	EPC Contractor/ Operations and Maintenance (O&M) Manager
	Coordination to secure the water requirements of the Project	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction Once before operation	EPC Contractor/ O&M Manager

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
Regional Office of MoWIE and/or Water and Infrastructure Unit/Aysha Woreda Cabinet	Obtain no-objection on layout of turbines and various project components to determine if any specific requirements need to be taken into account with regards to the water infrastructure elements onsite (e.g. setback distance)	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
	Coordinate to hire a private contractor for the collection of wastewater from the site to the closest WWTP	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction Once before operation	EPC Contractor/ O&M Manager
Ministry of Culture and Tourism / Authority for Research and Conservation of Cultural Heritage and Regional Cultural and Tourism Office (Ijjiga)	Reporting and communication in case archeologically remains are found through construction of Project along with chance find procedures implemented.	Individual/Internal Meetings (if required) Correspondence and Official Letters	Upon occurrence	EPC Contractor
Ministry of Transport, Ethiopian Roads Authority, and Woreda Transportation Office	Coordination with relevant entity to take into account any specific traffic and transportation requirements that should be considered and ensure they are aware of the transportation requirements and details related to the Project as per Traffic and Transportation Plan.	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Ethiopian Railway Corporation	Obtain no-objection on layout of turbines and various project components; Determine if any specific requirements need to be taken into account with regards to the railway infrastructure onsite Approval for transportation activities over the railway (if required) Determine safety measures for the railway crossing which could include for example installation of warning signage at both sides of the crossing or a railway signal	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Ethiopian Electric Power	Obtain no-objection on layout of turbines and various project components to determine if any specific requirements need to be taken into account with regards to the transmission lines and substation area	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Ethio Telecom Authority	Obtain no-objection on layout of turbines and various Project components Determine if any specific requirements need to be taken into account with regards to the telecommunication fiber cable (e.g. buffer distance); Ensure buffer distance maintained from LoS connections for broadcasting towers is sufficient to ensure no distribution on microwave connections within the PAOI.	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Ethiopian Civil Aviation Authority	Obtain non-objection letter on the Project development and layout of turbines and various Project components	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Ethiopian National Defence Force/Ethiopian Air Force	Obtain non-objection letter on the Project development and layout of turbines and various Project components	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction	EPC Contractor
Somali Regional State	Updates on the Project including environmental and social issues (e.g. current and schedule for activities, duration, environmental and social risks mitigations and performance, grievance mechanism implementation, emphasize that pastoralist activities can be undertaken, etc.)	Direct bi-lateral meetings	Quarterly during planning phase Quarterly during construction phase Semi-annually during operation phase	Project Company CLOs
	Undertake and complete land lease and compensation process	Individual/Internal Meetings (if required) Correspondence and Official Letters Site Visits	Once before construction	Project Company
Aysha Woreda	Introduction meetings to discuss next steps in LRP implementation, grievance management and stakeholder engagement	Meetings with key Woreda authorities	As soon as possible after approval of LRP	Social Manager
	Preparation of local recruitment and procurement procedure for inclusion of local community members within such opportunities	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction phase Once before operation	Project Company / EPC Contractor / O&M Manager

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
	Planning meetings to select community development projects for the upcoming year and identify service providers	Meetings with key Woreda authorities	As soon as possible after approval of LRP Yearly throughout construction and operation	Project Company
	Continuous engagement including: Updates on the Project, including environmental and social issues Training and regular updates on the grievance mechanism Details on the Social Development Plan	Meetings with key Woreda authorities	Quarterly during planning phase Quarterly during construction phase Semi-annually during operation phase	Social Manager
Aysha 01, Aysha 02, Lasarat and Dagago Kebeles	Introduction meetings to discuss next steps in LRP implementation, grievance management and stakeholder engagement	Meetings with key Kebele authorities (clan / subclan leaders and elders)	As soon as possible after approval of LRP	Social Manager
	Preparation of local recruitment and procurement procedure for inclusion of local community members within such opportunities	Meetings specifically with Chairperson and Vice Chairperson of Aysha Woreda Correspondence and Official Letters	Once before construction phase Once before operation	Project Company / EPC Contractor / O&M Manager
	Workshops to select livelihood restoration and service providers	Meetings with key Kebele authorities (clan / subclan leaders and elders)	As soon as possible after approval of LRP Yearly throughout construction and once in the first year of operation	Social Manager in collaboration with local authorities
	Continuous engagement including: Updates on the Project, including environmental and social issues Training and regular updates on the grievance mechanism Details on the Social Development Plan	Meetings with key Kebele authorities (clan / subclan leaders and elders)	Quarterly during planning phase Quarterly during construction phase Semi-annually during operation phase	Social Manager
	Coordination for the collection of solid waste from the site to the approved disposal areas	Individual/Internal Meetings (if required) Correspondence and Official Letters	Once before construction Once before operation	EPC Contractor/ O&M Manager
All Stakeholders / General Public				
All stakeholders	Online disclosure of lender-approved LRP on the Project Company's website	The LRP will be uploaded to the Project Company's website, providing a publicly accessible electronic version. The website disclosure will include a summary in Somali and Ethiopian	Immediately after lenders' approval	Project Company

6.8 Summary of the Project Grievance Mechanism

A Local Community GM has been compiled. The GM complies with the following principles, which are consistent with IFC PS1 and AfDB OS1:

- **Clarity:** The purpose, scope and process the mechanism are clearly defined.
- **Accessibility:** The GM needs to be culturally appropriate, free of cost and available to all stakeholders.
- **Non-Retaliation:** Community members must be assured that they can raise concerns without fear of retaliation, discrimination or loss of benefits.
- **Transparency:** Ensure that the entire process is clearly documented, publicised and explained to stakeholders.
- **Impartiality and Fairness:** All grievances must be handled objectively and fairly and include opportunities for appeal.
- **Confidentiality:** Identifies and personal information of complainants must be protected and data related to grievances handled responsibly and in accordance with privacy standards.
- **Timeliness:** Handle all grievances promptly and within defined timeframes to maintain trust and predictability.

A CLO and Social Manager have been appointed who will be responsible for managing and coordinating all community grievances, to ensure that issues are recorded, investigated and resolved according to these principles.

7 ASSESSMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS

This section aims at supplementing the updated ESIA report (MDI, 2025) environmental and social impact assessment for the Project in line with IFC PS and AfDB E&S OS.

Impacts were identified for the Project in the updated ESIA report (MDI, 2025). However, no impact significance rating or impact scoring was applied to the impacts assessed. To ensure alignment with IFC and AfDB standards and requirements, all impacts (those previously assessed and newly identified impacts) were assessed using the Environmental Consultant's impact assessment matrix.

Newly identified impacts stemmed from the additional specialist studies as follows:

- Livelihood Restoration Plan.
- Indigenous People Social Assessment.
- Biodiversity Survey and Impact Assessment.
- Noise Modelling and Impact Assessment.
- Climate Change Risk Assessment.
- Human Rights and Gender Risk Assessment.
- Shadow Flicker Assessment.

Accordingly, this Impact Assessment should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).

7.1 Impact Assessment Methodology

7.1.1 Impact Assessment Process

The environmental and social impacts were assessed by experts in their respective fields. This evaluation utilised the impact assessment methodology outlined below, which aligns with GIIP and the requirements set forth by the IFC and AfDB.

The impact assessment was conducted in an integrated manner that links the socio-economic components with the biophysical components of the environment. This assessment methodology enables the assessment of physical, biological, cultural, and socio-economic impacts, including cumulative impacts and residual impacts and impact significance through the consideration of intensity, extent, duration, and the probability of the impact occurring.

This report assesses impacts resulting from the Project activities and facilities during the construction, operational and decommissioning phases in the context of the PAOI. The report evaluates Project impacts both before the application of mitigation measures (pre-mitigation impacts) and after the implementation of mitigation measures (post-mitigation or residual impacts).

A residual impact, in terms of the IFC, refers to the remaining environmental or social impact after all feasible mitigation measures have been applied (i. e. the post-mitigation impact). These impacts are those that cannot be entirely avoided, reduced, or offset despite the implementation of the mitigation hierarchy.

To identify if any residual impacts are likely to be associated with any of the biophysical, cultural and socio-economic impacts discussed, the following was evaluated to determine the effectiveness of the mitigation measures by assessing the following criteria:

- **Relevance:** Does the mitigation measure address the impacts?
- **Practicality:** Is the mitigation measure feasible to implement?
- **Sustainability:** Will the mitigation measure continue to be effective over time?

7.1.2 Approach and Methodology Used to Determine Impact Significance

Evaluation of impact significance follows a stepwise process as set out below. Part A (Table 7-1) provides the definition for determining impact consequence (combining intensity, extent, and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Parts B (Table 7-2) and Part C .

Table 7-3). The impact significance is interpreted in Part D (Table 7-4). This methodology is utilised to assess both the incremental and cumulative project-related impacts.

TABLE 7-1: CRITERIA AND DEFINITIONS FOR DETERMINING CONSEQUENCE AND SIGNIFICANCE

PART A: DEFINITIONS AND CRITERIA		
Definition of SIGNIFICANCE		Significance = consequence x probability
Definition of CONSEQUENCE		Consequence is a function of intensity, extent, and duration
Criteria for ranking of the INTENSITY of environmental impacts	VL	- Negligible change (severity), disturbance, or nuisance with very minor consequences or deterioration. - Targets, limits, and thresholds of concern never exceeded. - Species or habitats with negligible importance.
	L	- Minor (Slight) change (severity), disturbance, or nuisance with minor consequences or deterioration. - Targets, limits, and thresholds of concern rarely exceeded. - Habitats and ecosystems which are degraded and modified.
	M	- Moderate change (severity), disturbance, or discomfort with real but not substantial consequences. - Targets, limits, and thresholds of concern may occasionally be exceeded. - Habitats or ecosystems with important functional value in maintaining biotic integrity.
	H	- Prominent change (severity), disturbance, or degradation with real and substantial consequences. - May result in illness or injury. - Targets, limits, and thresholds of concern regularly exceeded. - Habitats or ecosystems which are important for meeting national/provincial conservation targets.
	VH	- Severe change (severity), disturbance, or degradation with severe consequences. - May result in severe illness, injury, or death. - Targets, limits, and thresholds of concern are continually exceeded. - Habitats or ecosystems of high importance for maintaining the persistence of species or habitats that meet critical habitat thresholds.
	VL+	- Negligible change or improvement. - Almost no benefits. - Change not measurable/will remain in the current range.
	L+	- Minor change or improvement. - Minor benefits. - Change not measurable/will remain in the current range.
	M+	- Moderate change or improvement. - Real but not substantial benefits.

PART A: DEFINITIONS AND CRITERIA		
Criteria ranking for the DURATION of impacts		Will be within or marginally better than the current conditions.
	H+	- Prominent change or improvement. - Real and substantial benefits. - Will be better than current conditions.
	VH+	- Substantial, large-scale change or improvement. - Considerable and widespread benefit. - Will be much better than the current conditions.
	Very Short term	Very short, always less than a year or may be intermittent (less than 1 year). Quickly reversible.
	Short term	Short term occurs for more than 1 but less than 5 years. Reversible over time.
Criteria ranking for the EXTENT of impacts	Medium term	Medium-term, 5 to 10 years.
	Long term	Long term, between 10 and 20 years. Likely to cease at the end of the operational life of the activity or because of natural processes or by human intervention.
	Permanent	Very long, permanent, +20 years. Irreversible. Beyond closure or where recovery is not possible either by natural processes or by human intervention.
	Portion of site	The impact is limited to the immediate footprint of the activity and within a confined area.
	Whole site	The impact is limited to the immediate footprint of the activity and within a confined area.
	Beyond site	Beyond the site boundary, affecting immediate neighbours.
	Local	The impact extends far beyond the site boundary.
	Regional/ National	The impact extends beyond district or regional boundaries, with national implications.

TABLE 7-2: DETERMINING CONSEQUENCE

PART B: DETERMINING CONSEQUENCE – APPLIES TO POTENTIAL POSITIVE OR ADVERSE IMPACTS						
		EXTENT				
		Portion of site	Whole site	Beyond the site, affecting neighbours	Local area extending far beyond site	Regional/ National
INTENSITY = VL						
DURATION	Very short term	Very Low	Very Low	Very Low	Low	Low
	Short term	Very Low	Very Low	Low	Low	Medium
	Medium term	Very Low	Low	Low	Medium	Medium
	Long term	Low	Low	Medium	Medium	Medium

PART B: DETERMINING CONSEQUENCE – APPLIES TO POTENTIAL POSITIVE OR ADVERSE IMPACTS

	Very long term/permanent	Low	Medium	Medium	Medium	High
INTENSITY = L						
DURATION	Very short term	Very Low	Very Low	Low	Low	Medium
	Short term	Very Low	Low	Low	Medium	Medium
	Medium term	Low	Low	Medium	Medium	Medium
	Long term	Low	Medium	Medium	Medium	High
	Very long term/permanent	Medium	Medium	Medium	High	High
INTENSITY = M						
DURATION	Very short term	Very Low	Low	Low	Medium	Medium
	Short term	Low	Low	Medium	Medium	Medium
	Medium term	Low	Medium	Medium	Medium	High
	Long term	Medium	Medium	Medium	High	High
	Very long term/permanent	Medium	Medium	High	High	High
INTENSITY = H						
DURATION	Very short term	Low	Low	Medium	Medium	Medium
	Short term	Low	Medium	Medium	Medium	High
	Medium term	Medium	Medium	Medium	High	High
	Long term	Medium	Medium	High	High	High
	Very long term/permanent	Medium	High	High	High	Very High
INTENSITY = VH						
DURATION	Very short term	Low	Medium	Medium	Medium	High
	Short term	Medium	Medium	Medium	High	High
	Medium term	Medium	Medium	High	High	High
	Long term	Medium	High	High	High	Very High
	Very long term/permanent	High	High	High	Very High	Very High

TABLE 7-3: DETERMINING SIGNIFICANCE

PART C: DETERMINING SIGNIFICANCE - APPLIES TO POSITIVE OR ADVERSE IMPACTS

		CONSEQUENCE				
		Very Low	Low	Medium	High	Very High
PROBABILITY (of exposure to impacts)	Unlikely	Insignificant	Insignificant	Very Low	Low	Medium
	Conceivable	Insignificant	Very Low	Low	Medium	High
	Possible/ frequent	Insignificant	Very Low	Low	Medium	High
	Probable/ likely	Very Low	Low	Medium	High	Very High

PART C: DETERMINING SIGNIFICANCE - APPLIES TO POSITIVE OR ADVERSE IMPACTS						
Highly likely/ definite/ continuous		Very Low	Low	Medium	High	Very High
Criteria for ranking the PROBABILITY of impacts	Unlikely	Where the possibility of the impact to occur is very low or not expected to occur, i.e. ≤ 5% chance of occurring.				
	Conceivable	Where the impact could occur but there is little evidence to suggest that it would happen. >5 to ≤35% chance of occurring.				
	Possible/frequent	Where there is a reasonable probability that the impact would occur, i.e. >35 to ≤65% chance of occurring.				
	Probable/likely	Where there is high probability that the impact would occur and is not continuous i.e. >65 but ≤95 % chance of occurring.				
	Highly Likely/ Definite/ Continuous	Where an impact is certain to occur, >95 to 100% chance of occurring.				

TABLE 7-4: INTERPRETATION OF SIGNIFICANCE

PART D: INTERPRETATION OF SIGNIFICANCE		
Significance		Decision guideline
Insignificant		Inconsequential, not requiring any consideration.
Very Low	Very Low +	These beneficial or adverse impacts will not influence the decision. In the case of adverse impacts, mitigation is not required.
Low	Low +	These beneficial or adverse impacts are unlikely to influence the decision. In the case of adverse impacts, limited mitigation is likely to be required.
Medium	Medium +	These beneficial or adverse impacts may be important but are not likely to be key decision-making factors. In the case of adverse impacts, mitigation will be required.
High	High +	These beneficial or adverse impacts are considered to be very important considerations and must influence the decision. In the case of adverse impacts, substantial mitigation will be required.
Very High	Very High +	Represents a key factor in decision-making. Adverse impact would be considered a potential fatal flaw unless mitigated to lower significance.

7.2 Physical Environmental Impacts

7.2.1 Impact: Loss of Soil and Land Capability through Physical Disturbance

7.2.1.1 Impact Description

Soil is a valuable resource that provides a variety of ecological functions. There are several activities and facilities that have the potential to disturb soils and related land capability through removal, compaction

and/or erosion. The loss of soil resources has a direct impact on the potential loss of the natural capability of the land.

Physical soil disturbance can result in a loss of soil functionality as an ecological driver. In the case of erosion, the soils will be lost to the area of disturbance. In the case of compaction, the soil's functionality will firstly be compromised through a lack of rooting ability and aeration. Secondly, the compacted soils are likely to erode because, with less inherent functionality, there will be little chance for the establishment of vegetation and other matter that naturally protects the soils from erosion.

During construction, the EPC contractor will need to prepare the site for the various Project components (wind turbines, substation, transmission cables, campsites, access roads etc., as discussed in section 2.4). These activities will require that land clearing, excavation and grading take place. The nature of construction activities could disturb the soil, exposing it to wind erosion and increased runoff water erosion during rainfall events. Topsoil will be removed where excavation is undertaken, and soil compaction may occur. Additionally, a quarry site was identified outside of the Project boundary, around 3km to the east. The quarry site is active and is used to supply Aysha town with construction earth material and is owned by a local community member. Some of the Project components such as the turbine and substation foundations, main access roads and internal service roads would be constructed or upgraded using fill or aggregate material sourced from the active quarry as shown in the Figure below.



FIGURE 7-1 ACTIVE QUARRY SITE (LEFT) AND INACTIVE QUARRY SITE (RIGHT) (ESIA REPORT 2025)

Some of the potential environmental impacts of sourcing material from the existing quarry include land degradation which could accelerate enlargement of excavation areas, slope instability and loss of topsoil. Other environmental impacts include dust generation and increased noise and vibration. Social impacts that may arise include competition between project demand and community needs and increased risks from accidents involving pedestrians, livestock and other quarry users.

During the operational phase, maintenance needs to be undertaken. During post-decommissioning and rehabilitation, the land will present final landforms that may be susceptible to erosion. In the decommissioning phase, these activities could be temporary in nature, usually existing for a few weeks to a few months.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Sourcing soil from nearby active quarry. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Vehicle maintenance and wash bays. Storage and handling of sand, rock, cement, and chemical additives in cement. Site management (monitoring, inspections, maintenance of facilities, security, access control). Use and maintenance of back-up generators for back-up purposes. Storage and management of waste (general, hazardous and sewage).
Operational	Maintenance of roads and Substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Revegetation of final landforms remaining in perpetuity Re-vegetation of disturbed areas and where infrastructure is removed. Restoration of natural drainage patterns as far as practically possible. Site management (monitoring, inspections, maintenance of facilities, security, access control). Storage and management of waste (general, hazardous and sewage).

7.2.1.2 Impact Discussion

During the construction and decommissioning phase, the intensity in the unmitigated scenario is high. In the unmitigated scenario, the potential loss of soil resources and associated land capability is confined to the PAOI and nearby surroundings. Impacts from the sourcing of materials from the nearby active quarry site represent an incremental intensification of existing pressures rather than the introduction of new impact pathways. Without any mitigation, the probability of losing soil or compacting of soil and the related loss of land capability is definite. In the absence of soil conservation and management measures and a pollution prevention plan, the significance of the potential impact is expected to be **LOW**.

In the mitigated scenario, the potential loss of soil resources and associated land capability is reduced to part of the site, the probability of erosion and runoff events, as well as soil compaction will be reduced because the emphasis will be placed on preventing such events and on quick and effective remediation if they do occur. Additionally, with appropriate mitigation measures for the sourcing of sand from the active quarry site, including controlled extraction volumes, continued community access arrangements, dust and traffic management measures, and labour and health and safety due diligence, the residual environmental and social impacts associated with sourcing materials from the active quarry are expected to be low, localised, and manageable. This impact significance can be reduced to **VERY LOW** with the implementation of mitigation measures focused on minimising impacts during construction and decommissioning. Refer to the summary of the construction phase impact in Table 7-5.

TABLE 7-5: IMPACT SUMMARY – LOSS OF SOIL AND LAND CAPABILITY THROUGH PHYSICAL DISTURBANCE DURING THE CONSTRUCTION AND DECOMMISSIONING PHASE

Loss of Soil and Land Capability through Physical Disturbance during the Construction and Decommissioning Phase		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction and Decommissioning	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Whole site and nearby surroundings	Part of site/property
Consequence	Medium	Low
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Very Low -

During the operational phase, the intensity in the unmitigated scenario is medium. The potential loss of soil resources and associated land capability is confined to the PAOI and nearby surroundings but is long term. Without any mitigation, the probability of losing soil or compacting of soil and the related loss of land capability is possible. In the absence of soil conservation and management measures and a pollution prevention plan, the significance of the potential impact is expected to be **LOW**.

In the mitigated scenario, the potential loss of soil resources and associated land capability is reduced to part of the site with mitigation. With mitigation, the probability of erosion and runoff events, as well as soil compaction will be reduced because the emphasis will be placed on preventing such events and on quick and effective remediation if they do occur. This impact significance can be reduced to **VERY LOW** with the implementation of mitigation measures. Refer to the summary of the operational phase impact in Table 7-6.

TABLE 7-6: IMPACT SUMMARY – LOSS OF SOIL AND LAND CAPABILITY THROUGH PHYSICAL DISTURBANCE DURING THE OPERATIONAL PHASE

Loss of Soil and Land Capability through Physical Disturbance during the Operational Phase		
Type	Direct	
Nature	Negative	
Phases	Operational	
	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Part of site/property	Part of site/property
Consequence	Low	Low
Probability	Probable (High)	Conceivable (Low)
Significance	Low -	Very Low -

7.2.1.3 Mitigation Measures

The proposed mitigation measures are included in ESMP, attached to this SLIP. A summary of the mitigation measure includes the following:

- Limit soil disturbance to the immediate area of works only.
- Keep the topsoil stripped from areas where infrastructure will be located, for re-use.
- Store topsoil in protected stockpiles, protected from compaction and contamination for reuse for rehabilitation.
- Topsoil stripping and stockpiling will be carried out where soils have agricultural or ecological value to support future rehabilitation.
- Limit the height and slope of material stockpiles to reduce wind entrainment.
- Cover the stockpiles during periods of strong winds and heavy rain with appropriate material (e.g., cloth, tarpaulin etc).
- No waste material will be placed on the soil stockpiles.
- Invasive alien plant species or weeds will regularly be removed from stockpiles.
- Implementation of erosion control measures, such as sediment barriers, around stockpile areas.

7.2.2 Impact: Pollution and Contamination of Soils and Water Resources

7.2.2.1 Impact Description

Inadequate management of waste streams, wastewater and accidental spillages may result in pollution of soils and water resources. Pollution of soils and watercourses (groundwater or surface) from numerous incidents can result in a loss of soil functionality and watercourse quality because it can create a toxic environment for vegetation, vertebrates and invertebrates that rely on these resources.

Solid waste is expected to be generated during all phases. Solid waste generated will likely include construction waste (such as debris) and municipal solid waste (during construction and operation such as cardboard, plastic, food waste, etc.).

Improper housekeeping practices during construction and operation (such as illegal disposal of waste to land) could contaminate and pollute soil and water resources (MDI, 2025). This could also indirectly affect flora/fauna and the general health and safety of workers (from being exposed to such waste streams).

Rivers/streams and harvested water (stored in open and unprotected ponds) are used by the community for water supply purposes including for drinking, washing purposes and cattle watering. These water sources are found throughout the PAOI. Pollution of these resources may arise at or close to the base camps or work sites as a result of inadequate provision of sanitary and waste facilities and accidental or deliberate spillage or leakage of polluting materials.

Wastewater may include black water (sewage water from toilets and sanitation facilities), as well as grey water (from sinks, showers, etc.) generated from workers during the construction and operation phase. Inappropriate disposal of refuse and some materials used in construction can also lead to pollution of local water resources and have a long-term effect on water quality. As indicated in the ESIA (MDI, 2025), wastewater quantities are expected to be minimal. It is expected that wastewater will be collected and stored in fully contained septic tanks and then collected and transported by transportation tankers to be disposed at the closest WWTP.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Mixing of concrete and concrete work. Vehicle maintenance and wash bays. Storage and handling of sand, rock, cement, and chemical additives in cement. General housekeeping. Use and maintenance of back-up generators for back-up purposes. Storage and management of waste (general, hazardous and sewage).
Operational	Maintenance of roads and substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Storage and management of waste (general, hazardous and sewage).

7.2.2.2 Impact Discussion

Potential impacts from improper management of waste streams could be of a long-term duration throughout the construction, operation and decommissioning phases of the Project. The intensity of the impact in an unmitigated scenario is considered to be high. In the mitigated scenario, the number of pollution events should be significantly less which reduces the potential intensity to medium. In both the unmitigated and mitigated scenarios, the potential loss of soil and water resources will be restricted to within the site boundary. Without any mitigation, the probability of impacting on soils and water resources through pollution events is high. With mitigation, the probability reduces because emphasis will be placed on preventing pollution events and on quick and effective remediation if pollution events do occur.

In the unmitigated scenario, the significance of the impact would be **MEDIUM**, which can be reduced to **LOW** in the mitigated scenario (Table 7-7).

TABLE 7-7: IMPACT SUMMARY – POLLUTION AND CONTAMINATION OF SOILS AND WATER RESOURCES

Pollution and Contamination of Soils and Water Resources		
Type	Direct	
Nature	Negative	
Phases	All Phases	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Probable (High)	Conceivable (Low)
Significance	Medium -	Low -

7.2.2.3 Mitigation Measures

The following mitigation measures can be implemented as provided in the ESMP:

- Provision of adequate rubbish bins and waste disposal facilities (general and hazardous waste) on-site and at the shared infrastructure area.
- Keep the PAOI clean and tidy and free from rubbish.
- Undertake recycling measures onsite if applicable in the area in the following approach: (i) separation and disposal of recyclables in a separate container (cardboard, paper, glass, metal, etc.); and (ii) separation and disposal of non-recyclable materials in a separate container (e.g. food waste).
- No burning of solid waste on site.
- Waste bins will be cleaned out weekly or when capacity has been reached to prevent any windblown waste and or visual disturbance.
- Maintain records and manifests that indicate the volume of waste generated onsite.
- Used or damaged turbine blades will be recycled, where appropriate. Where this is inappropriate, these will as a last resort be disposed offsite at an appropriate waste management facility.
- Provision of sufficient toilet facilities on site.
- Install mobile chemical toilets on-site if no other ablution facilities are available.
- Ensure that no spillage occurs when toilets are cleaned or emptied.
- Discharge of effluent from toilets to the natural environment is strictly prohibited.
- The washing of people or personal effects and acts of ablutions are prohibited except at the facilities provided.
- Accidental spills and leakages will be managed through the implementation of the **Emergency Preparedness and Response Management Plan**, as included in the ESMP.
- The **Hazardous Materials Management Plan**, as included in the ESMP will be implemented.
- An integrated waste management approach will be implemented based on waste minimisation and will incorporate the waste hierarchy (i.e. reduction, re-use, recycling, treatment and disposal where appropriate). Refer to section 5.1.9 of the ESMP.

- A **Waste and Wastewater Management Plan** will be developed prior to the commencement of construction, which will define waste streams, storage, handling, transport, treatment and final disposal, aligned with IFC requirements and GIIP.

7.2.3 Impact: Abstraction from Water Resources affecting the Community

7.2.3.1 Impact Description

As water availability is limited during most of the time of the year in and around the PAOI and competition with other users is a sensitive issue, abstraction of water will have an impact on the Community.

Water will be required for various construction purposes including for mixing concrete and for campsite requirements. Water will also be required for sanitary purposes. A drinking water supply will be needed for the labour force.

Although no water resource related studies were undertaken, surface water is mostly a scarce resource in the PAOI and its vicinity (MDI, 2025). The use of water from existing wells or ponds for the Project's requirements may reduce water availability for domestic uses of the local community.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Abstraction of water for construction activities.
Operational	Abstraction of water for operational activities.
Decommissioning	Abstraction of water for decommissioning activities.

7.2.3.2 Impact Discussion

During the construction phase of the Project, greater quantities of water will be required for the construction activities of the Project. However, this impact will be short-term as it is limited to the construction phase. The impact is negative in nature, with a high intensity. This will be limited within and near to the PAOI. Given all of the above, such an impact is of **LOW** significance before mitigation measures are implemented.

In the mitigated scenario, the potential impact of competition on water resources is reduced to part of the site. This impact significance can be reduced to **VERY LOW** with the implementation of mitigation measures focused on minimising impacts during construction (Table 7-8).

TABLE 7-8: IMPACT SUMMARY – ABSTRACTION FROM WATER RESOURCES AFFECTING THE COMMUNITY DURING CONSTRUCTION PHASE

Abstraction from Water Resources affecting the Community during Construction Phase		
Type	Direct	
Nature	Negative	
Phases	Construction	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)

Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Part of site/property	Part of site/property
Consequence	Medium	Low
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Low -	Very Low -

As the wind turbines would be air-cooled, there would be no water requirement for operation and maintenance. However, some facilities would require potable water and water for sanitary purposes. It is expected that the operation and maintenance demand, as well as the decommissioning is negligible compared to the construction phase. For the operational and the decommissioning phases after mitigation, the impacts related to water supply for the Project would be of local extent, long-term duration and a very low intensity, resulting in an overall **INSIGNIFICANT** impact significance (

Table 7-9).

TABLE 7-9: IMPACT SUMMARY – ABSTRACTION FROM WATER RESOURCES AFFECTING THE COMMUNITY DURING OPERATIONAL AND DECOMMISSIONING PHASE

Abstraction from Water Resources affecting the Community during Operation and Decommissioning Phase		
Type	Direct	
Nature	Negative	
Phases	Operational and Decommissioning	
	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Part of site/property
Consequence	Medium	Low
Probability	Possible / frequent (Medium)	Unlikely / improbable (Very low)
Significance	Low -	Insignificant -

7.2.3.3 Mitigation Measures

As indicated in the ESMP to this SLIP, the following mitigation measure must be implemented:

- Detailed design must avoid placing any Project components within or near the water pipeline and water harvesting ponds.
- Not abstracting water volumes over the amounts stipulated in the Water Abstraction Permits that would need to be obtained for the Project.
- Coordinate with the Regional Office and/or Aysha Woreda Administration / Water and Infrastructure Cabinet to secure the water requirements of the Project through an appropriate approach for the construction phase.
- Avoid key natural rainwater drainage lines that could flow into the water harvesting ponds onsite.

7.2.4 Impact: Risk of Floods on the Project

7.2.4.1 Impact Description

As indicated in the ESIA (MDI, 2025), a major temporary water-bearing river drainage line is located west of the PAOI. Within the PAOI itself there are no major or secondary natural rivers or waterways but only drainage structures that bear water temporarily after rainfall events. These drainage systems could entail potential risks of local flood hazards, especially during the rainy season and during flash flood events, which could affect the Project components. Such risks must be taken into consideration throughout the planning phase of the Project as they could inflict damage to the Project and its various components.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads
Operational	Maintenance of roads and Substation areas. Operation of wind turbines.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Re-vegetation of disturbed areas and where infrastructure is removed. Restoration of natural drainage patterns as far as practically possible.

7.2.4.2 Impact Discussion

The impact of floods on the Project components could be of a long-term duration throughout the construction, operation and decommissioning phases of the Project. If the impact is not properly managed, then it is expected to be of medium consequence. The probability of flooding occurring is high. Therefore, the impact is considered of **MEDIUM** significance before mitigation measures are implemented (Table 7-10).

Proper planning and implementation of mitigation measure, during the design phase will ensure that any impacts from flooding on the project components result in moderate changes with **LOW** significance (Table 7-10).

TABLE 7-10: IMPACT SUMMARY – RISK OF FLOODS ON PROJECT

Risk of Floods on Project		
Type	Direct	
Nature	Negative	
Phases	All Phases	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)

Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Probable (High)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.2.4.3 Mitigation Measures

To reduce the possible impact of flooding on the Project, the following mitigation measures should be implemented:

- Ensure detailed design considers the requirements of the flood risk assessment to include:
- Maintaining a buffer zone from the river drainage system located west of the PAOI or if not possible include flood protection measures as part of design work; and
- Include as part of design for project components onsite drainage works for surface rainfall and targeted expansion of natural surface drainage channels.

Please also refer to the ESMP attached to the SLIP.

7.2.5 Impact: Seismicity on the Project Components

7.2.5.1 Impact Description

The PAOI is located under Zone 4 (MDI, 2025) in relation to seismic hazards in which the area could experience some sort of seismic activity. If such an issue is not considered as part of the design of the Project, it could result in certain impacts in relation to the structural aspects of the various project components (e.g. collapse of the turbine tower). This in turn could result in other indirect impacts related to public health and safety.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Erection, use and removal of scaffolding and cranes. Steelwork (including installing re-enforcement steel, grinding and welding).
Operational	Wind turbines.
Decommissioning	Dismantling and demolition of all infrastructure and removal of equipment.

7.2.5.2 Impact Discussion

The potential impacts from seismicity could be of a long-term duration and would be limited to the PAOI. Given that the Project is located in Zone 4, which is classified as a region of the highest seismic hazard, the probability of the area experiencing damaging earthquakes is probable and can result in prominent change. The impact is, therefore, considered to be of **MEDIUM** significance before mitigation measures are implemented and this changes to **LOW** with the mitigation measures as indicated in Table 7-11.

TABLE 7-11: IMPACT SUMMARY – SEISMIC EVENTS ON PROJECT COMPONENTS

Seismic Events on Project Components		
Type	Direct	
Nature	Negative	
Phases	All Phases	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Probable (High)	Conceivable (Low)
Significance	Medium -	Low -

7.2.5.3 Mitigation Measures

As provided in section 5.1.1 in the ESMP, mitigation measures include that the Project ensures that appropriate seismic resistance loads for Zone 4, as required by the Seismic Hazard assessment for Ethiopia, are included in the detailed design.

7.2.6 Impact: Increase in Ambient Air Pollutants affecting Sensitive Receptors

7.2.6.1 Impact Description

As indicated in the ESIA (MDI, 2025), the activities which result in increased total suspended particles and impacting on air quality, are limited to the relatively small individual footprints of the Project's components and the actual area of disturbance is relatively minimal. Nevertheless, the activities will likely result in an increased level of dust and particulate matter emissions, which in turn will directly and temporarily impact ambient air quality. If improperly managed, there is a risk of nuisance and health effects to construction workers onsite and to a lesser extent to the nearby surrounding receptors from windblown dust (such as the moving dwellers in the area). The use of vehicles, machinery and equipment (will also result in emissions, which would have minimal direct impacts on ambient air quality.

The Project activities present emission sources that can have a negative impact on ambient air quality during the various Project phases due to the type of activities that will take place and result in increased total suspended particles in the air.

Total suspended particulates (TSP) generally include particles smaller than 30 microns and are often regulated for nuisance impacts such as dust fallout (DFO). DFO consists of Particulate Matter (PM) with varying sizes and masses, typically dominated by particles larger than 20 microns. Larger, heavier particles settle quickly due to gravity, resulting in localised impacts. In the construction and decommissioning phases, these activities are usually temporary in nature, lasting only a few weeks to a few months. Most of the impacts on air quality will result in the construction and decommissioning phases due to Project activities during these phases. The operational phase of the Project will impact on air quality but due to this mainly being maintenance activities, the impacts will be very limited.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Site management (monitoring, inspections, maintenance of facilities, security, access control). Use and maintenance of back-up generators for back-up purposes. Storage and management of waste (general, hazardous and sewage).
Operational	Maintenance of roads and Substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Revegetation of final landforms remaining in perpetuity Re-vegetation of disturbed areas and where infrastructure is removed.

7.2.6.2 Impact Discussion

The impacts during construction and decommissioning are anticipated to be short term but have a very high intensity. Before mitigation measures are implemented these impacts will have a definite probability of occurring. The significance will, therefore, be **MEDIUM**. However, with the implementation of mitigation measure, the probability of this impact occurring and the intensity decreases to medium, which results in a **VERY LOW** significance (Table 7-12).

TABLE 7-12: IMPACT SUMMARY – INCREASE IN AMBIENT AIR POLLUTANTS AFFECTING SENSITIVE RECEPTORS (CONSTRUCTION AND DECOMMISSIONING)

Increase in Ambient Air Pollutants affecting Sensitive Receptors		
Type	Direct	
Nature	Negative	
Phases	Construction and Decommissioning	
	Without Mitigation	With Mitigation
Intensity	Severe change (Very high)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Low
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Very Low -

Although the operational phase is long-term, the Project activities during this phase have limited time-periods of impacting on air quality, which will result in a low intensity and low consequence of the activities impact on air quality. The significance is, therefore, **LOW** in the unmitigated scenario. As the probability changes to low with mitigation, the significance becomes **VERY LOW** (Table 7-13).

TABLE 7-13: IMPACT SUMMARY – INCREASE IN AMBIENT AIR POLLUTANTS AFFECTING SENSITIVE RECEPTORS (OPERATIONAL)

Increase in Ambient Air Pollutants affecting Sensitive Receptors		
Type	Direct	
Nature	Negative	
Phases	Operational	
	Without Mitigation	With Mitigation
Intensity	Minor change (Low)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Low	Low
Probability	Probable (High)	Conceivable (Low)
Significance	Low -	Very Low -

7.2.6.3 Mitigation Measures

Mitigation measure that should be implemented during construction and decommissioning include the following:

- The appropriate sizing of diesel generators so that they run at an optimal workload.
- Maintaining diesel generators.
- Sourcing of construction materials locally.

- For the transport of materials and equipment, the vehicle load will be maximised to increase fuel efficiency and reduce emissions.
- Truck drivers will receive training on good driving practices to improve fuel economy and reduce carbon emissions.
- Reduced vehicle speeds.
- Dust suppression methods will be applied if required.
- Dust Suppression Register and Complaints Register must be kept on site.

Please also refer to the Air and Dust Management Plan included in section 5.1.6 of the ESMP attached as to the SLIP.

During the operational phase, the following mitigation measures are applicable:

- Truck drivers will receive training on good driving practices to improve fuel economy and reduce carbon emissions.
- Reduced vehicle speeds.
- Dust suppression methods will be applied if required.
- Dust Suppression Register and Complaints Register must be kept on site.

7.2.7 Impact: Climate-Related Risks for the Project

The information in this section was sourced from the CCRA undertaken by SLR.

The CCRA is required by the IFC and AfDB to identify and manage the financial, environmental, and social risks of projects related to climate change, ensuring their resilience and alignment with sustainability goals. Although climate change was considered in the ESIA (MDI, 2025), it did not include a full CCRA. The section below provides an assessment of the Project to climate-related risks.

7.2.7.1 Data Collection

The CCRA undertaken by SLR in August 2025 included the assessment of:

- The risk of climate change for the Project; and
- The Project's GHGs emissions.

The assessment of climate-related risks and opportunities is based on information sourced from Climate Insights. Climate Insights is a climate risk assessment tool developed by ClimSystems to enable users understand the site-specific projected impacts of acute and slow-onset climate change. In contrast to most freely available climate databases, Climate Insights provides climate data for a specific location (i.e., single coordinate) or a linear activity (i.e., linear set of coordinates).

The Climate Insights global database consists of more than 60 metrics, with a focus on extremes of rainfall, temperature, wind, drought, flood and sea levels. The global database is based on outputs from the Coupled Model Inter-Comparison Project No. 6 (CMIP6). CMIP6 is also used by the Intergovernmental Panel on Climate Change (IPCC) in the Sixth Assessment Report, which was released at the end of 2021.

Climate-related risks are firstly identified through the desktop study and categorised according to the TCFD disclosure framework (Table 7-14). The TCFD distinguishes between two types of climate-related risks, namely physical risks and transitional risks, as well as climate-related opportunities¹¹:

- The **physical risks** resulting from climate change can have a direct impact on the Project, or an indirect impact on the Project's supply chains. Physical risks are further divided into acute and chronic risks.

¹¹ TCFD (2017). *Recommendations of the Task Force on Climate-related Financial Disclosures*. URL: <https://assets.bbhub.io> [accessed 4 July 2025].

- **Transitional risks** refer to the financial and reputational impact to Projects with the global transition to a lower-carbon economy. The level of risks is dependent on the nature, speed, and focus of the transition. Transitional impacts are further divided into policy and legal, technology, market, and reputational risks.
- The **opportunities** that may arise for organisations from efforts to mitigate and adapt to climate change.

TABLE 7-14: CLIMATE-RELATED RISKS DISCLOSURE FRAMEWORK

Category	Type	Description
Physical risks	Acute	Impacts that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods.
	Chronic	Impacts arise from longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves.
Transitional risks	Policy and legal impacts	Impacts arise from policy actions that attempt to constrain actions that contribute to climate change or seek to promote adaptation to climate change. Impacts also arise from climate-related litigation claims being brought before the courts by property owners, municipalities, states, insurers, shareholders, and public interest organisations.
	Technology	Impacts arise from new technologies displacing old technologies and disrupting some parts of the existing economic system. This transition leads to winners and losers, and uncertainty in assessing technological impact.
	Market	Impacts arise from shifts in supply and demand for certain commodities, products, and services as climate-related impacts and opportunities are increasingly taken into account.
	Reputational	Impacts arise from changing customer or community perceptions of an organisation's contribution to or detraction from the transition to a lower-carbon economy.
Opportunities	Resource efficiency	Opportunities arise from improving efficiency across production and distribution processes and employing innovation in technology.
	Energy source	Opportunities arise from the uptake of low emission alternative energy sources.
	Products and services	Opportunities arise from the innovation and development of new low-emission products and services, allowing organisation to improve their competitive position and to capitalise on shifting consumer and producer preferences.
	Markets	Opportunities arise from accessing new markets or types of assets, allowing organisations to diversify their activities and better position themselves for the transition to a lower carbon economy.
	Resilience	Opportunities arise from developing adaptive capacity to better manage climate-related risks and seizing climate-related opportunities.

7.2.7.2 Risk Assessment Methodology

The CCRA, therefore, utilised a risk matrix which is a commonly used tool in risk assessment. Physical risks of the Project have been assessed as a function of hazard, exposure vulnerability as per Equator Principles Guidance Note on Climate Change as shown in the tables below.

In the context of the CCRA, risk refers to the likelihood that a certain event will occur, and the potential consequences of such an event should it occur. This differs from impact which refers to the actual consequences or effects that result from a certain event.

TABLE 7-15: CCRA VULNERABILITY ASSESSMENT

Adaptive Capacity	High (5)	1	2	2	3	3
	Medium-high (4)	2	2	3	3	4
	Medium (3)	2	3	3	4	4
	Low-medium (2)	3	3	4	4	5
	Low (1)	3	4	4	5	5
Vulnerability Matrix		Low (1)	Low-medium (4)	Medium (3)	Medium-high (4)	High (5)

The magnitude of potential climate-related impacts considers the exposure rating and vulnerability. The description of the exposure ratings is provided in the table.

TABLE 7-16: EXPOSURE RATINGS

Rating		Description
1	Low	Assets with few or no unit with little to no value exposed to the hazards.
2	Low-medium	Assets with some few units of moderate value exposed to hazards.
3	Medium	Assets with many units of moderate value exposed to hazards.
4	Medium-high	Assets with some of many units of important value highly exposed to hazards.
5	High	Assets with many units of important value highly exposed to hazards.

The assessment of climate risks and opportunities also considers the likelihood of an impact as shown below.

TABLE 7-17: CCRA LIKELIHOOD RATINGS

Rating	Description
High	Operational disruptions longer than 10 days / significant disruption with emergency response required /extreme monetary loss of > 90%.
Medium-high	Operational disruptions longer than 5 days / major monetary loss of 50–90%.
Medium	Operational disruptions less than 5 days / moderate monetary loss of 10–50%.
Low-medium	Operational disruptions less than 24 hours / monetary loss of < 10%.
Low (1)	Little to no impact on operational uptime or revenue.

TABLE 7-18: CCRA IMPACT RATING

Exposure	High (5)	3	4	4	5	5
	Medium-high (4)	3	3	4	4	5
	Medium (3)	2	3	3	4	4
	Low-medium (2)	2	2	3	3	4
	Low (1)	1	2	2	3	3
Impact Magnitude		Low (1)	Low-medium (2)	Medium (3)	Medium-high (4)	High (5)
		Vulnerability				

The risk rating description is provided in the table below.

TABLE 7-19: CCRA RISK RATINGS

Rating	Description
Rare	Recurrent risk: The unwanted event has not occurred or is unlikely to occur within 30 years. Single event: Negligible; probability small, almost zero.
Unlikely	Recurrent risk: The unwanted event has happened at some time or could happen about once in 30 years. Single event: Unlikely but not negligible: probability noticeably greater than zero.
Possible	Recurrent risk: The unwanted event has happened at some time; or could happen within 10 years. Single event: Less likely than not but still appreciable: probability less than 50% but still quite high.
Likely	Recurrent risk: Unwanted events occur infrequently and could arise about once per year. Single event: As likely as not: probability greater than 50% but less than 80%.

Rating	Description
Almost certain	Recurrent risk: The unwanted event could occur several times per year and is likely to recur within 1 year. Single event: More likely than not: probability greater than 80%.

The sections hereunder provide an assessment of the impact of a changing climate on the Project using the methodology detailed above. It also describes the opportunities that may arise for the Project with the transition to a lower carbon economy. The section also presents an assessment of the impact of the Project on communities, priority ecosystem services, and sites of demonstrated importance for climate change mitigation or adaptation, that are or likely to be adversely affected by climate change.

7.2.7.3 Impact: Increased Risk of Extreme Heat

Climate change is resulting in increased frequency, severity and duration of extreme heat events in countries such as Ethiopia. This alters climatic patterns across the country, leading to significant health impacts. Increased risk to extreme heat adversely affects the health of employees. The impact is most likely to occur during the construction phase of the Project due to the activities during the construction phase. However, during the operational and decommission phase, workers can also be exposed to extreme heat conditions.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding)
Operational	Maintenance of roads and Substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Revegetation.

Increased risk of extreme heat may lead to an increased risk of employees suffering from heat stress. This may affect employee's health and productivity, which can reduce revenue. A summary of the impact is provided in Table 7-20. The risk score for the Project is **Low-Medium**.

TABLE 7-20: IMPACT SUMMARY - INCREASED RISK OF EXTREME HEAT

Increased Risk of Extreme Heat Adversely Affecting the Health of Employees		
TCFD Category	Physical - Acute	
Impact	Major	In extreme cases, heat stress can be a life-threatening injury.
Likelihood	Rare	Although the conditions that can lead to an increase in the occurrence and intensity of heat stress are projected to increase in the future, it is highly unlikely that heat stress will adversely affect the health of employees. This is because many of the employees will be from the area and are likely to be

Increased Risk of Extreme Heat Adversely Affecting the Health of Employees		
		accustomed to extreme heat. The likelihood can be further reduced with the implementation of the adaptation measures listed below.
Vulnerability	3	Medium-high vulnerability to heat exposure.
Exposure	3	Many workers exposed to extreme heat. Assets with many units of moderate value exposed to hazard.
Risk Score	Low-medium (2)	

7.2.7.3.1 Mitigation Measures

The mitigation measures proposed for the risk of extreme heat include the following:

- Development of an employee health awareness program for employees (and contractors) on maintaining hydration and identifying the early signs of heat stroke/dehydration.
- Providing employees with appropriate PPE to reduce sun exposure and risk of heat stroke/dehydration.
- Rescheduling work on very hot days (i.e., >30°C) to cooler parts of the day, providing more frequent rest breaks, and/or providing employees with shaded rest areas.

Also refer to section 5.1.1 and section 5.1.17 of the ESMP.

7.2.7.4 Impact: Increased Risk of Decreased Mean Wind Speed

The Project is dependent on wind during its operational phase for the generation of electricity. A decrease in wind speed would affect the electricity generation and Project revenues.

Increases in mean annual and maximum daily temperatures may result in changes in the local temperature and large-scale climate oscillations which may result in changes in surface wind speeds. Should wind speeds decrease then it would adversely affect the electricity generating potential of the Project. The mean wind speed is projected to generally decrease in months of October, November and December. However, the annual mean wind speed is projected to increase (0.5% to 2.5%), which means that there may be an overall increase in generating potential, and that the projected change in mean wind speed could have a positive impact on the Project. The risk score of this impact is **LOW** (Table 7-21).

TABLE 7-21: IMPACT SUMMARY - INCREASED RISK OF DECREASED MEAN WIND SPEED

Increased Risk of Decreased Mean Wind Speed, which could Adversely Affect Electricity Generating Potential and Revenues		
TCFD Category	Physical - Chronic	
Impact	Slight	Change in wind speed is likely to have little or no impact on operational uptime or revenue.
Likelihood	Rare	Based on the projected increase in mean annual wind speed, it is unlikely that a change in wind speed would adversely affect the Project.
Vulnerability	2	A change in wind speed will not adversely affect the Project.
Exposure	3	Assets with many units of moderate value exposed to hazard.
Risk Score	Low	

7.2.7.4.1 Mitigation Measures

No additional mitigation measures need to be implemented.

7.2.7.5 Impact: Increased Risk of Extreme Wind Speed

Due to an increase in mean annual and maximum daily temperatures, change in local temperature gradients and large-scale climate oscillations may occur, which can result in extreme temperature speeds during the operational phase of the Project. This can damage the wind turbines, which then need to be fixed.

Any damage to wind turbines due to extreme wind speeds result in a higher capital cost due to damaged components needing to be replaced and revenue losses from reduced generation capacity. Extreme wind speeds at the PAOI currently range from 63 km/h (1:2-year recurrence event) to 72 km/hr (1:1000-year recurrence event). As a result of climate change, extreme wind speed is projected to increase between 1.8% to 2.3%. However, modern wind turbines are designed to withstand sustained wind speeds of up to 180 km/hr, and the projected increase in extreme wind speeds is only up to 73 km/hr (1:1000-year recurrence event). Therefore, it is unlikely that a change in extreme wind speed would adversely affect the Project. Furthermore, modern wind turbines automatically shut down when the cut-off speed is reached (~90 km/hr) to reduce the risk of damage to the wind turbines. The risk score for this impact is **LOW** (Table 7-22).

TABLE 7-22: IMPACT SUMMARY: INCREASED RISK OF EXTREME WINDSPEEDS

Increased Risk of Extreme Wind Damaging the Wind Turbines, which could Lead Higher Capital Costs, Reduced Generating Potential, and Revenue Losses		
TCFD Category	Physical - Acute	
Impact	Slight	Change in extreme wind speed is likely to have little or no impact on operational uptime or revenue.
Likelihood	Rare	As modern wind turbines are designed to withstand sustained wind speeds of up to 180 km/hr, and the projected increase in extreme wind speeds is only up to 73 km/hr (1:1000-year recurrence event), it is unlikely that a change in extreme wind speed would adversely affect the Project. Furthermore, modern wind turbines automatically shut down when the cut-off speed is reached (~90 km/hr) to reduce the risk of damage to the wind turbines.
Vulnerability	2	Assets with some few units of moderate value exposed to hazards.
Exposure	3	Assets with many units of moderate value exposed to hazards
Risk Score	Low	

7.2.7.5.1 Mitigation Measures

No additional mitigation measures are recommended by the specialist.

7.2.7.6 Impact: Increased Risk of More Stringent Climate Policies and Legislation

The transition to a lower carbon economy, may result in impacts from legislation or policy actions that attempt to constrain activities which are incompatible with a country's national climate mitigation and/or adaptation commitments. Projects that are not aligned with national climate commitments may present higher transition risks due to the nature of the operations, which may adversely affect the commercial decisions of financial institutions.

In determining the compatibility of a project with a country's national climate commitments, it is firstly necessary to determine if the project is included on the list of activity types that are universally considered

to “not” be aligned with the goals of the Paris Agreement¹². The Project is not one of the activity types included on this list.

Secondly, it is required to determine if the project is included on the list of activity types that are universally considered to be aligned with the goals of the Paris Agreement. Due to the nature of this Project, it is one of the activity types included on this list and is, therefore, considered to be aligned with the goals of the Paris Agreement.

The impact on the Project due to more stringent climate policies and legislation is considered to be slight as a change in climate policies and legislation is unlikely to have an impact on operational uptime or revenue of the Project. The likelihood is rare as the nature of the Project is such that it is aligned with the goals of the Paris Agreement. The risk score is, therefore, **LOW** (Table 7-23).

TABLE 7-23: IMPACT SUMMARY - INCREASED RISK OF MORE STRINGENT CLIMATE POLICIES AND LEGISLATION

Increased Risk of More Stringent Climate Policies and Legislation which could Lead to Higher Operational Costs		
TCFD Category	Transitional – Policy and legislation	
Impact	Slight	A change in climate policies and legislation is likely to have little or no impact on operational uptime or revenue.
Likelihood	Rare	As the Project is, by default, aligned with the goals of the Paris Agreement, it is unlikely that a change in climate policies and legislation would adversely affect the Project.
Risk Score	Low	

7.2.7.6.1 Mitigation Measures

As per the CCRA no additional mitigation measures need to be implemented.

7.2.7.7 Impact: Increased Risk of More Stringent Waste Policies and Legislation

With the transition to a lower carbon economy, there is growing global concern over the large number of end-of-life wind turbine blades and the lack of facilities for recycling and/or safe disposal of such blades. These blades are often made from composite materials like fiberglass or carbon fibre, which are difficult to recycle. Furthermore, these materials are designed for strength and durability, making them hard to break down and separate.

There is an increased risk of more comprehensive regulations in the future governing the disposal and recycling of end-of-life wind turbine blades, may lead to increased operating costs for the recycling and/or safe disposal of such blades.

A change in waste policies and legislation will have a minor impact on the operation of the Project. It is, however, possible that more stringent waste policies and legislation could be implemented over the next ten years, The risk is considered to be **LOW** (Table 7-24).

TABLE 7-24: IMPACT SUMMARY - INCREASED RISK OF STRINGENT WASTE POLICIES AND LEGISLATION WHICH COULD LEAD TO HIGHER OPERATIONAL COSTS

¹² World Bank (2023). Joint MDB Methodological Principles for Assessment of Paris Agreement Alignment of New operations. URL: <https://documents1.worldbank.org/> [accessed 12 July 2025].

Increased Risk of More Stringent Waste Policies and Legislation which could Lead to Higher Operational Costs		
TCFD Category	Transitional – Policy and legislation	
Impact	Minor	A change in waste policies and legislation is likely to have minor impact on operations.
Likelihood	Possible	It is possible that more stringent waste policies and legislation could happen in the next ten years.
Risk Score	Low	

7.2.7.7.1 Mitigation Measures:

The below mitigation measure should be implemented for the Project:

- A standalone waste management plan will be developed and implemented to ensure that the Project's different waste streams are handled in an environmentally responsible and efficient manner.
- This plan will include provisions for the proper storage, handling, recycling, and, as a last resort, disposal to landfill of the different waste streams, and to cover the construction, operations and decommissioning phases of the Project.
- In developing the plan, the 'best practicable environmental option' will be considered for each of the Project's waste streams, particularly the end-of-life wind turbine blades.
- This plan will be reviewed and updated at least every five years. During the review, it is essential to re-evaluate the 'best practicable environmental option' by considering new and emerging waste technologies and processes.

Please also refer to the Waste and Wastewater Management Plan in section 5.1.9 in the ESMP.

7.2.8 Impact: Carbon Footprint and Project's Greenhouse Gas Emissions

A project's carbon footprint and GHG emissions need to be determined to manage climate-related business risks, identify and develop climate-friendly opportunities, and ensure compliance with its environmental and social performance standards. This analysis helps the IFC, the AfDB and its clients to understand and reduce emissions, assess risks, attract climate-related funding, and align projects with its sustainability goals and global commitments, such as the Paris Agreement.

7.2.8.1 Data Collection

SLR undertook a CCRA in August 2025, which included the assessment of:

- The risk of climate change for the Project; and
- The Project's GHGs emissions.

The approach to the quantification of Project's GHG emissions is guided by the following reference documents:

- Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard.
- IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- International Organisation for Standardisation: ISO 14064-1:2019: Greenhouse gases - Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals.

7.2.8.2 GHG Emissions Sources included in the Assessment

Table 7-25 presents the GHG emission sources which were included in the assessment, as well as the activity data on which the GHG emissions were calculated.

TABLE 7-25: GHG EMISSION SOURCES INCLUDED IN THE ASSESSMENT

Project Phase	Scope	Emissions Source	Activity Data	Unit
Construction	1	Stationary combustion – Diesel consumed by onsite generators during the construction process	Litres consumed	Litres (l)
Construction	1	Kilometres travelled – Freight transport of equipment to the PAOI	Distance travelled	Kilometres (km)
Operations	1	Stationary combustion – Diesel consumed by onsite generators	Litres consumed	Litres (l)
Operations	2	GHG emissions of electricity consumed by onsite facilities, which is produced offsite	Electricity consumed	Kilowatt hour (kWh)

7.2.8.3 Quantification of the Project's GHG Emissions

7.2.8.3.1 Stationary Combustion

During the construction and operational phase, GHG emissions will result from the combustion of diesel fuel in onsite generators to the Project to the site¹³. The GHG emissions from stationary combustion are calculated using the following equation:

$$GHG\ emissions_{(tCO_2e)} = Litres\ diesel_{(l)} * Emission\ factor_{(kgCO_2el)} * 0.001$$

The GHG emissions from the combustion of diesel fuel in generators during the construction phase are calculated to be 1.1.tCO₂e, with an average of 0.48 tCO₂e/a over 27-month construction phase (Table 7-26).

TABLE 7-26: CALCULATION OF GHG EMISSIONS FROM STATIONARY COMBUSTION DURING THE CONSTRUCTION PHASE

Description	Value	Unit
Total diesel consumption	405	ℓ
Emission factor	2.66155	kgCO ₂ e/ℓ
Total GHG emissions	1.1	tCO₂e
Duration of construction phase	2.25	years
Average annual GHG emissions	0.48	tCO₂e/annum

The GHG emissions from the combustion of diesel fuel in generators during the operational phase are calculated to be 35.tCO₂e, with an average of 1.3 tCO₂e/a over a 26 year period (Table 7-27).

¹³ It was assumed each truck would undertake a round trip – Fully laden on the journey from Djibouti DMP Port to Aysha Wind Farm and empty on the return journey.

TABLE 7-27: CALCULATION OF GHG EMISSIONS FROM STATIONARY COMBUSTION DURING THE OPERATIONAL PHASE

Description	Value	Unit
Total diesel consumption	500	ℓ/a
Emission factor	2.66155	kgCO ₂ e/ℓ
Total annual GHG emissions	1.3	tCO₂e
Duration of operational phase	25	years
Total GHG emissions	33	tCO₂e

7.2.8.3.2 Mobile Combustion

During the construction phase, GHG emissions will result from the combustion of diesel fuel in heavy goods vehicles used to transport the nacelle, hub, blades, and towers to the Project to the site¹⁴. The GHG emissions from mobile combustion are calculated using the following equation:

$$GHG\ emissions_{(tCO_2e)} = Distance\ travelled_{(km)} * Mass\ of\ load\ (tonnes) * Emission\ factor_{(kgCO_2e)} * 0.001$$

The emission factors used to calculate GHG emissions resulting from the consumption of diesel and kilometres of road freight were sourced from the Department for Energy Security and Net Zero's latest (2025) emission factor spreadsheet for advanced users¹⁵.

The GHG emissions from the combustion of diesel fuel in heavy good vehicles during the construction phase are calculated to be 276.tCO₂e, with an average of 123 tCO₂e/a over 27-month construction phase. It is assumed that the heavy goods vehicles transporting equipment to site will be fully laden, and empty (0% laden) on the return trip (Table 7-28).

TABLE 7-28: CALCULATION OF GHG EMISSIONS FROM MOBILE COMBUSTION DURING THE CONSTRUCTION PHASE

Description	Value	Unit
100% laden heavy good vehicles		
Total mass transported & distance	3,182,391	tonne.km
Emission factor (fully laden)	0.07431	kgCO ₂ e/tonne.km
GHG emissions	236	tCO ₂ e
0% laden heavy good vehicles		
Total distance travelled	60,420	km
Emission factor (0% laden)	0.65975	kgCO ₂ e/km
GHG emissions	40	tCO ₂ e
Total GHG emissions	276	tCO₂e
Duration of construction phase	2.25	years
Average annual GHG emissions	123	tCO₂e/annum

¹⁴ It was assumed each truck would undertake a round trip – Fully laden on the journey from Djibouti DMP Port to Aysha Wind Farm and empty on the return journey.

¹⁵Department for Energy Security and Net Zero (2025). *Greenhouse Gas Reporting: Conversion Factors 2025*. URL - [Greenhouse gas reporting: conversion factors 2025 - GOV.UK](https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2025) [accessed 4 July 2025]

7.2.8.3.3 Purchased Electricity

During the operational phase, GHG emissions will result from consumption of electricity sourced from the national grid, which is generated offsite. Purchased electricity will only be used during low generation hours. The GHG emissions from purchased electricity are calculated using the following equation:

$$GHG\ emissions_{(tCO_2e)} = Electricity\ consumption_{(MWh)} * Emission\ factor_{(tCO_2e/MWh)}$$

The emission factor used to calculate GHG emissions resulting from the consumption of electricity were sourced from ClimateIQ¹⁶.

The GHG emissions from the purchase of electricity generated offsite (from the Ethiopian national grid) during the operational phase are calculated to be 820 tCO₂e, with an average of 33 tCO₂e/a over a 26-year period (Table 7-29).

TABLE 7-29: CALCULATION OF GHG EMISSIONS FROM PURCHASED ENERGY DURING THE OPERATIONAL PHASE

Description	Value	Unit
Average annual consumption	2,000,000	MWh
Emission factor	0.0164	kgCO ₂ e/kWh
Total GHG emissions	33	tCO₂e
Duration of operational phase	25	years
Total GHG emissions	820	tCO₂e

7.2.8.4 Assessment of the Project's GHG Emissions

For the purpose of this assessment, the SLR impact assessment matrix included in section 7.1 has not been utilised as this approach is not deemed to be appropriate for assessing the impact of GHG emissions. This is because this methodology tends to overstate the significance of the impact despite the relatively insignificant contribution of a Project's GHG emissions. This is due to the global extent of the impact, long-term duration (approximately 100 years), and high probability of the impact occurring. This assessment, therefore, assesses the Project's GHG emissions in terms of three criteria:

- Comparison to alternative technologies.
- Contribution to Ethiopia's modelled domestic pathways.
- Pre-defined thresholds.

7.2.8.5 Comparison to Alternative Technologies

The first criterion for assessing Project's GHG emissions is a comparison of the lifecycle GHG emissions of the preferred technology alternative (i.e., wind energy) and other technologies alternatives (i.e., coal, natural gas, nuclear, solar PV, and concentrating solar power (CSP)).

If the lifecycle emissions of the preferred technology are lower than that of feasible alternative technologies, the impact is considered to be Positive. If, however, the lifecycle emissions are higher than that of feasible alternative technologies, the impact is considered to be Negative.

Lifecycle assessments indicate that the GHG emissions for renewable energy technologies are lower than that of fossil fuel technologies. The median values for renewable energy technologies range from 1 to 12 grams carbon dioxide equivalent per kilowatt hour (gCO₂e/kWh), while those of fossil fuel technologies range from 460 to 1,020 gCO₂e/kWh.

¹⁶ ClimateIQ (2017). *Electricity supplied from the grid – Ethiopia*. URL - <https://www.climateiq.io/data/emission-factor/53303f04-3356-4436-a506-1fbcdc686363> [accessed 4 July 2025]

Figure 7-2 presents a comparison of the lifecycle GHG emissions of other technology alternatives, namely solar photovoltaics, CSP, nuclear, natural gas, and coal, in comparison to onshore wind energy, the preferred technology alternative.

It was calculated that the lifecycle GHG emissions for producing the same quantity of energy (i.e. 1,333,000 MWh/year) using nuclear (14,663 tCO₂e), CSP (11,997 tCO₂e), solar photovoltaics (7,332 tCO₂e), gas (611,847 tCO₂e), and coal (1,358,327 tCO₂e), was greater than that of onshore wind energy, the preferred technology alternative (zeroed for comparison purposes). As the lifecycle GHG emissions of the preferred technology is lower than that of feasible technology alternatives, the impact of the Project's GHG emissions, from alternatives analysis perspective, is assessed to be Positive.

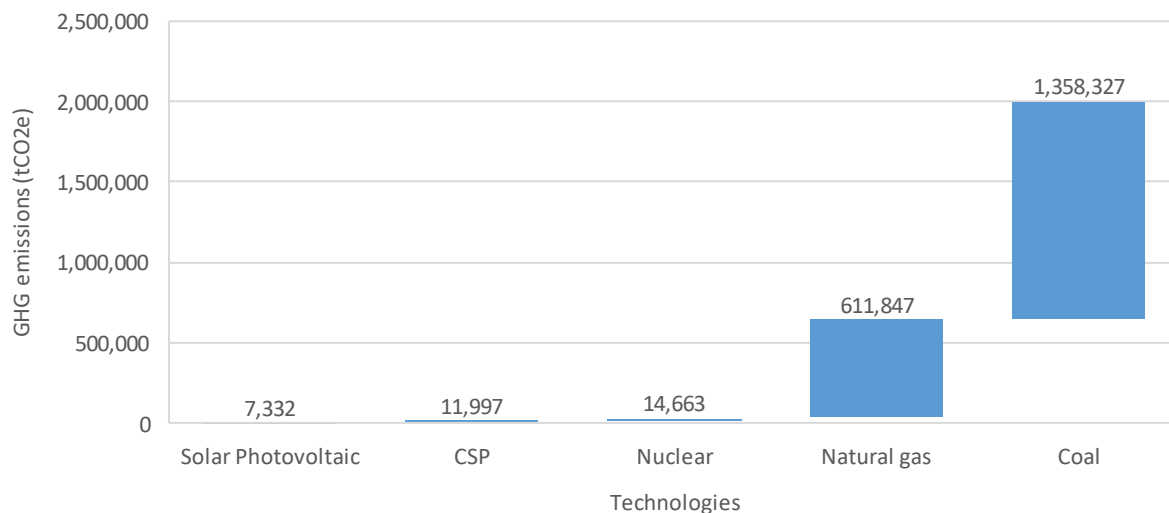


FIGURE 7-2: COMPARISON OF THE LIFECYCLE GHG EMISSIONS OF VARIOUS TECHNOLOGY ALTERNATIVES RELATIVE TO WIND ENERGY, THE PREFERRED OPTION

7.2.8.6 Contribution to Ethiopia's Domestic Pathways

The second criterion for assessing the potential impact of the Project's GHG emissions is the potential contribution to Ethiopia's four modelled domestic pathways.

Climate Action Tracker (CAT) uses rating categories and modelled domestic pathways to evaluate whether a country's targets and policies are on track towards decarbonisation in line with 1.5°C temperature limit of the Paris Agreement. CAT derives country-level pathways from modelled global pathways, taking into account a "fair share range" for each country. CAT uses the following rating categories for the modelled domestic pathways:

- **1.5°C Paris Agreement compatible:** Indicates that a country's climate policies and commitments are consistent with the Paris Agreement's 1.5°C temperature limit.
- **Almost sufficient:** Indicates that a country's climate policies and commitments are not yet consistent with the Paris Agreement's 1.5°C temperature limit but could be with moderate improvements.
- **Insufficient:** Indicates that a country's climate policies and commitments need substantial improvements to be consistent with the Paris Agreement's 1.5°C temperature limit.
- **Highly insufficient:** Indicates that a country's climate policies and commitments are not consistent with the Paris Agreement's 1.5°C temperature limit. For many countries in this category, policies and commitments lead to rising, rather than falling, emissions.

Figure 7-3 presents Ethiopia's policies and action, as well as the country's Nationally Determined Contribution (NDC) targets, relative to CAT's rating categories. In summary, Ethiopia's "Policies and

action” are considered to be compatible, their conditional “NDC target” is considered to be critically insufficient, and their “Unconditional NDC target” is considered to be compatible.

While these calculations provide a useful indication of the scale of the contribution of the Project’s GHG emissions to Ethiopia’s domestic pathways, this approach does have some limitations:

- First, the contribution of a single renewables project to Ethiopia’s national GHG emissions inventory is unlikely to look significant.
- Second, there are no official benchmarks which could be used to determine the significance of the Project’s contribution to the national GHG emissions.

The impact significance is therefore not formally rated.

The contribution of the Project’s estimated GHG emissions to country’s four modelled pathways was calculated for the period 2026 to 2050 (Table 7-30). The calculated contribution ranges between 0.000011%% (Highly Insufficient pathway) and 0.000079%% (1.5°C Paris Agreement Compatible pathway).

V FIGURE 7-3: ETHIOPIA'S MODELLED DOMESTIC PATHWAYS

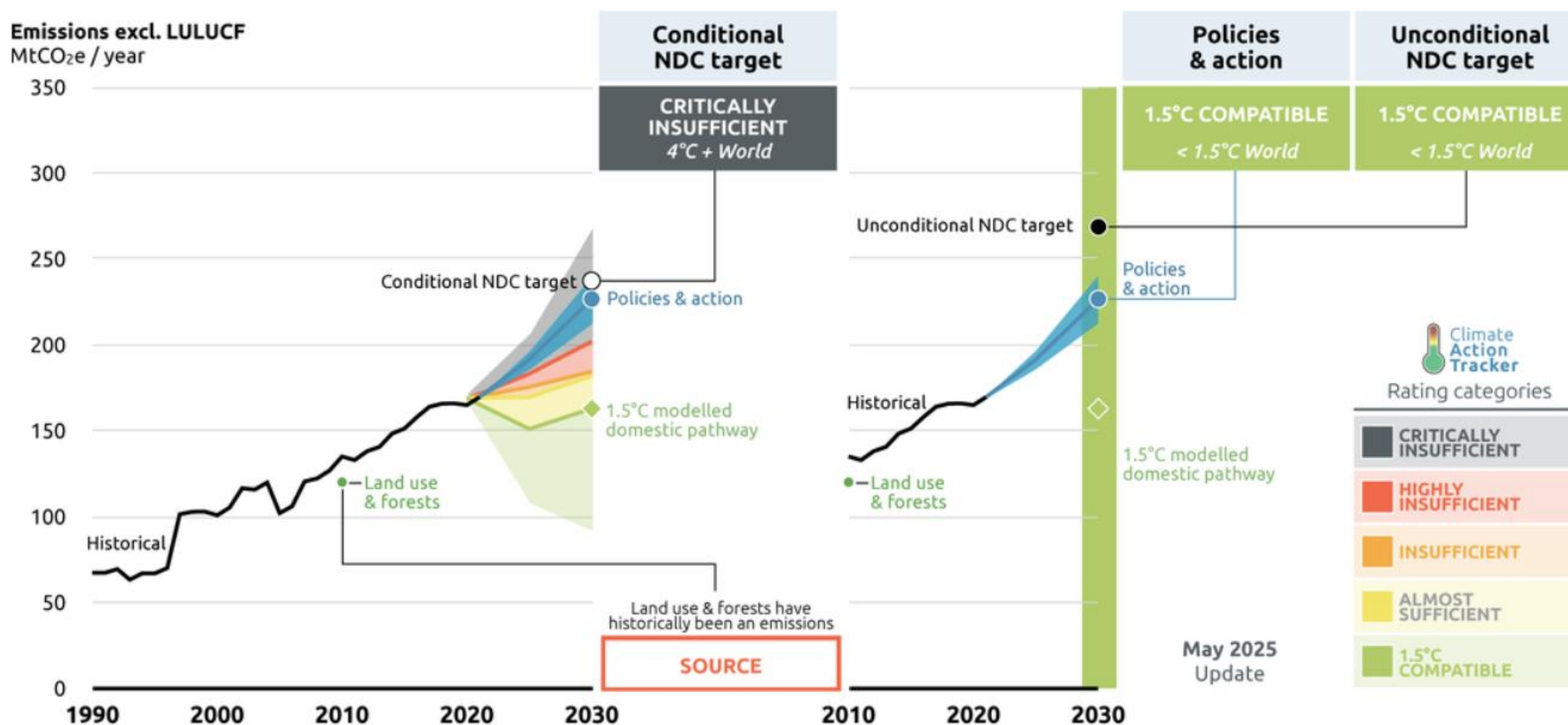


FIGURE 7-4: ETHIOPIA'S MODELLED DOMESTIC PATHWAYS

TABLE 7-30: PERCENTAGE CONTRIBUTION OF THE PROJECT'S GHG EMISSIONS TO ETHIOPIA'S FOUR DOMESTIC MODELLED PATHWAYS

Year	Project's GHG emissions (MtCO ₂ e)	1.5° C Paris Agreement Compatible Pathway	Almost Sufficient Pathway	Insufficient Pathway	Highly Insufficient Pathway
2026	0.000080%	0.000072%	0.000070%	0.000066%	0.000080%
2027	0.000079%	0.000071%	0.000069%	0.000065%	0.000079%
2028	0.000078%	0.000070%	0.000068%	0.000063%	0.000078%
2029	0.000021%	0.000019%	0.000019%	0.000017%	0.000021%
2030	0.000021%	0.000019%	0.000019%	0.000017%	0.000021%
2031	0.000021%	0.000019%	0.000018%	0.000017%	0.000021%
2032	0.000021%	0.000018%	0.000018%	0.000016%	0.000021%
2033	0.000020%	0.000018%	0.000018%	0.000016%	0.000020%
2034	0.000020%	0.000018%	0.000018%	0.000016%	0.000020%
2035	0.000020%	0.000018%	0.000018%	0.000016%	0.000020%
2036	0.000020%	0.000017%	0.000017%	0.000015%	0.000020%
2037	0.000020%	0.000017%	0.000017%	0.000015%	0.000020%
2038	0.000020%	0.000017%	0.000017%	0.000015%	0.000020%
2039	0.000020%	0.000017%	0.000017%	0.000014%	0.000020%
2040	0.000020%	0.000017%	0.000016%	0.000014%	0.000020%
2041	0.000020%	0.000017%	0.000016%	0.000014%	0.000020%
2042	0.000020%	0.000016%	0.000016%	0.000013%	0.000020%
2043	0.000020%	0.000016%	0.000016%	0.000013%	0.000020%
2044	0.000020%	0.000016%	0.000016%	0.000013%	0.000020%
2045	0.000020%	0.000016%	0.000016%	0.000012%	0.000020%
2046	0.000020%	0.000016%	0.000015%	0.000012%	0.000020%
2047	0.000020%	0.000016%	0.000015%	0.000012%	0.000020%

Year	Project's GHG emissions (MtCO ₂ e)	1.5° C Paris Agreement Compatible Pathway	Almost Sufficient Pathway	Insufficient Pathway	Highly Insufficient Pathway
2048	0.000020%	0.000016%	0.000015%	0.000011%	0.000020%
2049	0.000021%	0.000016%	0.000015%	0.000011%	0.000021%
2050	0.00002%	0.00000016	0.00000015	0.00000011	0.00002%
Min	0.000079%	0.000071%	0.000069%	0.000065%	0.000079%
Max	0.000020%	0.000016%	0.000015%	0.000011%	0.000020%

As mentioned previously, the significance of the contribution of the Project's GHG emissions to Ethiopia's domestic modelled pathways is not formally rated as there is no official benchmark that could be applied.

7.2.8.7 Benchmarking Against Pre-Defined Thresholds

The third criterion for assessing the Project's GHG emissions is benchmarking against pre-defined thresholds developed by the EBRD (Table 7-31). The thresholds are used by the EBRD for initial screening to determine the order of magnitude of a Project's annual GHG emissions during the operational phase. These thresholds are used by EBRD as an early indicator of a project's likely contribution to the Bank's GHG inventory and GHG intensity of the Bank's investment portfolio. In the absence of other commonly agreed thresholds they are used as a proxy to rate the significance of the Project's GHG emissions contribution to atmospheric GHGs.

TABLE 7-31: THRESHOLDS FOR ASSESSING THE SIGNIFICANCE OF A PROJECT'S GHG EMISSIONS

Benchmark thresholds (tCO ₂ e/a)	Significance rating
Negligible	Very low
< 20,000	Low
> 20,000 and < 100,000	Medium-low
> 100,000 and < 1 million	Medium-high
> 1 million	High

The Project's average annual GHG emissions during the operational phase are estimated to be 34 tCO₂e.

Based on the thresholds presented in Table 7-31 (i.e., Negligible), the significance of the Project's annual GHG emissions is classed as **VERY LOW**.

7.3 Biological Environmental Impacts

The construction phase of the Aysha I WPP project presents significant environmental challenges, requiring proactive management to mitigate potential impacts. This phase can lead to habitat destruction, soil erosion, and disruption of wildlife patterns, particularly affecting sensitive species and ecosystems. For each impact, a set of mitigation measures have been identified and proposed to eliminate or reduce the impact to acceptable levels. In addition to the mitigation measures provided in this ESIA, a Biodiversity

Management Plan has been developed for the Project which builds existing mitigation measures from the ESIA while incorporating lender-mandated requirements (IFC PS6, AfDB Safeguards). The mitigation hierarchy described in this ESIA and BMP has been implemented appropriately, i.e. avoidance measures first, followed by minimisation and then restoration. The BMP should be referred to by the EPC Contractor and all site workers during construction phase to ensure biodiversity measures are followed.

7.3.1 Impact: Habitat Degradation and Loss due to Construction Activities

7.3.1.1 Impact Description

During the construction phase, various construction activities result in the direct loss of vegetation which provide habitats for various flora and fauna species.

Site clearance and subsequent construction activities, including clearing, grading, excavation, and other earthworks, will result in the direct loss of areas of natural habitats over the full construction footprint of the Project. This includes construction activities such as internal site roads, turbine bases, crane pads, substations, permanent site structures (e.g., offices), as well as temporary structures and lay-down areas.

Clearing and excavation of existing soil, vegetation and other substrates will result in the loss of plant communities, food for animals and shelter for small animals. Vegetation cannot regenerate in impermeable paving or compacted soils, and wildlife dependent upon natural features and resources cannot utilize the converted land, which restricts available habitat regionally. Larger animals will be impacted through the loss of feeding grounds. The duration of habitat loss will be permanent until the project is decommissioned. There is also likely to be temporary habitat loss and degradation of habitats because of temporary facilities (e.g., worker accommodation) as well as cabling and communication routes.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Pre-construction	Project design.
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Establishment and upgrading of roads. Establishment of temporary camp. Earthworks. Establishing stormwater controls. Construction of laydown areas.

7.3.1.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** as there will be degradation and loss of natural habitat. In the mitigated scenario, with the application of the mitigation hierarchy, natural habitat can be avoided as much as possible in the planning / design phase which can lower the impact significance. In addition, ensuring that residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss, the impact significance then becomes **LOW**. Refer to Table 7-32.

TABLE 7-32: IMPACT SUMMARY – HABITAT DEGRADATION AND LOSS DUE TO CONSTRUCTION ACTIVITIES

Habitat Degradation and Loss due to Construction Activities	
Type	Direct

Nature	Negative	
Phases	Pre-construction and Construction	
	Without Mitigation	With Mitigation
Intensity	Sever change (Very High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	High	Medium
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	High -	Low -

7.3.1.3 Mitigation Measures

The following mitigation measure should be implemented during construction:

- Planned developments with the potential to generate significant negative impacts on natural habitat must show there is no technically and economically feasible alternatives to the Project. The mitigation plan should follow a hierarchy of actions:
 - Avoidance: action taken to fully prevent impacts, such as relocating a project or changing its spatial layout to prevent impacts in specific locations;
 - Minimisation: action taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided;
 - Restoration: action taken to assist in the recovery of a feature that has been degraded, damaged or destroyed, ensuring no net loss of biodiversity;
 - Offset: When impacts cannot be mitigated within the project area of influence, measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimisation and restoration measures have been taken.
- Project Design during the pre-construction phase must ensure that the placement of the proposed transmission lines and turbine locations avoid high-sensitivity zones, opt for lower-impact designs, or cluster infrastructure to preserve contiguous habitat blocks.
- The Project must ensure that impacts on Dorcas gazelle, Soemmerring's gazelle, white-backed vulture, Egyptian vulture and scissor-tailed kite are avoided or minimised to the extent possible, and that residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss. This requirement will be addressed through the Biodiversity Action Plan (BAP), which will outline specific avoidance, minimisation and restoration measures.
- Any sensitive habitats or important plant resources that are close to construction footprints should be clearly demarcated and access to these areas prohibited.
- Methods, timings, and target species for these measures must be outlined in a BAP. The BAP must also contain a Restoration Action Plan which should be prepared prior to construction that involves planting and seeding unused impacted areas with native, high-value species. This Plan must define restoration objectives, methods, responsibilities, and measurable success criteria for reinstating temporarily disturbed areas no longer required for project activities. also using native species and locally appropriate restoration techniques, supported by post-reinstatement monitoring and adaptive management.
- Mark all protected areas for threatened or endemic plant species.

- Reduce human disturbance to wildlife, including PBFs, include preventing nocturnal construction activities, reducing activity during the breeding season or other sensitive periods, and establishing buffer zones to minimize construction noise and visibility.
- Restrict damage to flora communities (food source).

7.3.2 Impact: Habitat Fragmentation and Barrier Effect

Following the loss of habitat, habitat fragmentation can become permanent while the project is operating. The development and operation of WPPs result in landscape fragmentation, diminishing overall ecosystem connectivity and functionality. This fragmentation impedes plant recruitment and wildlife movement between habitat patches, particularly impacting species with extensive home range requirements and migratory patterns. Long-term fragmentation due to physical barriers can also reduce genetic exchange, which is particularly detrimental to species characterized by rapid generation turnover.

Mitigation measures include pre-construction avoidance of sensitive habitats, establishing and maintaining green corridors, limiting the construction of roads, trails and other infrastructure to non-sensitive areas, establishing and maintaining wildlife passageways, traffic control measures, and ensuring passageways for wildlife to cross road accesses.

7.3.2.1 Impact Description

The loss of habitat during construction can result in habitat fragmentation becoming permanent while the Project is operating. The development and operation of the Project results in landscape fragmentation, diminishing overall ecosystem connectivity and functionality.

Fragmentation impedes plant recruitment and wildlife movement between habitat patches, particularly impacting species with extensive home range requirements and migratory patterns. Long-term fragmentation due to physical barriers can also reduce genetic exchange, which is particularly detrimental to species characterised by rapid generation turnover.

The Project will not be enclosed by fencing, therefore, no physical barriers to movement are expected. However, the presence of turbines may cause a minor barrier effect to terrestrial animals and deter migratory avifauna exhibiting macro-scale avoidance behaviour, such as waterbirds. Increased migratory detours can elevate stress levels and decrease survivorship among migrants due to the additional energy expenditure required to navigate around the Project. Conversely, migratory raptors do not exhibit macro-avoidance behaviour and are consequently at higher risk for turbine collisions.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Establishment and upgrading of roads. Establishment of temporary camp. Earthworks. Establishing stormwater controls. Construction of laydown areas.
Operational	Maintenance of roads and Substation areas. Wind turbine areas.

7.3.2.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** as there will be fragmentation of natural habitat. Barrier effects will also cause high intensity impacts for fauna. In the mitigated scenario, with the

application of the mitigation hierarchy, natural habitat can be avoided as much as possible in the planning / design phase which can lower the impact significance. In addition, ensuring that residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss, the impact significance can be lowered to **MEDIUM** (Table 7-33).

TABLE 7-33: IMPACT SUMMARY – HABITAT FRAGMENTATION AND BARRIER EFFECT

Habitat Fragmentation and Barrier Effect		
Type	Direct	
Nature	Negative	
Phases	Construction and Operation	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Prominent change (High)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Regional	Regional
Consequence	High	High
Probability	Probable (High)	Possible / frequent (Medium)
Significance	High -	Medium -

7.3.2.3 Mitigation Measures

The following mitigation measures should be implemented:

- Planned developments with the potential to generate significant negative impacts on natural habitat must show there is no technically and economically feasible alternatives to the Project. The mitigation plan should follow a hierarchy of actions:
 - Avoidance: action taken to fully prevent impacts, such as relocating a project or changing its spatial layout to prevent impacts in specific locations;
 - Minimisation: action taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided;
 - Restoration: action taken to assist in the recovery of a feature that has been degraded, damaged or destroyed, ensuring no net loss of biodiversity;
 - Offset: When impacts cannot be mitigated within the project area of influence, measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimization and restoration measures have been taken.
- Project Design during the pre-construction phase must ensure that the placement of the proposed transmission lines and turbine locations avoid high-sensitivity zones, opt for lower-impact designs, or cluster infrastructure to preserve contiguous habitat blocks. Plan the Project layout to avoid natural habitat.
- The Project must ensure that impacts on Dorcas gazelle, Soemmerring's gazelle, white-backed vulture, Egyptian vulture and scissor-tailed kite are avoided or minimised to the extent possible, and that residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss.

- The residual impact is Medium after mitigation and thus there is a requirement to manage impacts further through the measures in the BAP to be developed for the Project, which will outline specific avoidance, minimization and restoration measures.
- Implement traffic control measures.

7.3.3 Impact: Disturbance to Soil Fauna due to Construction Activities

7.3.3.1 Impact Description

Animals that burrow underground or take shelter in grass and shrubs will be displaced by construction activities (such as earthworks) or suffer direct mortality.

Underground and burrowing animals may be crushed by construction activities (such as earthworks) or suffer stress-induced mortality. Bird nests may be destroyed. Larger animals will be impacted through the loss of feeding grounds.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Establishment and upgrading of roads. Establishment of temporary camp. Earthworks. Establishing stormwater controls. Construction of laydown areas.

7.3.3.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** because the mortality of soil fauna would be permanent and has a very high probability. In the mitigated scenario, avoidance of breeding / nesting sites and seasons can reduce the impact significance to **LOW**. Refer to Table 7-34.

TABLE 7-34: IMPACT SUMMARY – DISTURBANCE TO SOIL FAUNA DUE TO CONSTRUCTION ACTIVITIES

Disturbance to Soil Fauna due to Construction Activities		
Type	Direct	
Nature	Negative	
Phases	Construction	
	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Permanent (> 20 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	High	Medium

Probability	Definite / Continuous (Very high)	Probable (High)
Significance	High -	Low -

7.3.3.3 Mitigation Measures

The following mitigation measure should be implemented during construction:

- Methods, timings, and target species for these measures must be outlined in a BAP.
- Avoid construction activities on congregatory nesting sites and implement temporary wildlife exclusion zones.
- Implement timing restrictions on construction activities to avoid active periods for terrestrial mammals.
- Restrict damage to flora communities (food source).

7.3.4 Impact: Pollution from Waste, Hazardous Materials and Chemical Spills affecting Flora and Fauna

7.3.4.1 Impact Description

Waste generation, hazardous materials and potential chemical spills may degrade habitats through soil contamination, reduced water quality, and direct toxicity to flora and fauna. Such pollution can impair ecosystem functioning, reduce species diversity, and increase mortality risk for sensitive species.

Solid waste and hazardous materials (including wires, nets, plastic containers and plastic bags) are introduced on site during the construction phase. This may result in wind-blown litter, which poses risks to wildlife due to entanglement or ingestion.

Hydrocarbon spills from fuels and lubricants, which are toxic to plants and animals via soil and water contamination can also damage plant communities depending on the substances left in the field.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Establishment and upgrading of roads. Establishment of temporary camp. Earthworks. Establishing stormwater controls. Construction of laydown areas.
Operational	Maintenance of roads and Substation areas. Wind turbine areas.

7.3.4.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** because pollution can affect natural habitats and ecosystem functioning, and the probability is very high. With the implementation of mitigation measures, the impact significance changes to **VERY LOW**.

TABLE 7-35: IMPACT SUMMARY – POLLUTION FROM WASTE, HAZARDOUS MATERIALS AND CHEMICAL SPILLS AFFECTING FLORA AND FAUNA

Pollution from Waste, Hazardous Materials and Chemical Spills affecting Flora and Fauna		
Type	Direct	
Nature	Negative	
Phases	Construction and Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 - 20 years)	Short-term (1 to 5 years)
Extent	Regional	Local
Consequence	High	Low
Probability	Definite / Continuous (Very High)	Conceivable (Low)
Significance	High -	Very Low -

7.3.4.3 Mitigation Measures

The following mitigation measures should be implemented during the construction phase:

- Prepare and implement the Waste and Wastewater Management Plan.
- Provide training to working staff to avoid leaving unattended materials in the field.
- Define strict waste management supervision and controls.
- Secure waste storage area must be established.
- Undertake daily inspections and regular litter cleanup.
- Reduce the use of plastic waste.
- Immediately remove waste to prevent scavenging.
- Daily inspections and cleanup of litter by EPC contractors and on-site managers.

7.3.5 Impact: Pollution from Dust and Air Pollutants due to Construction Activities affecting Flora and Fauna

Construction activities generate dust clouds and airborne pollutants (e.g., particulate matter, exhaust emissions) that can reduce plant photosynthesis, disrupt insect pollinators, and impair avian flight and respiration. Pollutants can cause respiratory stress in wildlife and contaminate water sources.

Mitigation measures include track dampening, wind barriers, air quality monitoring, work timing adjustments based on measurements, vehicle speed limits, and low-emission machinery.

7.3.5.1 Impact Description

Construction activities generate dust clouds and airborne pollutants (e.g., particulate matter, exhaust emissions) that pose risks to desert ecosystems.

During the construction phase, dust particles will be released into the air in the form of particulate matter. The use of construction vehicles and equipment will release exhaust emissions. Dust can reduce plant photosynthesis, disrupt insect pollinators and impair avian flight and respiration. Pollutants can cause respiratory stress in wildlife and contaminate water sources.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Vehicle maintenance and wash bays. Use and maintenance of back-up generators for back-up purposes.

7.3.5.2 Impact Discussion

In the unmitigated scenario, the impact significance is **MEDIUM** because dust and air pollution are short-term during the construction phase. With the implementation of mitigation measures, the impact significance changes to **VERY LOW**.

TABLE 7-36: IMPACT SUMMARY – POLLUTION FROM DUST AND AIR POLLUTANTS DUE TO CONSTRUCTION ACTIVITIES AFFECTING FLORA AND FAUNA

Pollution from Dust and Air Pollutants due to Construction Activities affecting Flora and Fauna		
Type	Direct	
Nature	Negative	
Phases	Construction	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	Low	Low
Probability	Definite / Continuous (Very High)	Possible / frequent (Medium)
Significance	Medium -	Very Low -

7.3.5.3 Mitigation Measures

The following mitigation measures should be implemented:

- Apply track dampening.
- Use wind barriers.
- Undertake air quality monitoring.
- Adhere to vehicle speed limits.

7.3.6 Impact: Pollution from Noise affecting Fauna

7.3.6.1 Impact Discussion

Construction activities (particularly associated with site clearing and construction activities, and operational machinery, generators, and vehicle movement) introduce anthropogenic noise stressors that may disrupt wildlife behaviour, including feeding, reproduction, and movement. These noises can overlap with communication frequencies used by many faunal groups. Birds, amphibians, and mammals may suffer reduced breeding success due to masking of calls or avoidance of noisy zones. Chronic noise can also trigger stress responses and territory abandonment in sensitive species.

During operation of the Project, the wind turbines will result in noise pollution that may impact fauna. Operational noise generated by the rotation of wind turbine blades and the power generator can lead to acoustic masking, disturbance, and displacement of wildlife, potentially reducing survivorship and reproductive success in various species. This noise can interfere with the communication and navigation abilities of animals, particularly affecting those that rely on acoustic signals, such as birds and bats. The continuous hum and mechanical sounds produced by turbines can disrupt the natural soundscape, making it challenging for these species to detect mates, prey, or predators, and ultimately impact their behaviour and habitat use.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Vehicle maintenance and wash bays. Use and maintenance of back-up generators for back-up purposes.
Operational	Operation of Wind turbines

7.3.6.2 Impact Description

In the unmitigated scenario, the impact significance is **MEDIUM** because noise pollution can disturb fauna throughout the construction phase through to the operational phase. With the implementation of mitigation measures, the impact significance changes to **LOW**. Refer to Table 7-37.

TABLE 7-37: IMPACT SUMMARY – POLLUTION FROM NOISE AFFECTING FAUNA

Pollution from Noise affecting Fauna		
Type	Direct	
Nature	Negative	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.3.6.3 Mitigation Measures

The following measures can reduce the impacts on biodiversity:

- Design buffer zones to minimize the construction noise footprint.
- Use turbines with advanced blade designs to reduce aerodynamic noise.
- Ensure regular maintenance of all equipment to keep turbines operating efficiently and quietly.

7.3.7 Impact: Pollution from Light affecting Fauna

7.3.7.1 Impact Description

Construction activities introduce anthropogenic stressors such as light that may disrupt wildlife behaviour, including feeding, reproduction, and movement.

During operation of the Project, lighting will be required which will result in artificial pollution and impact fauna.

Light pollution from wind turbines, particularly due to night-time lighting, can significantly impact nocturnal wildlife behaviour. This artificial illumination can act as an attractant, leading to congregation and increased predation rates, or altering movement and migration patterns. Conversely, it can serve as a repellent, causing displacement of species from their natural habitats. Additionally, light pollution can interfere with the circadian rhythms of wildlife, potentially leading to reduced survivorship and reproductive success. These disruptions can have cascading effects on ecosystem dynamics and the overall health of nocturnal species. For example, light pollution can have a significant impact on migratory species by disrupting their migration patterns, and bats by attracting insects towards turbines.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Vehicle maintenance and wash bays. Use and maintenance of back-up generators for back-up purposes.
Operational	Lighting at PAOI.

7.3.7.2 Impact Description

In the unmitigated scenario, the impact significance is **MEDIUM** because light pollution can disturb fauna throughout the construction phase through to the operational phase. With the implementation of mitigation measures, the impact significance changes to **LOW**. Refer to Table 7-38.

TABLE 7-38: IMPACT SUMMARY – POLLUTION FROM LIGHT AFFECTING FAUNA

Pollution from Light affecting Fauna		
Type	Direct	
Nature	Negative	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)

Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.3.7.3 Mitigation Measures

The following mitigation measures need to be implemented:

- Minimise external lighting as much as possible, especially at night.
- Use red/amber LEDs that have minimal impact on wildlife.
- Establish barriers to prevent light from reaching long distances.
- Implement shields or hoods to prevent skyglow, spill and glare, where applicable.
- Timer systems or motion sensors to control lighting time and intensity, where applicable.

7.3.8 Impact: Disturbance to Fauna due to Illegal Wildlife Trading and Poaching

7.3.8.1 Impact Description

The illegal harvest of specimens (e.g. poaching) by on-site workers can be a significant problem in areas where rare or threatened species are present.

The PAOI support significant populations of threatened gazelle species which could be targeted by onsite workers and citizens. The opening of new access roads brings easier access to navigate the PAOI and capture wildlife. Nomadic herders in particular have been known to target livestock predators (e.g. jackals, hyenas), while poachers have captured raptors and cheetah cubs to deliver Middle East markets. Without supervision, such activities can lead to localised extinction of threatened species and the loss of apex predators, compromising the ecosystem function.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Construction workers on site. Truck drivers.
Operation	Operational workers on site.

7.3.8.2 Impact Discussion

Poaching would result in the mortality of fauna which would be permanent and has a high probability of occurring throughout the project phases before mitigation measures are implemented. The impact significance will be **VERY HIGH**. With the implementation of mitigation measures, the impact becomes **LOW** as there is a low probability of it occurring (Table 7-39).

TABLE 7-39: IMPACT SUMMARY – DISTURBANCE TO FAUNA DUE TO ILLEGAL WILDLIFE TRADING AND POACHING

Disturbance to Fauna due to Illegal Wildlife Trading and Poaching	
Type	Direct

Nature	Negative	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Sever change (Very High)	Minor change (Low)
Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Inter-regional	Local
Consequence	High	Medium
Probability	Probable (High)	Conceivable (Low)
Significance	Very High -	Low -

7.3.8.3 Mitigation Measures

Mitigation Measures to be implemented on site include the following:

- A BAP will include constant supervision of construction works and a prohibition to harvest specimens of any kind.
- Training and education for on-site workers about the importance of preserving ecosystem integrity.
- Develop and implement community education programs.
- Restrict use of access roads to local citizens.
- Implement anti-poaching patrols with local and regional cooperation.
- Livestock guard programs must be implemented.

7.3.9 Impact: Fauna Mortality from Vehicular Collisions due to Increased Traffic

7.3.9.1 Impact Description

There will be an increase in the number of vehicles within the PAOI during the construction and operation phases. This increases the risk of collisions with wildlife. Improved road surfaces also result in higher speeds on roads and an elevated risk of collisions.

Wildlife is at risk of being struck by or colliding with motorized vehicles and equipment during the construction and operation of the Project. The impact varies depending on the size and behaviour of the species involved, as well the speed and time of day the vehicle is travelling.

Animals such as hares, hedgehogs, rodents, lizards, snakes, and amphibians face a higher risk of mortality from collisions with vehicles and machinery. Their smaller size and limited mobility make them more vulnerable to being overlooked or unable to escape in time. Conversely, species such as gazelles and foxes are less likely to be affected by vehicle-related fatalities, except at night time when these species are often blinded or confused by vehicle headlights. These animals typically have the agility and awareness to avoid slow-moving construction vehicles and machinery, especially under enforced speed restrictions. Additionally, drivers will have enough visibility during the day to detect these species and adjust their driving speed. Raptors that scavenge on roadkill are also at risk. Increased traffic and improved road surfaces can lead to more road killings, attracting these birds and potentially increasing their exposure to vehicular collisions. Kites and vultures have been observed at Degago road feeding on roadkill.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding) Vehicle maintenance and wash bays. Storage and handling of sand, rock, cement, and chemical additives in cement. Site management (monitoring, inspections, maintenance of facilities, security, access control). Use and maintenance of back-up generators for back-up purposes. Storage and management of waste (general, hazardous and sewage).
Operation	Maintenance.

7.3.9.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** because of the mortality of fauna being a high probability. With the implementation of mitigation measures, the impact significance changes to **LOW**. Refer to Table 7-40.

TABLE 7-40: IMPACT SUMMARY – FAUNA MORTALITY FROM VEHICULAR COLLISIONS DUE TO INCREASED TRAFFIC

Fauna Mortality from Vehicular Collisions due to Increased Traffic		
Type	Direct	
Nature	Negative	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Sever change (Very High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	High	Medium
Probability	Probable (High)	Conceivable (Low)
Significance	High -	Low -

7.3.9.3 Mitigation Measures

The following mitigation measures should be implemented:

- Enforce strict speed controls (< 50 km/h) to the EPC contractors.
- Ban driving outside of delineated access roads.
- Ensure wide visibility when driving through access roads, otherwise reduce speed limit.
- Restrict driving and machinery operations to daylight hours.
- Design a protocol in the BAP to remove any roadkill carcasses immediately after detection in a 30 m buffer from the access roads during the construction phase.

7.3.10 Impact: Introduction of Alien Species affecting Ecosystem Functioning

7.3.10.1 Impact Description

The influx of workers and material to the PAOI can inadvertently facilitate the spread of non-native species, such as the already prevalent mesquite (*Neltuma juliflora*), which has significantly degraded the local ecosystem.

Soil imports, whether intentional or accidental, particularly through contaminated excavation and earthworks equipment, pose a substantial risk. These soils may harbour pathogens capable of infecting native flora and fauna that lack evolved defence mechanisms. Additionally, exotic seeds present in imported soil can exacerbate the proliferation of invasive species, which often outcompete indigenous species due to their aggressive growth habits and the absence of natural predators. This can lead to secondary impacts on wildlife dependent on native vegetation for foraging or shelter, disrupting trophic interactions and ecosystem services.

Furthermore, the displacement of shy or specialist species and the proliferation of generalist species can result in permanent shifts in ecosystem functioning and trophic cascades, ultimately leading to a loss of biodiversity and ecosystem resilience.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Site management (monitoring, inspections, maintenance of facilities, security, access control). Increased number of workers on site.
Operational	Maintenance of roads and Substation areas.

7.3.10.2 Impact Discussion

In the unmitigated scenario, the impact significance is **VERY HIGH** because alien invasive species can severely degrade ecosystem functioning which can be permanent. With the implementation of mitigation measures, the impact significance changes to **MEDIUM**. To compensate for the residual impact caused by the introduction of exotic or native species that managed to bypass prevention and monitoring protocols, a BAP will be prepared that will include a dedicated Alien Plant Management Plan to create a biodiversity net gain and contribute to restore the natural ecosystem functioning at the PAOI. Refer to Table 7-41.

TABLE 7-41: IMPACT SUMMARY – INTRODUCTION OF ALIEN SPECIES AFFECTING ECOSYSTEM FUNCTIONING

Introduction of Alien Species affecting Ecosystem Functioning		
Type	Direct	
Nature	Negative	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Severe change (High)	Moderate change (Medium)
Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Inter-regional	Local
Consequence	Very High	Medium
Probability	Definite Continuous (High)	Possible / frequent (Medium)
Significance	Very High -	Medium -

7.3.10.3 Mitigation Measures

To mitigate the risks associated with the disruption of ecosystem functions, the following measures are recommended:

- To compensate for the residual impact caused by the introduction of exotic or native species that managed to bypass prevention and monitoring protocols, a BAP will be prepared that will include a dedicated Alien Plant Management Plan. This will include the removal of mesquites *Neltuma juliflora*, which have caused large damage to the ecosystem and are abundant in the southwestern area. This measure will create a biodiversity net gain and contribute to restore the natural ecosystem functioning at the PAOI.

- Sourcing of local materials, where possible.
- Materials sourced from outside the region should require a Health, Safety and Environment (HSE) certificate of inspection, issued by the EPC contractor, and undergo rigorous cleaning and inspection protocols before entering the PAOI.
- Include in the Waste Management Plan the removal of any food waste that may attract feral animals (generalist species) such as rats, cats or dogs.
- Any restoration actions should include the reintroduction of native flora and, if necessary, fauna.
- Establish a robust supervision and monitoring system for early detection and rapid response to invasive species and pathogens, ensuring that any incursions are swiftly addressed to minimize impact.
- The BAP must also contain a Construction Alien Species Management Plan and Operational Alien Species Management Plan to detect and eradicate any populations of alien species that become established.

7.3.11 Impact: Mortalities of Avifauna and Bats due to Overhead Transmission Line Collisions

7.3.11.1 Impact Discussion

The presence of overhead transmission lines (OHTL) can lead to visual disturbances and alter the natural landscape. The construction and maintenance of the OHTL can cause soil and vegetation damage and contribute to habitat fragmentation within the WPP, affecting wildlife movement and connectivity. An OHTL is a collision risk for flying birds and bats, and for birds perching on poles or contacting conductors. These can cause mortality through electrocution with the OHTL. The risk is aggravated for species migrating at OHTL height, species flying at night, species flying in flocks, and/or large and heavy species of limited manoeuvrability.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Operational	Operation of OHTL.
Phase	Activities
Operational	Operation of OHTL.

7.3.11.2 Impact Description

In the unmitigated scenario, the impact significance will be **VERY HIGH** because some of the key receptors will be vultures, which are high risk species, especially for electrocution, and are critically threatened. The mortality of birds and bats will be permanent. With the implementation of mitigation measures, the impact significance changes to **LOW** (Table 7-42).

TABLE 7-42: IMPACT SUMMARY – MORTALITIES OF AVIFAUNA AND BATS DUE TO OVERHEAD TRANSMISSION LINE COLLISIONS

Mortalities of Avifauna and Bats due to Overhead Transmission Line Collisions		
Type	Direct	
Nature	Negative	
Phases	Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Regional	Regional
Consequence	High	Medium
Probability	Possible / frequent (Medium)	Possible / frequent (Medium)
Significance	Very High-	Low -

7.3.11.3 Mitigation Measures

The following measures can be implemented to significantly reduce impacts on biodiversity, specifically birds and bats:

- Use insulated lines.
- Reduce lighting near lines.
- Use line-markings and flight diverters (e.g. spiral flappers) on OHTL sections identified as high-risk segments. Diverter type and installation spacing will be finalised during detailed design in line with international good practice and supplier specifications, with a typical installation density in the range of 5–10 m spacing in high-risk segments. Effectiveness will be verified through post-construction fatality monitoring, and the mitigation design will be adjusted adaptively if collision incidents are recorded.
- Use spacing adjustments (to avoid simultaneous collision with two lines).
- Perch deterrents or providing perches well above the conductors.
- Carcass removal upon detection.

7.3.12 Impact: Mortalities of Avifauna and Bats due to Turbine Collisions

Wind power plants present a distinct risk to flying species due to the potential for collisions with rotating turbine blades. This risk has been documented across various projects, where turbine collisions have resulted in bird and bat fatalities. The severity of this risk and its potential impact vary significantly based on factors such as the WPP's location, landscape context, turbine size, and the diversity and abundance of flying species in the area. Generally, larger soaring birds and those with high wing-loading, such as vultures, are considered more vulnerable. Raptors, for instance, have a limited forward field of view, which

may hinder their ability to detect and avoid turbines. Conversely, some migratory birds, particularly waterfowl, exhibit macro-scale avoidance behaviors around WPPs.

Likewise, bat fatalities due to collisions with wind turbines are a documented global phenomenon, though the underlying reasons remain a subject of ongoing research. Several patterns have emerged, e.g., migratory bats undertaking long-distance movements are at higher risk compared to resident, sedentary species. Most fatalities occur during late summer and autumn, coinciding with breeding, increased foraging, and migration periods. Species adapted to foraging in open spaces are particularly vulnerable. Interestingly, wind turbines may act as attractants to certain bat species, possibly due to the presence of aerial insects drawn to the lights and heat associated with turbines. Fatalities tend to increase at low wind speeds and around the passage of storm fronts. Mortality rates also rise with taller turbine towers and larger rotor diameters. Barotrauma does not appear to be a significant factor in these fatalities. The risk of collision is strongly influenced by the bats' preferred flight altitudes, with higher-flying species facing greater risks than those that fly lower. A collision risk model has been undertaken by BioInsights & ECOA to estimate birds' collision risk with the turbines currently laid out for the Project. Collision risk models estimate negligible rates of collision with wind turbines even in the most cautious scenario. The methodology used, including the model parameters, for the collision risk model has been included in Section 7.3.1 and Section 7.3.2 of the Biodiversity Survey Report.

Mitigation measures include designing a project layout that minimizes collision risk, implementing a Shut-Down On Demand protocol (SDOD), implementing a Cut-In Speed Curtailment program for bats, and post-construction fatality monitoring.

7.3.12.1 Collision Risk Model for Birds

The estimation of the number of collisions for each bird species in a scenario that expresses a dropout rate (avoidance) with associated uncertainty and variability (e.g. rate of 0.98 ± 0.1) is described in Table 7-43 to

Table 7-45.

TABLE 7-43: ESTIMATE OF NUMBER OF COLLISIONS FOR EACH TARGET SPECIES

Bird Species	Number of Collisions / Year (mean $\pm$ SD; IC95%)	Number of Collisions during Lifetime of the Project (20 years) (Mean)	Time until first collision (mean; in years)
Short-toed Snake-eagle	$1,23\text{E-}06 \pm 7,15\text{E-}07$	0	0
Scissor-tailed Kite	$6,59\text{E-}06 \pm 2,97\text{E-}06$	0,0002	100000 years
Eurasian Hobby	$1,70\text{E-}07 \pm 1,21\text{E-}07$	0	0
Common Kestrel	$2,49\text{E-}06 \pm 7,30\text{E-}07$	0	0
White-backed Vulture	$5,46\text{E-}08 \pm 1,30\text{E-}08$	0	0
Egyptian Vulture	$1,59\text{E-}06 \pm 3,92\text{E-}07$	0	0
Chestnut-bellied Sandgrouse	$0,003 \pm 0,001$	0,06	333.3 years
Spotted Sandgrouse	$3,43\text{E-}05 \pm 1,73\text{E-}05$	0,0006	33333.3 years

TABLE 7-44: EXTRAPOLATION OF THE ESTIMATION OF THE NUMBER OF COLLISIONS FOR EACH TARGET SPECIES, CONSIDERING NEAREST VP COLLISION ESTIMATES FOR ADJACENT TURBINES

Bird Species	Number of collisions / year (mean $\pm$ SD; IC95%)	Number of collisions during lifetime of the project (20 years) (mean)	Time until first collision (mean; in years)
Short-toed Snake-eagle	$1,51\text{E-}06$	0,00	664413

Bird Species	Number of collisions / year (mean $\pm$ SD; IC95%)	Number of collisions during lifetime of the project (20 years) (mean)	Time until first collision (mean; in years)
Scissor-tailed Kite	8,66E-06	0,00	115511
Eurasian Hobby	3,65E-07	0,00	2738759
Common Kestrel	3,66E-06	0,00	273118
White-backed Vulture	7,45E-08	0,00	13428212
Egyptian Vulture	2,22E-06	0,00	449727
Chestnut-bellied Sandgrouse	0,004	0,08	245
Spotted Sandgrouse	3,51E-05	0,00	28497

TABLE 7-45: EXTRAPOLATION OF THE ESTIMATED NUMBER OF COLLISIONS FOR EACH TARGET SPECIES, CONSIDERING ESTIMATES OF VP COLLISION WITH HIGHER RISK FOR ADJACENT TURBINES (MORE CAUTIOUS SCENARIO)

Bird Species	Number of collisions / year (mean $\pm$ SD; IC95%)	Number of collisions during lifetime of the project (20 years) (mean)	Time until first collision (mean; in years)
Short-toed Snake-eagle	2,54E-06	5,08E-05	393357
Scissor-tailed Kite	1,73E-05	3,46E-04	57722
Eurasian Hobby	5,57E-07	1,11E-05	1794996
Common Kestrel	4,14E-06	8,29E-05	241379
White-backed Vulture	7,81E-08	1,56E-06	12808372
Egyptian Vulture	2,96E-06	5,93E-05	337429
Chestnut-bellied Sandgrouse	0,006	0,13	153
Spotted Sandgrouse	8,01E-05	1,60E-03	12491

The chestnut-bellied sandgrouse is the species with the highest collision risk, which matches its abundance in the PAOI. However, even sandgrouses have a collision rate well below one individual per year, in addition to not being a conservation priority (classified as Least Concern by the IUCN).

7.3.12.2 Impact Discussion

Wind power plants present a distinct risk to birds and bats due to the potential for collisions with rotating turbine blades.

The severity of this risk and its potential impact vary significantly based on factors such as the wind farm location, landscape context, turbine size, and the diversity and abundance of flying species in the area. Generally, larger soaring birds and those with high wing-loading, such as vultures, are considered more vulnerable. Raptors, for instance, have a limited forward field of view, which may hinder their ability to detect and avoid turbines. Conversely, some migratory birds, particularly waterfowl, exhibit macro-scale avoidance behaviours around wind farms.

Likewise bat fatalities due to collisions with wind turbines are a documented global phenomenon, though the underlying reasons remain a subject of ongoing research. Several patterns have emerged, indicating that migratory bats undertaking long-distance movements are at higher risk compared to resident, sedentary species. Most fatalities occur during late summer and autumn, coinciding with breeding, increased foraging, and migration periods. Species adapted to foraging in open spaces are particularly

vulnerable. Interestingly, wind turbines may act as attractants to certain bat species, possibly due to the presence of aerial insects drawn to the lights and heat associated with turbines. Fatalities tend to increase at low wind speeds and around the passage of storm fronts. Mortality rates also rise with taller turbine towers and larger rotor diameters. Barotrauma does not appear to be a significant factor in these fatalities. The risk of collision is strongly influenced by the bats' preferred flight altitudes, with higher-flying species facing greater risks than those that fly lower.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Operational	Operation of Wind turbine areas.

7.3.12.3 Impact Description

In terms of birds, collisions with turbines will result in mortality which is permanent and this could involve endangered bird species. This results in a **VERY HIGH** impact significance. With the implementation of mitigation measures the intensity becomes low with a medium probability. With results of the collision risk model for birds, the impact was found to be **LOW**. Refer to Table 7-46.

TABLE 7-46: IMPACT SUMMARY – MORTALITIES OF AVIFAUNA DUE TO TURBINE COLLISIONS

Mortalities of Avifauna due to Turbine Collisions		
Type	Direct	
Nature	Negative	
Phases	Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Severe change (Very high)	Minor change (Low)
Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Inter-regional	Inter-regional
Consequence	Very High	High
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Very High -	Low -

In terms of bats, collisions with turbines will result in mortality which is permanent and this could involve migratory species. This results in a **VERY HIGH** impact significance. With the implementation of mitigation measures the intensity becomes medium with a medium probability. The impact is predicted to be reduced to **MEDIUM**. To compensate for the residual impacts on bat populations from collision risk, a BAP will be prepared with a Restoration Action Plan with actions to restore native vegetation outside the turbine boundaries. Refer to Table 7-47.

TABLE 7-47: IMPACT SUMMARY – MORTALITIES OF BATS DUE TO TURBINE COLLISIONS

Mortalities of Bats due to Turbine Collisions	
Type	Direct
Nature	Negative
Phases	Operation

Intensity	Severe change (Very high)	Moderate change (Medium)
Duration	Permanent (> 20 years)	Long-term (10 to 20 years)
Extent	Inter-regional	Inter-regional
Consequence	Very High	High
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Very High -	Medium -

7.3.12.4 Mitigation Measures

The following mitigation measures can be implemented to reduce or offset impacts caused by direct collision with birds and bats:

- Changes in turbine siting and/or layout to reduce collision risk.
- Painting turbines to reduce motion smear and increase visibility to birds.
- Develop a livestock carcass management plan to reduce the presence of carcasses on the PAOI that might attract vultures to wind turbines.
- To compensate for the residual impacts on bat populations from collision risk, a BAP will be prepared with a Restoration Action Plan with actions to restore native vegetation outside the turbine boundaries. Such plan should increase prey availability for bats, thereby bringing a net gain in biodiversity, while reducing attractiveness to foraging around turbines, thus reducing collision risk.
- A Bat Management Plan to be developed that includes a Fatality Monitoring protocol during the construction period, first year of operation and post-construction. This should entail detailed and intensive carcass searches throughout the Project. Best international practice should be followed in determining the appropriate level of search efforts as well as formulas for searcher-bias adjustments. The protocol should last up to five years or until the risk to birds is considered 'negligible' in consultation with the lenders.
- The Project may need to implement targeted shut-down-on-demand seasonally, where monitoring identifies an unacceptable collision risk and other avoidance/ minimisation measures are insufficient to reduce impacts to an acceptable level under PS6. However, shutdown is a risk-based / last-resort mitigation.
- Design turbines to make them less attractive to bats, such as isolating gaps to prevent nesting, using appropriate lighting to reduce attraction of insects, etc.
- A Collision Risk Reduction Plan for bats with an adaptive Cut-In Speed Curtailment program where turbines are shutdown during seasonal periods of higher bat activity (minimal cut-in speed of 5 m/s).
- Include timer systems or motion sensors to control lighting time and intensity, where applicable.

7.3.13 Disturbance to Fauna during Decommissioning Activities

7.3.13.1 Impact Description

While decommissioning restores some ecological function through infrastructure removal, it can also introduce short-term but intense fauna disturbance during dismantling. Decommissioning activities involve the dismantling and removal of the turbine infrastructure. The removal of infrastructure can result in habitat stripping that displaces small mammals, reptiles, and amphibians that may rely on burrows, undergrowth, and debris for cover. In addition, the dismantling of turbines pose a risk to bird and bat

species that have adapted to nesting on this infrastructure. Raptor species may use these structures for perching or nesting.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Re-vegetation of disturbed areas and where infrastructure is removed. Site management (monitoring, inspections, maintenance of facilities, security, access control).

7.3.13.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** because the mortality of fauna would be permanent and has a very high probability. In addition, disturbance to nesting sites is high. In the mitigated scenario, identification of breeding / nesting sites and seasons as well as conducting faunal rescue operations can reduce the impact significance to **LOW**. Refer to Table 7-48.

TABLE 7-48: IMPACT SUMMARY – DISTURBANCE TO FAUNA DURING DECOMMISSIONING ACTIVITIES

Disturbance to Fauna during Decommissioning Activities		
Type	Direct	
Nature	Negative	
Phases	Decommissioning	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Permanent (> 20 years)	Permanent (> 20 years)
Extent	Local	Within/ near site
Consequence	High	Medium
Probability	Definite / Continuous (Very High)	Conceivable (Low)
Significance	High -	Low -

7.3.13.3 Mitigation Measures

The following mitigation measure should be implemented during construction:

- Implement staggered infrastructure removal to avoid simultaneous displacement across wide areas.
- Preserve or create faunal refuge zones uncleared habitat patches or brush piles to absorb displaced animals.
- Conduct pre-clearing walkovers to identify active burrows, nests, or herpetofauna aggregation sites.
- Use manual clearing methods (rather than machinery) in sensitive areas.
- Monitor displaced species using camera traps, pitfall arrays, or visual encounter surveys to assess recovery and recolonisation.

- Integrate decommissioning works with ecological restoration sequencing, so that restored areas are in place when displacement occurs.
- Conduct faunal rescue operations and implement habitat restoration in decommissioned areas.
- Manage removal in a phased manner to avoid fauna entrapment.
- Conduct pre-decommissioning surveys to identify active nests, roosts, and breeding territories.
- Time infrastructure removal outside of breeding season.

7.3.14 Poaching

The illegal harvest of specimens (e.g., poaching) by on-site visitors can be a significant problem in areas where rare or threatened species are present. The opening of new access roads brings easier access to navigate the project site and capture wildlife. Nomadic herders in particular have been known to target livestock predators (e.g., jackals, hyenas), while poachers have captured raptors and cheetah cubs to deliver Middle East markets. Without supervision, such activities can lead to localized extinction of threatened species and the loss of apex predators, compromising the ecosystem function.

Mitigation measures include community education programs, restricting use of access roads to residents only, anti-poaching patrols with local or regional cooperation, and livestock guard programs.

7.3.15 Increased Erosion during Decommissioning Activities which may Prevent Recolonisation by Natural Vegetation

7.3.15.1 Impact Description

During decommissioning, the systematic dismantling of infrastructure involves clearing remaining vegetation, ripping or regrading of compacted ground, and excavation of embankments. These activities expose topsoil and subsoil layers to wind and water erosion, which will, in turn, prevent recolonisation by natural vegetation.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Re-vegetation of disturbed areas and where infrastructure is removed. Site management (monitoring, inspections, maintenance of facilities, security, access control).

7.3.15.2 Impact Discussion

In the unmitigated scenario, the impact significance is **HIGH** because of the long-term duration this impact can have on natural vegetation if not managed. In the mitigated scenario with erosion measures in place, the duration of the impact can be limited to the short-term decommissioning phase which can reduce the impact significance to **LOW**. Refer to Table 7-49.

TABLE 7-49: IMPACT SUMMARY – INCREASED EROSION DURING DECOMMISSIONING ACTIVITIES WHICH MAY PREVENT RECOLONISATION BY NATURAL VEGETATION

Increased Erosion during Decommissioning Activities which may Prevent Recolonisation by Natural Vegetation	
Type	Direct

Nature	Negative	
Phases	Decommissioning	
Criteria	Without Mitigation	With Mitigation
Intensity	Severe change (Very high)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	High	Medium
Probability	Probable (High)	Probable (High)
Significance	High -	Low -

7.3.15.3 Mitigation Measures

The following mitigation measure should be implemented during construction:

- Implement Restoration Action Plan
- Implement erosion control measures during and after decommissioning, within days of stripping.
- Prioritise rehabilitation using native vegetation.
- Sequence works to minimise the area of exposed soil at any one time.
- Install diversion berms and sediment traps along slopes and drainage lines.
- Monitor erosion with visual inspections, especially after heavy rainfall.

7.3.16 Biodiversity No Net Loss Commitment

The project is located in largely modified habitat – semi-arid grassland/shrubland, culturally disturbed by nomad pastoralists and local communities – with pockets of natural microhabitats that include areas of rocky outcrops and a valley and ponds where water flows seasonally. Amea Power is committed to achieving **No Net Loss (NNL) of biodiversity** for all natural habitats impacted by the project, including rocky outcrops and areas where water is seasonally available. Post-construction habitat restoration will deal with any residual impacts left after BMP measures have been applied.

Net gain in native vegetation cover through revegetation with indigenous species and invasive species control (e.g., *Neltuma juliflora*), as well as net gain in species abundance (e.g., gazelles, kites) through corridors, reduced disturbance, and adaptive monitoring, are expected with the implementation of this BMP.

NNL will be measured using a biodiversity metric framework, aligned with IFC PS6 GN20 and AfDB OS6. Key actions include:

- New habitat assessment during the pre-construction phase of the project, focused on delimiting areas of modified habitat, natural habitat, native plant cover and invasive species cover;
- Estimate loss of habitat area and vegetation cover during construction and operation of the project;
- Pre-construction ecological assessment of Priority Biodiversity Features, particularly territorial use within the project's Aol;
- Habitat loss estimates during construction and operation for these species (i.e. estimate loss of suitable territory);
- Post-Construction Fatality Monitoring to assess biodiversity loss due to turbine collisions.

NNL indicators should be shared in reporting and communication requirements to allow appropriate auditing by lenders and external experts.

7.4 Cultural Heritage Impacts

7.4.1 Impact: Loss of or Disturbance of Tangible Cultural Heritage Sites

7.4.1.1 Impact Description

Tangible heritage refers to physical cultural resources that hold historical, archaeological, architectural, or artistic significance. In the context of this Project, tangible heritage includes “movable or immovable physical objects, sites, structures, or landscapes of historical, cultural, religious, or aesthetic value.” This may include:

- Archaeological remains (e.g., ruins, artifacts, burial sites);
- Historic buildings or monuments;
- Sacred sites and religious structures; and
- Culturally important landscapes or heritage trees.

Cultural heritage surveys were undertaken as discussed in section 5.3. Ten burial sites were identified within the Project Area. Three ritual sites were identified, of which two are located in Lasarat and one is in Aysha II. These sites are used for religious festivals like Eid-al-Fitir, Eid-al-Adha and Mowlid. The site in Lasarat is utilised for gatherings by the sub-clan Sheika.

The current location of the Project components is not expected to directly impact on any of the sites identified. In fact, the tangible heritage sites identified in 2025 all fall outside of the proposed construction and operational safety areas.

However, indirect impacts related to damage during heavy equipment movement, excavation and clearing for construction may occur.

Refer to the ESMP, section 5.1.12 and section 5.2.7.

7.4.2 Impact: Loss of Intangible Cultural Heritage

7.4.2.1 Impact Description

Intangible heritage refers to non-physical cultural elements that are passed down through generations and hold social or spiritual significance for communities. In the context of this Project, intangible heritage includes “*Practices, expressions, knowledge, skills, and cultural traditions that communities recognize as part of their cultural identity.*” Examples include:

- Oral histories, languages, and storytelling;
- Rituals, ceremonies, and traditional beliefs;
- Indigenous knowledge systems; and
- Music, dance, and craftsmanship.

As discussed in section 5.3.2, several intangible cultural heritage practices are found across the Issa clan. This includes the traditional dance Harimaadee, also called Wilwile, traditional craftsmanship, games and wedding ceremonies. The Issa hold a unique oral tradition of the customary law, *Xeer Issa*, Somali people, including Issa, follow the Sunni Shafi’ite rite of Islam.

7.4.2.2 Impact Discussion

Qualitative focus groups conducted in 2025 confirmed that no particular rituals are practiced within the lease area. Consequently, the Project will **NOT IMPACT** any intangible cultural heritage.

7.5 Socio-Economic Impacts

The LRP as well as an Indigenous People Social Assessment. The below impact discussion on the socio-economic environment was taken from these assessments, as well as the updated EISA report.

7.5.1 Benefit: Increased Employment Opportunities

7.5.1.1 Impact Description

The activities associated with the Project will bring employment opportunities to the local people. It will provide direct employment opportunities which support local livelihoods. By creating employment opportunities and increasing the purchasing power of residents, which in turn stimulates demand for goods and services, particularly during the construction and operational phases of the mine.

During the construction phase, the proposed project is expected to create temporary employment opportunities at local, regional and national levels. In addition to direct employment opportunities, the project is expected to generate indirect and induced employment. Indirect employment includes jobs created by subcontractors and suppliers, while induced employment arises from increased spending by households earning an income from the project. In addition, the Project Company is also considering implementing a Social Responsibility Program for the local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standards of living, and bring social and economic prosperity to local communities.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities.
Operational	Ongoing operational and maintenance activities

7.5.1.2 Impact Discussion

Job creation will have a direct positive high intensity on a local level, the consequence will be medium with a definite probability for both the mitigated and unmitigated scenarios.

The significance of the benefit will be **MEDIUM** and **POSITIVE** in both the unmitigated and mitigated scenarios (Table 7-50).

TABLE 7-50: IMPACT SUMMARY – INCREASED EMPLOYMENT OPPORTUNITIES

Increased Employment Opportunities		
Type	Direct	
Nature	Positive	
Phases	Construction and Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite / Continuous (Very high)	Definite / Continuous (Very high)
Significance	Medium +	Medium +

7.5.1.3 Mitigation Measures

The following mitigation measures need to be implemented to ensure that the benefits of this impact are realised:

- The EPC Contractor will develop Recruitment Policy and Plans which specifically addresses labour, working conditions and recruitment principles, and which complies with Ethiopian law, PS 2: Labour and Working Conditions, E&S OS 2: Labour and Working Conditions and the ILO's conventions.
- Employment opportunities will be communicated to the local community using avenues agreed upon with the community.
- The Contractor will work with relevant Clan heads to advertise all openings in ways that are accessible to local communities and explain to both women and men on how they can benefit from the Project for them to be economically empowered.
- Implementation of the Labour Management Plan included in the ESMP (section 5.1.15).

7.5.2 Benefit: Contribution of Project to Ethiopia's Economy through Power Supply

7.5.2.1 Impact Description

Wind farms in Ethiopia offer significant positive benefits to the country's economy by enhancing energy security and diversification, creating jobs and local economic opportunities, and generating export revenue.

Ethiopia's energy mix has traditionally been heavily reliant on hydropower, which is vulnerable to droughts and seasonal water fluctuations. Wind energy provides a vital complement, as wind generation is often highest during the dry season when hydropower output is low. This synergy strengthens the national grid's stability and ensures a more consistent power supply to meet the country's growing demand.

By generating electricity from an abundant, domestic renewable source, Ethiopia lessens its dependence on imported fossil fuels, saving valuable foreign exchange and insulating its economy from global fuel price shocks.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Operational	Ongoing operational and maintenance activities.

7.5.2.2 Impact Discussion

The production of electricity from the Project on the economy of Ethiopia through the supply of power will have a direct positivity high intensity and extend on a national and international level, the consequence will be high with a definite probability for both the mitigated and unmitigated scenarios.

The significance of the benefit will be **HIGH** and **POSITIVE** in both the unmitigated and mitigated scenarios (Table 7-51).

TABLE 7-51: IMPACT SUMMARY - CONTRIBUTION OF PROJECT TO ETHIOPIA'S ECONOMY THROUGH POWER SUPPLY

Contribution of Project to Ethiopia's Economy through Power Supply		
Type	Direct	
Nature	Positive	
Phases	Operation	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	National/International	Inter-regional
Consequence	High	High
Probability	Definite / Continuous (Very high)	Definite / Continuous (Very high)
Significance	High +	High +

7.5.2.3 Mitigation Measures

To ensure continued benefits of the operation of the wind turbines, the mitigation measures as included in Section 5.2 of the ESMP, must be implemented on site.

7.5.3 Impact: Economic Displacement / Land Use Restriction

7.5.3.1 Impact Description

Some land use restrictions will be imposed within the Project's lease area during both construction and operation. During construction communities will not be able to access the designated safety zones around infrastructure roads and machinery. During operation restrictions will remain within the permanent turbine safety buffers where settlement is not permitted but walking pastoral movement and grazing can continue.

To reduce impacts on local communities, the Project will keep most of the lease area open for grazing and temporary settlement while enforcing specific safety related restrictions during construction and operation:

- During construction this includes exclusion zones around key infrastructure, machinery and roads covering roughly 6.49 square kilometres or about eight percent of the lease area.

- During operation permanent safety buffers around turbines will prohibit settlement but still allow walking and grazing, affecting about 15.21 square kilometres or eighteen percent of the lease area.

An overview of land use restrictions is provided in Table 7-52 and Figure 7-5 below.

TABLE 7-52: OVERVIEW OF LAND USE RESTRICTIONS

Phase	Land Use Restriction	Land Surface Affected (km ²)	% of Land Lease Affected
Construction	No access allowed within 200 m radius around key infrastructure, 5 m buffer along roads, and 15 m radius around small-scale machinery.	6.49 km ²	8%
Operation	No settlement allowed within permanent safety buffers around turbines (radius of 352.5 m, equivalent to 0.39 km ² / 39 ha per turbine). Walking and grazing will still be permitted	15.21 km ²	18%

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Construction safety areas around all construction activities.
Operational	Operational safety areas around wind turbines.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

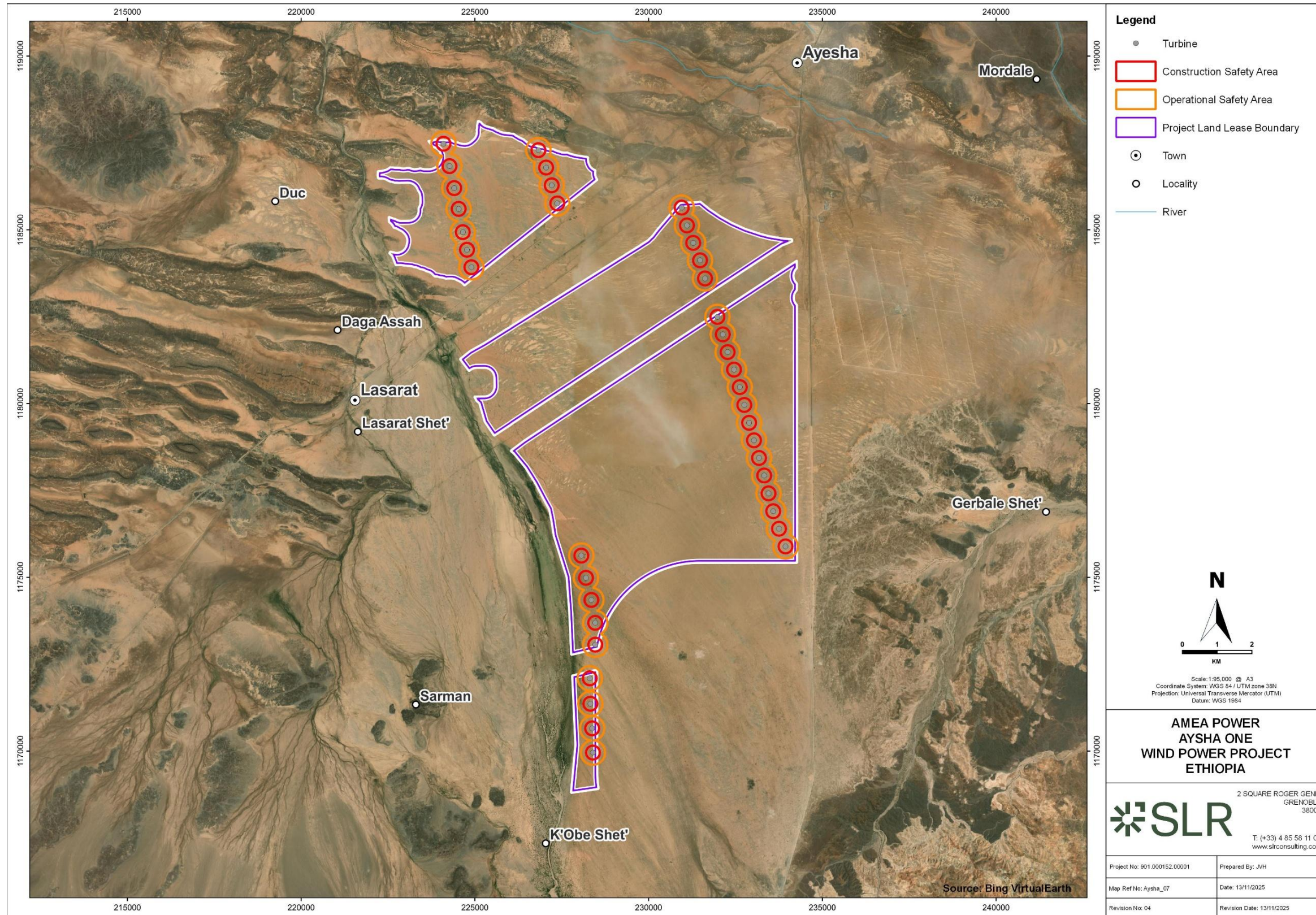


FIGURE 7-5: CONSTRUCTION AND OPERATION SAFETY AREAS AROUND THE WIND TURBINES

7.5.3.2 Impact Discussion

The Project's impact on land use during construction and de-commissioning will be short-term and localised. The probability of the impacts happening is definite. The significance is therefore, **MEDIUM**. With the implementation of mitigation measure the significance changes to **LOW** as the change will be moderate and the probability becomes medium (Table 7-53).

TABLE 7-53: IMPACT SUMMARY - ECONOMIC DISPLACEMENT / LAND USE RESTRICTIONS (CONSTRUCTION / DECOMMISSIONING)

Economic Displacement / Land Use Restrictions (Construction / Decommissioning)		
Type	Direct	
Nature	Negative	
Phases	Construction and Decommissioning	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	Low	Low
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Low -

During the operational phase, the intensity of the impact will be moderate before mitigation measures and limited to within the site. The consequence will be medium and the overall significance of the impact will be **LOW**. With the implementation of mitigation measures the intensity and probability of the impact changes to low. The overall impact significance becomes **VERY LOW** (Table 7-54).

TABLE 7-54: IMPACT SUMMARY - ECONOMIC DISPLACEMENT / LAND USE RESTRICTIONS (OPERATIONAL)

Economic Displacement / Land Use Restrictions (Operational)		
Type	Direct	
Nature	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Low
Probability	Possible / frequent (Medium)	Conceivable (Low)
Significance	Low -	Very Low -

7.5.3.3 Mitigation Measures

The following mitigation measures will be implemented for the Project:

- Implementation of the Livelihood Restoration Plan, refer to section 5.1.14 of the ESMP.

7.5.4 Impact: Project's Impact on Vulnerable Groups

7.5.4.1 Impact Description

While vulnerable households are not expected to be disproportionately affected by Project impacts, given that land use restrictions will be minimal and are not anticipated to negatively affect livelihoods, special assistance measures will be implemented to ensure they have equal access to livelihood restoration opportunities and can fully benefit from them

Certain households within and around the PAOI are considered to be subject to higher levels of vulnerability. These include:

- Women-headed households, which tend to own less animals and therefore have less assets.
- Households headed by anyone who's physically impaired due to old age, sickness or disability, due to their lower mobility and ability to earn sustainable livelihoods.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Construction of laydown areas. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Mixing of concrete and concrete work. Steelwork (including installing re-enforcement steel, grinding and welding). Transporting of wind turbines and components.
Operational	Wind turbines.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

7.5.4.2 Impact Discussion

In the unmitigated scenario, the impact of the Project on vulnerable groups will be high with medium consequence. The probability of impact occurring is high. The impact significance is, therefore, **MEDIUM**. With the implementation of the mitigation measures, the intensity of the impact becomes moderate with a medium possibility. The significance of the impact changes to **LOW** (Table 7-55).

TABLE 7-55: IMPACT SUMMARY – PROJECT’S IMPACT ON VULNERABLE GROUPS

Project’s Impact on Vulnerable Groups		
Type	Direct	
Nature	Negative	
Phases	All	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Probable (High)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.5.4.3 Mitigation Measures

The following support measures and mitigation measures will be implemented:

- Engagement with vulnerable households within the four Kebeles to include them in the selection of livelihood restoration and community development projects, ensuring that their views and preferences are taken into account.
- Facilitation of access to microcredit finance for women.

7.5.5 Impact: Spread of Culturally Unacceptable Behaviour

7.5.5.1 Impact Description

The establishment of a project requires workers, which may result in an influx of people to the PAOI, which is associated with increased anti-social behaviour. This includes a rise in demand for prostitution, gender-based violence and harassment (GBVH), public disorderly conduct, and other disruptive activities. Much of this behaviour is linked to alcohol and drug abuse, which tends to become more evident following the payment of salaries. Addressing these challenges requires community engagement, strict enforcement of laws, and programs aimed at reducing substance abuse and promoting social cohesion.

With an influx of workers arriving in the community throughout the construction phase, it is possible that these workers may spread certain unacceptable behaviour, including drinking alcohol, substance abuse and criminal activities, within the local communities. These activities are seen as culturally unacceptable. Misunderstanding could arise and things could easily go wrong if and when outsiders, knowingly or otherwise, break traditional norms, values and customs.

The impact sources linked to the Project’s activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor’s camp.

Phase	Activities
	Earthworks. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities.
Operational	Maintenance of roads and operation of Project and Substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Revegetation of final landforms remaining in perpetuity

7.5.5.2 Impact Discussion

The impact will be prominent and long term in nature with a medium probability of occurring without mitigation measure. This will result in a **LOW** impact pre-mitigation, With the implementation of the mitigation measures, the intensity of the impact changes to low and the consequence will also become low. The final significance in the mitigated scenario, changes to **VERY LOW** (Table 7-56).

TABLE 7-56: IMPACT SUMMARY – SPREAD OF CULTURALLY UNACCEPTABLE BEHAVIOUR

Spread of Culturally Unacceptable Behaviour		
Type	Direct	
Nature	Negative	
Phases	All	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Within/ near site
Consequence	Medium	Low
Probability	Possible / frequent (Medium)	Conceivable (Low)
Significance	Low -	Very Low -

7.5.5.3 Mitigation Measures

The following mitigation measures need to be implemented for the Project:

- The Stakeholder Engagement Plan (included as section 5.1.13 and 5.2.5 in the ESMP).
- The EPC Contractor will develop **Recruitment Policy and Plans** which specifically addresses labour, working conditions and recruitment principles, and which complies with Ethiopian law, PS 2: Labour and Working Conditions, E&S OS 2: Labour and Working Conditions and the ILO's conventions.
- The Contractor will work with relevant Clan heads to advertise all openings in ways that are accessible to local communities and explain to both women and men on how they can benefit from the Project for them to be economically empowered.
- In all cases, disturbance / annoyance potentially caused by the labour force will be controlled through a code of conduct in the integrated labour contract, and a specific focus of the community grievance system.

- Skilled labour will be housed, where possible, in the Aysha or Lasarat Towns.
- The Labour Management Plan as included in section 5.1.15 of the ESMP.
- The Inward Migration Management Plan as included in section 5.1.16 of the ESMP.

7.5.6 Impact: Project's Impact on Indigenous People

Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from dominant groups in national societies.

The IFC provides a comprehensive set of criteria to characterize and determine Indigenous People. These criteria include:

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

The Somali are a distinct socio-cultural group and are recognized as such in the Constitution of Ethiopia. The project affected community practices transhumant pastoralism. They continue to maintain a strong collective tie to the traditionally owned lands and the natural resources therein and the use of such lands and resources is regulated through a traditional land tenure system. They are governed by a traditional political institution; the heads of clan and sub-clan regulate the Somali political as well as social and economic systems. The Somali speak a distinct language.

Ethiopian Somali pastoralist and agro-pastoralist communities meet almost all four criteria used by the IFC to characterize Indigenous People. In fact, Ethiopia, like all other African governments, agrees to the definition of and conceives Indigenous Peoples as: ".....generally nomadic and semi-nomadic pastoralists and hunter/gatherers who live in situations of marginalization and discrimination".

Therefore, IFC PS7 applies to the Somali people affected by the proposed Aysha Wind Farm Project.

7.5.6.1 Impact Description

The main potential impacts on Indigenous Peoples are on land and natural resources use. This will cause access restrictions constraints to customary grazing area. Temporary access restrictions will apply around construction safety zones. The safety zone boundaries will extend over:

- A radius of 150-200 meters around key infrastructure and machinery operations.
- A buffer of 5 meters on each side of roads and traffic areas.
- A radius of approximately 15 meters around small-scale machinery and general construction activities.

During operations, the Project will apply a safety buffer of 1.5 times the top tip height of the Wind Turbine Generator. This buffer is intended to manage safety risks related to blade throw, tower collapse, and maintenance activities. However, pastoral access, walking, and grazing activities will continue to be allowed. The safety zone will be monitored regularly throughout operation to ensure that temporary structures are not placed within it.

Several positive impacts may also arise including employment opportunities and implementation of community development programs.

Phase	Activities
Construction	Land acquisition and leasing. Construction of wind turbines and associated infrastructure. Access road construction. Influx of workers. Livelihood restoration and benefit sharing programs.
Operational	Operation of the wind turbines in the customary land.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment. Revegetation of final landforms remaining in perpetuity

7.5.6.2 Impact Discussion

In the unmitigated scenario, the impact of the Project on Indigenous Peoples will be high with medium consequence. The probability of impact occurring is high. The impact significance is, therefore, **MEDIUM**. With the implementation of the mitigation measures, the intensity of the impact becomes moderate with a medium possibility. The significance of the impact changes to **LOW** (Table 7-55).

Spread of Culturally Unacceptable Behaviour		
Type	Direct	
Nature	Negative	
Phases	All	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Within/ near site
Consequence	Medium	Low
Probability	Possible / frequent (Medium)	Conceivable (Low)
Significance	Medium	Low

7.5.6.3 Mitigation Measures

In order to minimise any disruptions caused by the Project, the following measures will be ensured during construction:

- The construction site will remain unfenced to avoid unnecessary restriction of movement or access. Grazing and seasonal settlement activities will continue to be permitted within most of the lease area.
- Construction activities will be adjusted where possible to avoid any temporary shelters and temporary housing units.
- Existing access routes will be prioritised where possible to reduce the destruction of grass in the Project area. If this is not possible, the Project will rehabilitate the land by revegetating the areas where grass quantity or quality has been affected by construction activities.
- Where temporary or mobile huts are identified within the planned construction safety zones, the Project will make an effort to modify the route of machinery or placement of activities where possible to reduce disruption. If this is not possible, residents may be requested to relocate their structures a short distance away to ensure their safety. The households required to move their belongings will be eligible for Project assistance in doing so through the Livelihood Restoration Plan.
- Additionally, the site's layout will be modified to ensure that the cultural heritage sites identified within the lease area fall at least 50 m outside of all construction safety zones.
- During Operations, the site will be unfenced, allowing free grazing in the lease area, apart from physical structures (e.g. the wind turbines). Permanent Project components will only take 0.751 km² of the lease area (around 1%).
- The Project has developed a Livelihood Restoration Plan (LRP). The LRP considers the local communities of the Issa Clan as a group eligible for livelihood restoration measures. In consultation with local authorities at Kebele and Woreda levels, the Project will select the two most relevant options out of the proposed three schemes for each of the kebeles where the Project is located.
- To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP), the Project has been engaging local stakeholders since 2019, and future informed consultation and participation is planned for Project disclosure and throughout the lifetime of the Project as described in the Project SEP.

7.5.7 Impact: Working Conditions

7.5.7.1 Impact Description

As with many large-scale infrastructure projects, the construction phase will be labour-intensive, requiring a temporary workforce with a diverse set of skills, including civil works, electrical installations, logistics and site management. Fewer workers are required during the operational phase of the Project. However, the workers may be impacted on due the possibility of work resulting in physical injury, chronic illness and mental stress. These conditions can lower worker morale, productivity, and loyalty, while leading to issues like non-compliance with labour laws and a higher risk of fatalities and injuries.

Throughout the construction and operation phase there will be generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents.

The following risks are generally associated with wind farm projects:

- Slips and falls;

- Working at heights;
- Working with powered and hand-held tools;
- Struck-by objects;
- Moving machineries;
- Working in confined spaces and excavations;
- Risk of excavations for excavations;
- Exposure to chemicals, hazardous or flammable materials;
- Working in sunny conditions and high temperatures; and
- Exposure to electric shocks and burns when touching live components.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes. Steelwork (including installing re-enforcement steel, grinding and welding)
Operational	Maintenance of roads and turbines and operation of substation areas.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

7.5.7.2 Impact Discussion

The impacts are of long-term duration throughout the Project phases and of negative nature and are expected to be of medium consequence with a high intensity and probability of occurring. This results in a **MEDIUM** significance without mitigation. With mitigation measures the intensity changes to medium and the probability becomes low, which results in a **LOW** significance (Table 7-57).

TABLE 7-57: IMPACT SUMMARY – IMPACT OF WORKING CONDITIONS ON LABOUR

Impact of Working Conditions on Labour		
Type	Direct	
Nature	Negative	
Phases	All	
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Within/ near site
Consequence	Medium	Medium

Probability	Probable (High)	Conceivable (Low)
Significance	Medium -	Low -

7.5.7.3 Mitigation Measures

The following mitigation measures can be implemented:

- The appointed EPC Contractor(s) will prepare and implement an OHS Management Plan, which ensures the health and safety of all personnel. The Plan will be in line with existing systems put in place by the Project Company, as well as the requirements of national labour laws. The Health and Safety aspects will focus particularly on Construction risk, working at height risks and electrocutions and other such exposures. It will include the following:
 - Eliminate or reduce the requirement to work at height by assembling the structure and carrying out ancillary work at ground level before lifting the complete structure into position if feasible and cost effective;
 - Use work equipment or other methods to prevent a fall if working at height cannot be eliminated.
 - Make use of collective protection systems such as edge protection or guardrails before resorting to individual fall arrest equipment. Safety nets or airbags can also be used to minimise consequences of a fall should it occur.
 - The working-at-height systems fitted need to be appropriate to the structures and built to the appropriate standards.
 - Exclusion zones will be established and maintained underneath the working at height activities to protect workers from falling objects.
 - Ensure that workers are trained and competent in the use of all working at height and rescue systems in place.
 - Workers must be provided with a suitable work-positioning device and the connectors on the positioning systems must be compatible with the tower components to which they are attached.
 - Hoisting equipment must be properly rated and maintained and hoist operators must be properly trained.
 - Make use of an approved toolbag for raising and lowering tools or materials to workers on the elevated structures.
 - Avoid conducting tower installation or maintenance work during poor weather conditions and especially where there is a risk of lightning strikes.
 - Put an emergency rescue plan in place detailing methods to use rescue operatives should they become stranded or incapacitated while at height.
 - Suitable communication equipment must be made available to workers.
 - Ensure that all necessary safety equipment is available in the location.
 - Ensure a local emergency plan is in place.
 - All lifting equipment must be suitable, capable of supporting the load, in good condition and in receipt of any statutory inspections required.
 - Ensure all supervisors, equipment operators and slingers are trained and competent in the lifting equipment and intended lifting techniques.
 - Weather conditions must be favourable when lifting large loads.
 - All lifting equipment must be operated within safe operating parameters.
- Health and safety materials (appropriate posters) used at the PAOI will be displayed in public places.
- Develop a Traffic Management Plan.
- Implement the Health and Safety Management Plan as included in section 5.1.17 and section 5.2.8 of the ESMP.

7.6 Community Health, Safety and Security

The development and operation of the Project will have the potential to impact community health and safety, both positively and negatively. These impacts may arise from increased traffic and construction

activity, changes in land use, and the introduction of large-scale infrastructure into predominantly rural or low-density settings.

The information in the below sections was sourced from the ESIA (MDI, 2025)), the Noise Impact Assessment undertaken by SLR and the Shadow Flicker Assessment undertaken by SLR.

7.6.1 Impact: Increase in Ambient Noise Levels for Proximate Sensitive Receptors

A noise emissions inventory was developed. This was based on the technical design information provided for the Project. SoundPlan was used to model the noise propagation for the operational phase of the Project.

7.6.1.1 Impact Description

The noise source inventory was developed for the Project, the existing wind farm and the Dire Dawa-Ayesha-Dewele-Djibouti express highway road. Noise emissions from the wind turbines are expressed as A-weighted sound power levels (L_{WA}, dB) and vary with wind speed. Turbine noise is assumed to be continuous and constant during both day and night, as operation is primarily governed by wind speed. Variations in atmospheric conditions, such as nighttime temperature inversions, may affect how noise propagates, but the source levels remain unchanged. This approach provides a conservative basis for assessing long-term noise impacts at sensitive receptors.

Details of the wind turbine activity for the proposed operations are presented in Table 7-58.

TABLE 7-58: WIND TURBINE SPECIFICATIONS

Source	Quantity	Rated Capacity (MW)	Hub Height (m)	Rotor Diameter (m)	Sound Power Level, L _{WA} (dB)
Aysha I	39	7.7 – 9.9	120 – 230	89.73 – 103.1	109.3

The environmental noise propagation from the site activities was modelled in NoiseMap (v.5.2.10), which allows for accurate prediction of environmental noise levels from multiple sources, taking into account topography, meteorological conditions, and receptor locations. It supports the generation of detailed noise maps and estimation of potential impacts at sensitive receptors.

The model predicted LA_{eq}, representing the energy-equivalent one-hour average noise levels, which were then assessed against the relevant standard / guideline limits. To enable comparison with the IFC WEF thresholds, the predicted LA_{eq} levels were converted to approximate LA₉₀ values using an empirically derived offset. In accordance with ETSU-R-97 (1996)¹⁷ and the Institute of Acoustics (IOA, 2013)¹⁸ guidance, noise levels from wind turbines are typically 1.5–2.5 dB(A) lower in LA₉₀ than LA_{eq}. This approach provides a consistent and conservative basis for comparison with the IFC WEF noise limits. The noise model incorporated key meteorological parameters such as wind speed, wind direction, temperature, and atmospheric stability, as well as a Digital Ground Model (DGM) to represent the local terrain. This combination of environmental inputs and terrain data allows for a realistic prediction of noise propagation across the study area, accounting for topographical effects, atmospheric conditions, and source characteristics. The Model settings are presented in Table 7-60.

TABLE 7-59: NOISE MODEL SPECIFICATIONS

¹⁷ The Working Group on Noise from Wind Turbines. (1996). The Assessment and Rating of Noise from Wind Farms (ETSU-R-97). Energy Technology Support Unit (ETSU) on behalf of the Department of Trade & Industry (DTI), UK.

¹⁸ Institute of Acoustics. A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. Issue 1, May 2013, Institute of Acoustics, St Albans, UK

Table 7-60: Noise Model Specifications

Model Parameter	Parameter setting / standard																										
Calculation Standard	ISO 9613-2 “Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Calculation Method” (ISO, 1996)19 IOA Good Practice Guide (CPG 272)20																										
Wind Speed	10 m/s at a 10 m height																										
Ground Absorption Coefficient	0.5 m																										
Receiver Height	2 m																										
Meteorological Data	Humidity 70% Air Pressure 1013.3 mbar T = 10°C																										
Atmospheric Attenuation Coefficients (dB / km)	<table><tr><th>Frequency (Hz)</th><th>63</th><th>125</th><th>250</th><th>500</th><th>1k</th><th>2k</th><th>4k</th><th>8k</th></tr><tr><td>Coefficient</td><td>0.1</td><td>0.4</td><td>1.0</td><td>1.9</td><td>3.7</td><td>9.7</td><td>32.8</td><td>117.0</td></tr></table>									Frequency (Hz)	63	125	250	500	1k	2k	4k	8k	Coefficient	0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0
Frequency (Hz)	63	125	250	500	1k	2k	4k	8k																			
Coefficient	0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0																			

Predicted noise levels (operational phase) for sensitive receptors are presented in Table 7-61. A comparison of predicted noise levels with IFC and Ethiopian Standards are shown in Table 7-62. Measured and predicted noise levels (applicable to sites where data are available), and IFC-referenced change in noise level assessment is presented in Table 7-63 and Table 7-64. Noise contour maps for the Project are shown in Figure 7-6 (proposed scenario). Key findings are summarised as follows:

- The highest predicted continuous noise level (LA_{eq}) under the proposed scenario was 48.58 dB(A), observed at the Degego Kebele site. This receptor location occurs onsite and is, therefore, considered non-residential for the purposes of the assessment.
- The highest cumulative LA_{eq} is 60.1 dB(A) and occurs around the existing wind farm (i.e. non-residential receptor), reflecting the combined presence of operational turbines.
- Predicted noise levels at residential and non-residential receptors were shown to be below their respective IFC and Ethiopian noise thresholds.
- Sites where the model simulation is zero for proposed and cumulative scenarios (e.g., Ged Goble Village, Lasarat Shet', Duc, Somadu, Saman, Mordale, Elan) indicate that no measurable contribution from the project or cumulative sources is predicted at these receptors.
- The highest predicted background noise levels (LA_{90}) under the proposed scenario are 42.38 dB(A) and 48.58 dB(A), occurring at non-residential receptors, specifically around the existing wind farm and Degego Kebele. Under the cumulative scenario, the highest predicted LA_{90} levels increase to 59.11 dB(A) at the existing wind farm and 46.58 dB(A) at Degego Kebele.
- Predicted background noise levels (LA_{90}) are generally below IFC WEF guidelines for residential receptors. The highest levels occur at non-residential sites (existing wind farm and Degego Kebele), reaching up to 59.11 dB(A) under the cumulative scenario. Residential sites Daga Assah and K'Obe Shet exceed the 35 dB(A) limit (36.84 and 37.17 dB(A) respectively), under an environmentally conservative modelling approach.
- Operational ambient noise monitoring is recommended at residential sites Daga Assah and K'Obe Shet due to predicted cumulative LA_{90} levels above 35 dB(A) to assess compliance with ETSU-R-97 limits after commissioning. Please refer to Table 7-64 for recommended monitoring locations, periods and frequencies.

¹⁹ ISO (1996). ISO 9613-2:1996, Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation

²⁰ Institute of Acoustics. A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. Issue 1, May 2013, Institute of Acoustics, St Albans, UK.

- The highest predicted increase in LA90 at residential receptors was observed at Lasarat Village (0.22 dB(A)). For all receptors, the calculated change in background noise remained below 3 dB(A) (Table 7-63), which is considered negligible according to IEMA significance criteria.
- The highest predicted continuous noise (LAeq) for residential receptors occurred at Aysha Town during the day (0.01 dB(A)) and at Lasarat Village during the night (0.02 dB(A)). For all receptors, the calculated changes in background noise remained below 3 dB(A) (Table 7-64) and are, therefore, considered negligible according to IEMA significance criteria.
- The PAOI for noise has been defined based on the predicted 35 dB(A) contour, which represents the lowest relevant IFC WEF threshold for residential receptors. This PAOI has been determined based on the cumulative (project-related and baseline noise) model, as the proposed WEF will not operate in isolation.

TABLE 7-61 : SUMMARY OF PREDICTED NOISE MODELLING RESULTS (PROPOSED AND CUMULATIVE SCENARIOS)

Location	Proposed Scenario (dB LAeq)	Cumulative Scenario (dB LAeq)	Proposed Scenario (dB LA90)(a)	Cumulative Scenario (dB LA90)(a)
Aysha Town	34.47	34.47	32.47	32.47
Lasarat Village	28.23	28.23	26.23	26.23
Around Existing Wind Farm	44.38	60.11	42.38	58.11
Degego Kebele	48.58	48.58	46.58	46.58
Ged Goble Village	0	0	0	0
Lasarat Shet'	0	0	0	0
Daga Assah	38.84	38.84	36.84	36.84
Duc	0	0	0	0
Gerbale Shet	0	33.29	0	31.29
Somadu	0	0	0	0
K'Obe Shet	39.17	39.17	37.17	37.17
Saman	0	0	0	0
Mordale	0	0	0	0
Elan	0	0	0	0
Notes:				
(a)	-	LA ₉₀ calculation based on ETSU-R-97 guidance (i.e. <2 dB(A) of LA _{eq})		
Red	-	Exceeds the IFC WEF limit of 35 dB(A) for background noise levels (LA ₉₀)		

TABLE 7-62: PREDICTED NOISE LEVELS (LA_{eq}) COMPARED TO IFC AND ETHIOPIAN NOISE THRESHOLD LIMITS

Receptor Location(a)	Predicted Noise Levels(b) (dB LAeq)		IFC EHS (dB LAeq)		Ethiopian Standard (dB LAeq)	
	Proposed Scenario	Cumulative Scenario	Day	Night	Day	Night
Aysha Town	34	34	55	45	55	45
Lasarat Village	28	28	55	45	55	45
Around Existing Wind Farm	44	60	70	70	75	70
Degego Kebele	49	49	70	70	75	70
Ged Goble Village	0	0	55	45	55	45
Lasarat Shet'	0	0	55	45	55	45
Daga Assah	39	39	55	45	55	45
Duc	0	0	55	45	55	45
Gerbale Shet	0	33	55	45	55	45
Somadu	0	0	55	45	55	45
K'Obe Shet	39	39	55	45	55	45
Saman	0	0	55	45	55	45
Mordale	0	0	55	45	55	45
Elan	0	0	55	45	55	45
Notes:						
(a)	-	Non-residential receptor locations were classified as industrial and thus compared to the corresponding standard / guideline value.				
(b)	-	Wind turbine noise emissions are assumed to remain constant between day and night periods, as turbine operation and sound power output are primarily governed by wind speed rather than time of day. However, variations in atmospheric conditions, particularly nighttime temperature inversions, can affect sound propagation and may increase the audibility of turbine noise at receptors even when the source levels remain unchanged.				

TABLE 7-63: MEASURED AND PREDICTED BACKGROUND NOISE LEVELS (LA₉₀) AND IFC CHANGE IN NOISE LEVEL ASSESSMENT

Location	Ambient Noise Levels LA90, (dBA)	Predicted Noise Levels LA90, (dBA)	Calculated New Ambient Noise Levels LA90, (dBA)	IFC WEF Noise Limit	Change in Ambient Levels	IEMA Rating(a)
				LA90, (dBA)	LA90, (dBA)	
Aysha Town	48.90	32.47	49.00	35	0.10	Negligible
Lasrat Village	39.10	26.23	39.32	35	0.22	Negligible
Existing wind farm project	61.90	42.38	61.95	35	0.05	Negligible
Degego Kebele	57.00	46.58	57.38	35	0.38	Negligible
Ged Goble Village	35.40	0.00	35.40	35	0.00	Negligible
Notes: (a) - Refer to Table 5-5 for rating classification Orange - Exceeds the IFC WEF Guideline						

TABLE 7-64: MEASURED AND PREDICTED CONTINUOUS NOISE LEVELS (LAeq) AND IFC CHANGE IN NOISE LEVEL ASSESSMENT

Location	Ambient Noise Levels LAeq, (dBA)		Predicted Noise Levels LAeq, (dBA)	Calculated New Ambient Noise Levels LAeq, (dBA)		Change in Ambient Levels		IFC EHS Noise Limit LAeq, (dBA)		IEMA Rating(a)	
	Day	Night	Day and Nighttime	Day	Night	Day	Night	Day	Night	Day	Night
Aysha Town	60.50	59.70	34.47	60.51	59.71	0.01	0.01	55	45	Negligible	Negligible
Lasrat Village	68.40	52.60	28.23	68.40	52.62	0.00	0.02	55	45	Negligible	Negligible
Existing wind farm project	60.40	63.30	44.38	60.51	63.36	0.11	0.06	70	70	Negligible	Negligible
Degego Kebele	69.00	NM	48.58	69.04	NA	0.04	NA	70	70	Negligible	NA
Ged Goble Village	64.50	NM	0	64.50	NA	0.00	NA	55	45	Negligible	NA
Notes (a) - Refer to Table 5-5 for rating classification NM - Not measured NA - Not assessed Red - Exceeds the IFC EHS Guideline											

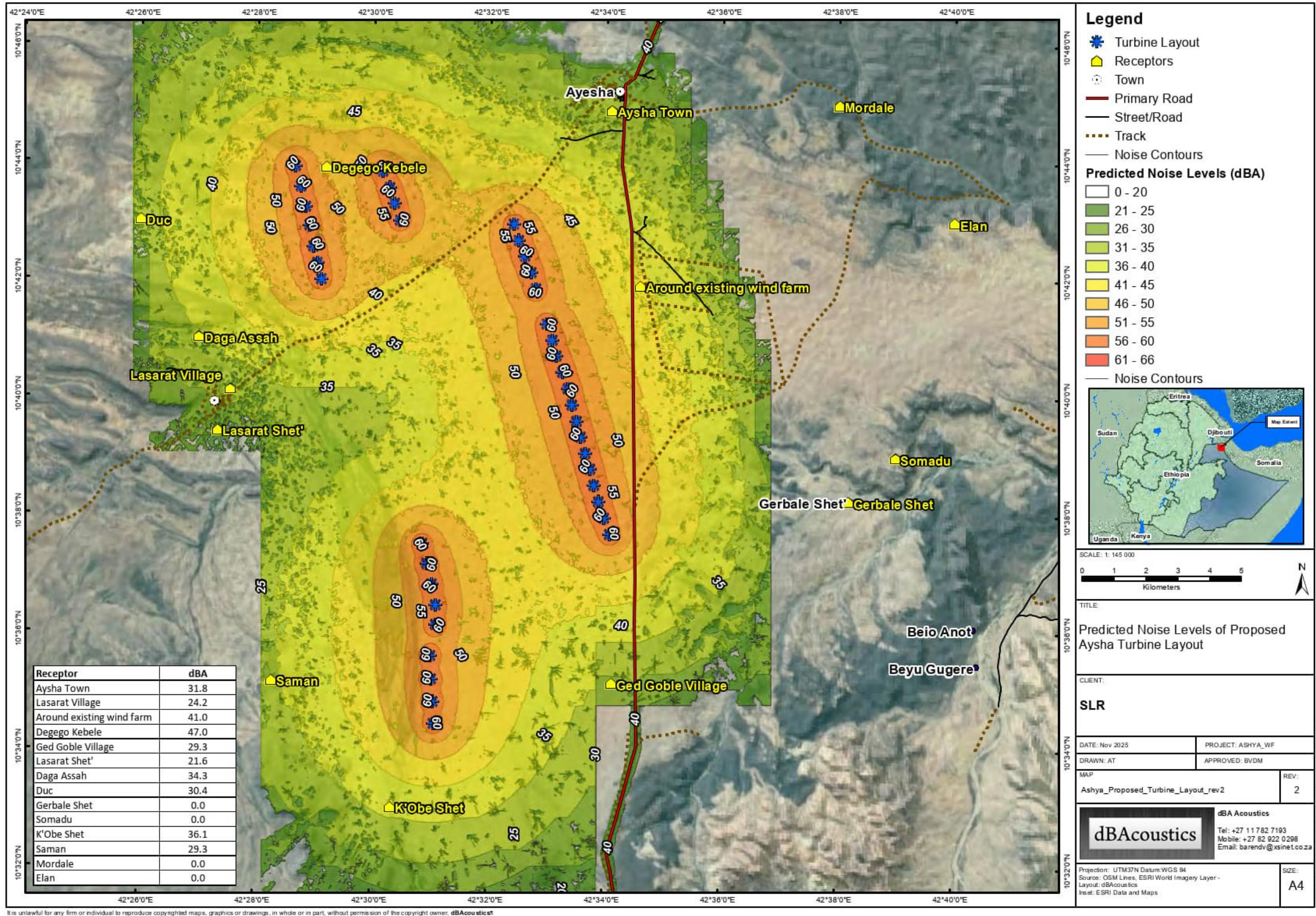


FIGURE 7-6: PREDICTED NOISE LEVELS (DBA) FOR THE PROJECT

In addition to the above receptors, the Project Area is seasonally used by nomadic herders who establish temporary and mobile shelters that do not constitute fixed residential receptors. These locations shift annually depending on rainfall, pasture availability, and traditional movement patterns. The temporary shelters are short-duration, daytime-weighted, and non-fixed. IFC's noise criteria are designed primarily for permanent residences. A conservative screening assessment to potential impacts to the seasonal herders and their livestock has been applied. Areas of potential seasonal occupation within the PAOI were screened as "intermittent sensitive receptors" and compared against applicable daytime IFC noise guideline values. Given the predicted low operational noise levels at distances beyond turbine safety buffers, no significant adverse effects on livestock behaviour or productivity are anticipated.

7.6.1.2 Impact Discussion

The impact significance ratings for the impacts of noise from the operational phase of the Project are presented in Table 7-65. Impacts are assessed as proposed and combined operations (cumulative impacts) with an impact significance rating offered for a 'mitigated' scenario.

The significance assessment for operational phase noise impacts is based on background noise levels (LA_{90}) as per the IFC WEF criteria. However, impact "intensity" is assessed according to the IEMA rating classifications, taking into account the minimum incremental change in noise recommended by the IFC between baseline and project operations. For a person with average hearing acuity an increase of less than 3 dB(A) in the general ambient environment is not detectable, thus providing a useful buffer indicator before the onset of a negative noise impact.

Wind turbine noise emissions are assumed to remain constant between day and night periods, as turbine operation and sound power output are primarily governed by wind speed rather than time of day. However, variations in atmospheric conditions, particularly nighttime temperature inversions, can affect sound propagation and may increase the audibility of turbine noise at receptors even when the source levels remain unchanged. Therefore, noise impacts are assessed as continuous, long-term levels to provide a conservative and comprehensive evaluation.

For the unmitigated operational scenario, noise levels from proposed operations are assessed as having a "negligible" intensity based on the IEMA classification of a change in noise level of <3 dB(A) compared to baseline levels. For potential noise impacts on the seasonal herders and their livestock, it is predicted from the noise modelling that there will be low operational noise levels at distances beyond turbine safety buffers therefore, no significant adverse effects on livestock behaviour or productivity are anticipated.

The duration of the noise is long-term, will be definite and have a medium probability of occurring. This results in a **MEDIUM** impact significance.

For the mitigated scenario, noise from operational activities is likely to occur at the simulated estimates as the operational activity will proceed, however, impacts at sensitive receptors is estimated as "possible," which reduced the impact significance to **LOW** (Table 7-65).

TABLE 7-65: IMPACT SUMMARY – INCREASE IN AMBIENT NOISE LEVELS FOR PROXIMATE SENSITIVE RECEPTORS

Increase in Ambient Noise Levels for Proximate Sensitive Receptors		
Type of impact	Direct	
Nature of impact	Negative	
Phases	Operational	
Criteria	Unmitigated	Mitigated
Intensity(a)	Negligible	Negligible
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Beyond site	Beyond site

Consequence	Medium	Medium
Probability	Definite	Possible
Significance	Medium-	Low-
Notes:		
(a)	-	Intensity is assessed as per the IEMA classification

7.6.1.3 Mitigation Measures

The following mitigation measures should be implemented:

- Maintain appropriate operational controls (e.g. adhere to repair and maintenance requirements for all equipment, including vehicles).
- Conduct workforce training at all levels (workers, foremen, managers, contractors) on noise awareness. This can be included in site induction courses and should focus on promoting understanding as to why operational controls are in place and should be adhered to.
- Implement a grievance procedure to record and respond to complaints.
- Monitoring and grievance mechanisms will remain in place to capture any unanticipated concerns raised by pastoral users during operation.
- Engage with community on noisy activities and provide warning when possible.
- The building of walls or noise barriers around potentially affected residences is not considered feasible in relatively flat terrain due to the height of turbines. However, maintaining or increasing buffer distances between turbines and sensitive receptors can help reduce community noise exposure, as noise levels decrease with distance, providing an effective passive mitigation measure.

An environmental noise monitoring programme must be developed. At minimum, the monitoring programme should include:

- The measurement of ambient noise levels (1 hour during the day and 1 hour during night-time) at the existing monitoring points.
- Quarterly monitoring is recommended for the first year of operation to capture seasonal variations in meteorology. If results consistently measure below applicable thresholds, monitoring frequency can be reduced to annually.
- Residential sites Daga Assah and K'Obe Shet are particularly relevant for monitoring due to predicted cumulative LA90 levels above 35 dB(A).
- If residents raise concerns, targeted monitoring should be undertaken in line with noise complaints.
- Noise monitoring must be conducted with a Class 1 Noise Level Meter.
- Calibration of the instrument to be done at an accredited laboratory on an annual basis, and additional field calibration prior to measurement.
- Noise monitoring needs to be done in terms of the requirements of the Ethiopian Standards and WBG EHS Guidelines.
- It is further recommended that noise should be measured over 10-minute LA90 intervals, consistent with ETSU-R-97 methodology.

7.6.2 Impact: Shadow Flicker affecting Sensitive Receptors

A shadow flicker assessment was undertaken by SLR to determine if the Project will affect the dwellers that move through the PAOI and on cultural heritage sites.

7.6.2.1 Impact Description

The study area for the Shadow Flicker Assessment was determined in accordance with the WBG EHS Guidelines for Wind Energy the Best Practice Guidance to Northern Ireland PPS 18. This resulted in a combined area of 2.1 km (10 x rotor diameter) from each of the 39 turbine positions.

- Computer software (ReSoft WindFarm Release 5) was used to determine theoretical times and duration of shadow flicker effects on receptors based on.
- Turbine locations as per the layout provided by the Aysha 1 project company;
- Turbine hub height and rotor diameter;
- Topography, and
- Latitude and longitude of the project (to determine the position of the sun at a given time).

This assessment was based on a worst-case scenario where the turbine hub height and rotor diameter are assumed to be 130 m 210 m respectively.

Ten potentially sensitive receptor sample locations were identified in the shadow flicker study area for input into the model. It should be noted, however, that three of these locations (R2, R3 and R4) are more than 2.1 km from the nearest turbine and are, therefore, not expected to experience any shadow flicker impact.

The theoretical extent of shadow flicker impacts resulting from the proposed layout is shown in Figure 7-7.

Further analysis was undertaken to determine the possible impact at the selected receptor locations. Further analysis was undertaken to determine the possible impact at the selected receptor locations.

The table below presents the theoretical number of hours of shadow flicker experienced at each receptor within the study area per annum. It should be noted that the guidelines recommend that shadow flicker experienced by receptors (dwellings) within 500 m of a turbine should not exceed 30 hours per year or 30 minutes per day. Although only three of the receptors are within 500 m of the nearest turbine, the threshold has been applied to all nine receptors as a worst-case scenario.

Table 7-66 presents the theoretical number of hours of shadow flicker experienced at each receptor within the study area per annum. It should be noted that the guidelines recommend that shadow flicker experienced by receptors (dwellings) within 500 m of a turbine should not exceed 30 hours per year or 30 minutes per day. Although only two of the receptors are within 500 m of the nearest turbine, the threshold has been applied to all ten receptors as a worst-case scenario. Neither of the two receptor locations within 500 m of a turbine are expected to experience any shadow flicker effects. This is largely since both locations are north of the nearest turbines.

The receptor location labelled as R7 is expected to experience 115.16 hours of shadow flicker per annum which is well above the 30-hour limit, but as this location is more than 500 m from the nearest turbine, the levels of impact are likely to be reduced. The hours of shadow flicker expected to be experienced at receptor locations R1, R8 and R9 are also likely to exceed the 30-hour threshold, although to a lesser degree than R7, but as these locations are all more than 1.5 km from the nearest turbine, the levels of impact would be insignificant.

The rocky outcrops in the north of the study are not expected to experience more than 10 hours of shadow flicker per annum (Figure 7-7) and as such the level of impact on any dwellers in these areas would be insignificant. It should be noted that the hours of shadow flicker experienced daily would fluctuate, depending on the time of day and the time of year.

Potentially sensitive receptors could include some cultural heritage features and, in this instance the SLIP has identified three ritual sites within the Project lease area that could potentially be sensitive to shadow flicker impacts. One of these sites is outside the shadow flicker study area and has been excluded from this assessment. The remaining sites are as follows:

- Ritual Site 01 - located in the village of Kelewle and it's used three times a year to hold religious festivals like Eid-al-Fitir, Eid-al-Adha and Mowlid.
- Ritual Site 03 - located in the village of Aligire and is used by the sub-clan Sheika for gatherings which take place once a year. People from different areas, including Degego, Lasarat, Aysha, Dire Dawa and Djibuti travel to the site for this occasion and spend 2-3 days on this location, where they slaughter goats and cattle to pray for peace and prosperity. This ceremony is usually initiated when demand arises due to some sort of crisis such as conflict, drought, epidemics or the death of influential personalities.

These results represent a worst-case scenario. The number of hours of shadow flicker experienced is likely to be reduced by varying weather conditions such as cloud cover and the distance of the receptor location from the nearest turbine.

Receptors in the PAOI are migrant and / or seasonal pastoral communities who set up temporary dwellings in locations that suit their needs at any given time. Hence it is not possible to determine the level of shadow flicker impacts with any level of confidence. In addition, the temporary dwellings do not appear to have windows and as such, persons inside the structure may not be affected by shadow flicker. Although outdoor activity may be affected by shadow flicker, these activities are unlikely to be confined to a fixed location and as such shadow flicker effects are unlikely to be significant.

7.6.2.2 Impact Discussion

As stated, this assessment takes a conservative approach whereby possible settlement locations and / or selected sample points representing seasonal dweller sites and the identified ritual sites have been identified as receptor locations to provide a worst-case scenario of potential shadow flicker impacts on receptors in the area.

Nine potentially sensitive receptor sample locations were identified in the shadow flicker study area for input into the model. It should be noted, however, that sample locations that are more than 2.1 km from the nearest turbine are not expected to experience any shadow flicker impact and have been excluded from further assessment.

The theoretical extent of shadow flicker impacts resulting from the proposed layout is shown in the figure below.

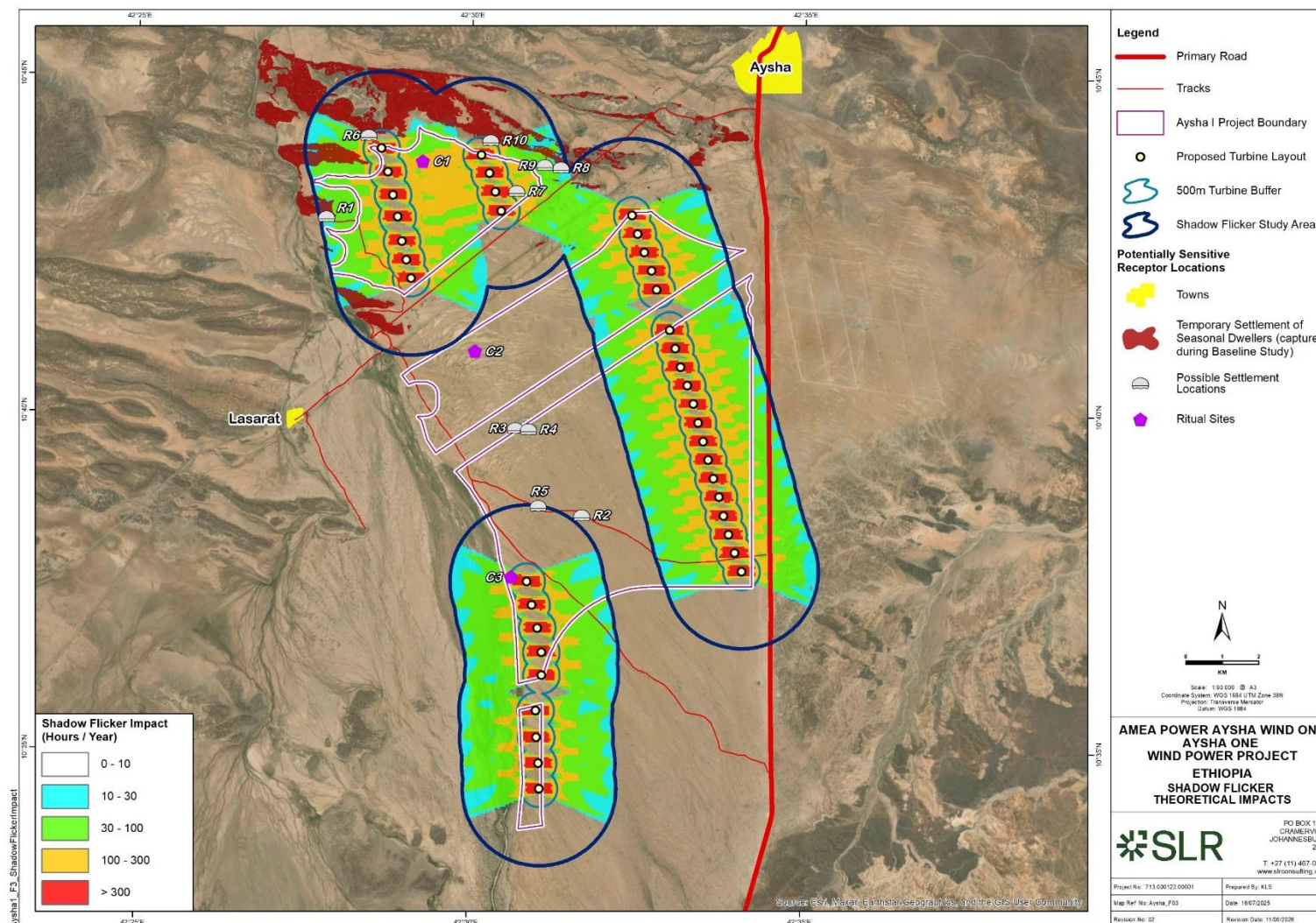


FIGURE 7-7: THEORETICAL EXTENT OF SHADOW FLICKER IMPACTS

Further analysis was undertaken to determine the possible impact at the selected receptor locations.

The table below presents the theoretical number of hours of shadow flicker experienced at each receptor within the study area per annum. It should be noted that the guidelines recommend that shadow flicker experienced by receptors (dwellings) within 500 m of a turbine should not exceed 30 hours per year or 30 minutes per day. Although only three of the receptors are within 500 m of the nearest turbine, the threshold has been applied to all nine receptors as a worst-case scenario.

TABLE 7-66: THEORETICAL HOURS OF SHADOW FLICKER AFFECTING SENSITIVE RECEPTORS

Receptor		Easting	Northing	Mean Hours per Year (Theoretical)	Distance from Nearest Turbine (m)
SETTLEMENT LOCATIONS	R10	42° 30' 17.167" E	10° 44' 3.072" N	0	480
	R6	42° 28' 27.398" E	10° 44' 6.715" N	0	496
	R7	42° 30' 40.832" E	10° 43' 17.977" N	115.16	585
	R9	42° 31' 5.849" E	10° 43' 41.219" N	34.9	1527
	R1	42° 27' 49.882" E	10° 42' 54.076" N	45.12	1907
	R8	42° 31' 20.529" E	10° 43' 39.087" N	42.16	1914
	R5	42° 31' 2.356" E	10° 38' 38.098" N	0	2095
	C1	42° 29' 16.265" E	10° 43' 44.010" N	141.28	1007
	C3	42° 30' 38.331" E	10° 37' 34.741" N	226.16	448
RITUAL SITES					

It should be noted that the hours of shadow flicker experienced on a daily basis would fluctuate, depending on the time of day and also the time of year.

Once again, it is stressed that these results represent a worst-case scenario. In reality, the number of hours of shadow flicker experienced is likely to be reduced by varying weather conditions such as cloud cover and also the distance of the receptor location from the nearest turbine.

It should be reiterated that the settlement receptors assessed in this area are in fact migrant and / or seasonal pastoral communities who set up temporary dwellings in locations that suit their needs at any given time. Hence it is not possible to determine the level of shadow flicker impacts with any level of confidence. In addition, the temporary dwellings do not appear to have windows and as such, persons inside the structure may not be affected by shadow flicker. Although outdoor activity may be affected by shadow flicker, these activities are unlikely to be confined to a fixed location and as such shadow flicker effects are unlikely to be significant.

With regard to the Ritual Sites, little information has been provided as to the actual dates, times and duration of the activities conducted on the site and as such, it is not possible to determine the level of shadow flicker impacts affecting these sites with any level of confidence. Shadow flicker incidence above

the recommended threshold is however largely restricted to early morning and late afternoon and while outdoor activities may occur at these times, these activities are unlikely to be confined to a fixed location and as such shadow flicker effects are unlikely to be significant.

Considering the above, therefore, shadow flicker impacts resulting from the Project during operation are expected to be **insignificant**.

As shadow flicker effects only occur when the wind farm is operational, no impacts will be experienced during the construction and decommissioning phases of the project.

7.6.2.3 Mitigation Measures

Mitigation measures would only need to be considered if complaints are received by affected receptors, and where an appropriate investigation into these complaints confirms the need for mitigation. However, as the potentially sensitive receptors in this instance are migrant pastoral communities who set up temporary camps across the study area, standard mitigation measures for shadow flicker effects would not be practicable.

Continuous consultation with the affected communities throughout the operational lifespan of the project could be undertaken to:

- Address any grievances that arise pertaining to shadow flicker effects;
- Assist with the selection of alternative suitable camp sites where shadow flicker effects are reduced; and
- Provide relocation assistance where required.
- Where flicker impacts are proven to affect religious and ceremonial activities on either of the two Ritual Sites, possible proportionate mitigation measures (including operational controls or limited curtailment windows) should be investigated in consultation with the affected parties.

Refer to the ESMP for more details.

7.6.3 Impact: Visual Impact affecting Sense of Place

7.6.3.1 Impact Description

Construction will result in a change in the landscape through an increase in dust and through the introduction of construction equipment into the landscape. While dust would be a naturally occurring feature of the region, the construction process requires the clearance of vegetation, excavation for the construction of foundations and creating gravel access roads. These activities result in the generation of dust through exposure to wind and through the stimulation of dust through the operation of construction equipment and vehicular movement which entrain and disperse dust. Dust generation would be most prevalent during extended dry periods. Rain during the wet season would serve to allay and reduce dust levels.

While the receiving environment is not devoid of anthropogenic activities, the construction phase will require the use of abnormal equipment, most noticeably the use of cranes. Due to the surrounding natural environment, no natural screening will occur.

The existing landscape of the proposed PAOI consists of shrubland, grassland, bushland and rocky outcrop areas. The functioning of these land uses naturally results in the emission of dust into the atmosphere. The landscape remains rural in character and largely devoid of industrial and mechanical elements, although the Ethio-Djibouti railway and Highway, the Aysha II Wind Farm, the Ethio-Djibouti Water Supply Line, Electricity Transmission Line, Fiber Optics Line and Aysha Industrial Park are located either within or adjacent to the PAOI.

During the operational phase, the large scale of wind turbines inevitably changes the character of the landscape, making the area appear more developed and less rural. Turbines add movement to the

landscape, which can attract attention and, for some observers, reduce the experience of tranquillity. The rotating blades can reflect sunlight, creating flashes of light that attract attention.

The wind turbines are tall structures that can be seen from several kilometres away and impose a change on the landscape of the area where they are installed and during the operational phase, they will result in a change on the landscape in the PAOI.

Visual impacts created from the development of the Project are not considered an issue of major concern due to there not being key sensitive visual receptors within the PAOI and the 10 km radius. The natural visual character of the PAOI and its surrounding includes various elements such as another wind farm development to east (Aysha II Wind Farm), several infrastructure and utility elements (railway, electricity transmission lines, telecommunication cable, etc.) for which its aesthetical value loses some importance, and the Project in that sense will not be a significant impact to the visual and landscape characteristic of the area.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site clearance and construction equipment operation resulting in increased dust. Introduction of heavy equipment and machinery into the rural landscape.
Operational	Wind turbines.

7.6.3.2 Impact Discussion

The visual environment created during the construction period would be temporary, of a short-term duration, limited to the construction phase only. For the duration of construction, the visual impacts will be of a negative nature and be noticeable and, therefore, of a medium consequence, but a high intensity and probability. The impact is considered to be of **MEDIUM** significance pre-mitigation. This changes to **LOW** with the implementation of mitigation measures. Refer to Table 7-67.

TABLE 7-67: IMPACT SUMMARY – VISUAL IMPACT AFFECTING SENSE OF PLACE DURING CONSTRUCTION PHASE

Visual Impact affecting Sense of Place during Construction Phase		
Type	Direct	
Nature	Negative	
Phases	Construction	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Long-term (10 to 20 years)
Extent	Local	Within/ near site
Consequence	Medium	Medium
Probability	Probable (High)	Possible / frequent (Medium)
Significance	Medium -	Low -

The potential impact on visual “sense of place” are of a long-term duration throughout the Project operational phase. The impacts will be of a negative nature and medium intensity given that such elements of the Project will be visible. However, there are no key visual receptors in the PAOI and its surroundings, therefore, the probability is medium. Given all the above, such an impact is considered of **LOW** significance pre-mitigation. This changes to **VERY LOW** with mitigation measures implemented (Table 7-68)

TABLE 7-68: SUMMARY OF IMPACT - NEGATIVE VIEWS AFFECTING SENSE OF PLACE DURING OPERATIONAL PHASE

Visual Impact affecting Sense of Place during Operational Phase		
Type	Direct	
Nature	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Medium
Probability	Possible / frequent (Medium)	Unlikely / improbable (Very low)
Significance	Low -	Very Low -

7.6.3.3 Mitigation Measures

As per the mitigation measure in section 5.1.11 in the ESMP (Appendix K), the following mitigation measures need to be implemented:

- Visual impact assessments are conducted during the planning phase to optimize turbine layouts and minimise adverse effects on the landscape and local "sense of place".
- A neat construction site will be maintained by removing rubble and waste materials regularly.

- Storage / stockpile areas will be positioned in unobtrusive positions in the landscape, where possible.
- Existing access roads will be utilised, where possible.
- The number of vehicles and trucks travelling to and from the construction site will be limited, where possible.
- Unless there are water shortages, dust suppression techniques will be implemented.

7.6.4 Impact: Blade and Tower Glint of Wind Turbines

7.6.4.1 Impact Description

Blade or tower glint occurs when the sun strikes a rotor blade or the tower at a particular orientation. This can impact a community, as the reflection of sunlight off the rotor blade may be angled toward nearby residences.

Blade glint is a temporary phenomenon for new turbines only and typically disappears when blades have been soiled after a few months of operation. The main effect of blade glint is the potential for annoyance or visual discomfort for residents or motorists located in the line of the reflection. This can manifest as a momentary flash or a strobing reflection.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Operational	Operation of wind turbines.

7.6.4.2 Impact Discussion

The impacts are considered of short-term duration as they will occur only temporary throughout the operation phase of the Project and of a negative nature. However, based on the location of the turbines in relation to nearby residential housing and the only temporary occurrence (if occurring at all) such an impact is considered of low intensity and medium probability. Given the above, such an impact is considered of **VERY LOW** significance.

With the implementation of mitigation measures the impact is unlikely to occur and result in a minor change. The impact, therefore, becomes **INSIGNIFICANT** (Table 7-69).

TABLE 7-69: IMPACT SUMMARY – BLADE AND TOWER FLINT OF WIND TURBINES AS NUISANCE

Blade and Tower Flint of Wind Turbines as nuisance.		
Type	Direct	
Nature	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Minor change (Low)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Low	Low
Probability	Possible / frequent (Medium)	Unlikely / improbable (Very low)
Significance	Very Low -	Insignificant -

7.6.4.3 Mitigation Measures

Consideration should be given to the use of non-reflective finishes to ensure potential impacts are not significant.

7.6.5 Impact: Technical Failure of Wind Turbines due to Blade Throws

7.6.5.1 Impact Description

The ejection of part or all of a blade over significant distances can pose a potential risk of serious injury or fatality to humans and substantial damage to property, infrastructure, and wildlife habitat.

There are potential impacts from blade throws from the wind turbines, which could affect the public safety of nearby receptors. According to the WBG EHS Guidelines on Wind Energy (IFC, 2015), a failure in the rotor blade can result in the ‘throwing’ of a rotor blade, however, the overall risk of such an event is extremely low. As the Project falls in an area where snow events are not experienced, ice throw impacts are considered irrelevant.

The impact sources linked to the Project’s activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Operational	Operation of wind turbines.

7.6.5.2 Impact Discussion

Taking all the above into account, such impacts are considered to have a long-term duration as they will occur throughout the operation phase of the Project and of a negative nature. However, given that the risk is extremely low such an impact is considered of low probability. Such an impact is considered of **LOW** significance in the unmitigated scenario. This changes to **VERY LOW** in the mitigated scenario. Refer to Table 7-70.

TABLE 7-70: IMPACT SUMMARY – TECHNICAL FAILURE OF WIND TURBINES DUE TO BLADE THROWS

Technical Failure of Wind Turbines due to Blade Throws		
Type	Direct	
Nature	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Minor change (Low)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Within/ near site	Within/ near site
Consequence	Medium	Low
Probability	Conceivable (Low)	Conceivable (Low)
Significance	Low -	Very Low -

7.6.5.3 Mitigation Measures

The following mitigation measures need to be implemented:

- Implementation of the Design Management Plan as described in section 5.1.1 of the ESMP.
- Establish a setback distance between the turbines and access locations. A minimum setback distance is 1.5 x turbine height or the minimum setback distance required to meet the noise and shadow flicker limits. A safety buffer of 352.5 m radius (corresponding to an area of approximately 390,140 m²) will be maintained throughout operation to restrict the placement of shelters and temporary housing.
- Lightning protection systems must be properly installed and maintained.
- Undertake blade inspections and repair defects that could affect blade integrity.
- Equip wind turbines with vibration sensors that shut down the turbine if any imbalance in the rotor blade is detected.

7.6.6 Impact: Increase in Traffic Volumes during Construction and Decommissioning affecting the Safety of Road Users

7.6.6.1 Impact Description

The PAOI, especially during the construction or decommissioning phases, will involve increased traffic of heavy earth-moving machinery and trucks hauling construction materials, goods and passengers. An increase in traffic volumes can significantly impact the safety of road users, particularly when large numbers of heavy vehicles are introduced onto public or shared roads. These vehicles pose safety risks due to their size, limited manoeuvrability, and reduced visibility, especially to pedestrians, other road users and livestock. Vulnerable groups, such as children, the elderly, and animals, are at heightened risk, particularly where road infrastructure is inadequate. These risks are present throughout all phases of the mine, prior to closure.

An increase in traffic, particularly the introduction of heavy construction vehicles, raises the risk of road accidents and poses safety concerns for third-party road users, animals as well as construction personnel. These risks are exacerbated in areas where road infrastructure is poorly maintained, intersections are inadequately designed for high traffic loads, or where pedestrian movements are high and unmanaged.

The road users likely to be affected include pedestrians, motorcycles, public transport vehicles (buses), light vehicles, stray animals and employees operating or travelling in company vehicles.

The heavy vehicles using the roads may overload while transporting construction materials. Overloading also has adverse implications in relation to road safety, through increasing the chance of failure of steering and braking mechanisms and reducing stability if excessively high loads are being transported.

Traffic during the construction or decommissioning phases may also contribute to increased congestion in towns especially at Aysha and the nearby rural towns and Kebeles where the existing road width is relatively limited. Therefore, unless properly managed and regulated, will trigger increased risks of road accidents in the rural project areas.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Establishment and upgrading of roads. Transportation of turbine components and equipment to site.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

7.6.6.2 Impact Discussion

Before mitigation measures are implemented the intensity of the impact will be high with medium consequence and high probability. Therefore, the impact will be **MEDIUM**. In the mitigated scenario, the probability changes to medium and the impact significance becomes **LOW**. Refer to Table 7-71.

TABLE 7-71: IMPACT SUMMARY – INCREASE IN TRAFFIC VOLUMES DURING CONSTRUCTION AND DECOMMISSIONING AFFECTING THE SAFETY OF ROAD USERS

Increase in Traffic Volumes during Construction affecting the Safety of Road Users		
Type	Direct	
Nature	Negative	
Phases	Construction and decommissioning	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Prominent change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Probable (High)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.6.6.3 Mitigation Measures

The mitigation measures for managing traffic impacts include the following:

- Develop a Traffic and Transport Plan before commencement of any transportation activities to ensure that the transportation process is properly and adequately managed and does not pose a risk of damage to the existing roads, highways, or overpasses whilst ensuring public safety:

- The Plan must analyse and study the entire route for transportation of the Project components from the port to the PAOI.
- The assessment must consider worst-case scenarios for the transportation of Project components for blade lengths, tower sections, etc.
- The study must investigate any constraints which need to be considered along the highways leading to the PAOI, such as bridges, overhead utility cables, slants in roads, etc. and identify accommodations which need to be taken into account (bypasses, adjustments to roads).

Refer to section 5.1.1 of the ESMP.

7.6.7 Impact: Project's Risk of Gender Based Violence

7.6.7.1 Impact Description

Due to lack of awareness and understanding on gender and Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) risks among employers and workers, female workers face difficulties in their workplaces, such as GBV and sexual harassment may occur.

Various project-specific risks may exacerbate or create SEA / GBV including activities during the construction phase. Contracting of construction companies may create a power differential between project workers and communities that may increase risks of women and girls to SEA / GBV. During the construction phase, the appointed EPC contractor will be responsible for recruiting and managing personnel on-site. Based on the ESIA undertaken in relation to the Project, the Project will require up to 1,000 workers at peak during the construction phase for the duration of approximately 24 months. These will include skilled workers (e.g. engineers, technicians, consultants, surveyors, etc.), unskilled workers (labourers, security personnel, cleaners, etc.). During the operational phase, the project will create around 25 job opportunities for a duration of 25 years.

Any contracted security forces under the Project can increase the risk of GBV. Female workers in close proximity to male workers with limited supervision may be at increased risk of GBV. Abuse of power, including SEA / GBV in hiring, employment, and retention practices. For example, hiring and employment practices that seek to increase the number of women in different employment positions under the project may expose women to potential SEA, or abuse, either because they are pressured to exchange "favours" for jobs, or because the working environment legitimizes and allows harassment and exploitation.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes.
Operational	Influx of workers during the operational phase of the Project. Power differential created between construction companies and communities
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

7.6.7.2 Impact Discussion

In the pre-mitigated scenario, the intensity will be high and of long-term duration, as well as a high probability. This will result in **MEDIUM** impact significance. Following the implementation of mitigation measure the intensity and probability of the impact becomes medium and changes the impact significance to **LOW** (refer to Table 7-72).

TABLE 7-72: IMPACT SUMMARY – PROJECT’S RISK OF GENDER BASED VIOLENCE

Project’s Risk of Gender Based Violence		
Type	Direct	
Nature	Negative	
Phases	All Phases	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Probable (High)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.6.7.3 Mitigation Measures

The EPC Contractor is required to implement the following measures at the project level:

- Implementation of the Project Company’s Gender Equality Policy on site and the Gender Equality Management Plan, which incorporates the identification of potential gender risks, including GBVH in the workplace, in the supply chain, and between the Project workers and local community members; discrimination in recruitment processes; barriers to the participation of women in decision making processes; inadequate facilities for women; security risks; and impediments to family responsibilities. The Gender Equality Management Plan includes the following:
 - Ensure that representatives of women’s groups are equally involved in stakeholder consultations, including:
 - Focus group discussions with women;
 - Female positions in the Community Liaison Committee (CLC) (when applicable);
 - Separate meetings with women’s organisations;
 - Ensure gender considerations are integrated into the Community Development Plan through measures that address women’s specific risks and promote their meaningful participation, such as GBVH sensitisation, maternity healthcare support, and women’s inclusion in training programs; and
 - Take actions to ensure gender balance in project teams, either through quotas or voluntary targets, with close monitoring to manage resistance and track progress.
 - Ensure gender considerations are integrated into the Community Development Plan through measures that address women’s specific risks and promote their meaningful participation, such as GBVH sensitisation, maternity healthcare support, and women’s inclusion in training programs; and

- Take actions to ensure gender balance in project teams, either through quotas or voluntary targets, with close monitoring to manage resistance and track progress.
- The EPC contractor will implement training to raise awareness on GBVH and provide training for women's groups and female workers.
- Support for victims of GBVH will be made available, including:
 - Medical support for survivors of sexual violence, including timely treatments such as emergency contraception and HIV post-exposure prophylaxis, as well as psychological counselling, legal advice, financial support like paid leave, and reintegration measures such as career guidance;
 - Child-protection services when needed; and
 - Ensuring proactive, survivor-centred, independent of disciplinary actions, and delivered by trained staff to prevent further harm.
- Implement community awareness activities on GBVH and allocate adequate resources for prevention, reporting and response measures
- Implementation of the Project Company's ESMS Manual that sets a standard for project-level policies, plans and procedures, including guiding EPC contractor management system. It incorporates the following:
 - Provisions for the protection of labour and human rights, including working conditions, fair terms of employment, workers' grievance management, the right to freedom of association and collective bargaining.
 - Prevention of child and forced labour, and non-discrimination and equal opportunity, with reference to the UN Guiding Principles (UNGPs) and the ILO Core Labour Standards.
 - The EPC contractor will be required to have HR policies and procedures in place including the provision for working hours, overtime work and overtime compensation; remuneration, leave and other benefits; termination of employment; disciplinary procedures; collective bargaining arrangements; non-discrimination and equal opportunity; prevention of child and forced labour; and prevention of GBVH, provision of gender-sensitive infrastructure and inclusive recruitment, training and promotion practices.
 - Implement training to raise awareness on GBVH and provide training for women's groups and female workers.
 - Train new recruits on GBVH policies and codes of conduct, and ensure candidates understand expected behaviours and how to report concerns.
 - Recruitment will assess values-based attitudes, while reward systems must promote positive behaviour and minimise bias through transparent, criteria-based decisions
 - Support for victims of GBVH will be provided, including:
 - Medical support for survivors of sexual violence, including timely treatments such as emergency contraception and HIV post-exposure prophylaxis, as well as psychological counselling, legal advice, financial support like paid leave, and reintegration measures such as career guidance;
 - Child-protection services when needed; and
 - Ensuring proactive, survivor-centred, independent of disciplinary actions, and delivered by trained staff to prevent further harm.
 - Community awareness activities will be implemented on GBVH and adequate resources for prevention, reporting and response measures will be allocated.

Refer to the Project ESMP for detailed information.

7.6.8 Impact: Influx of Workers Placing Pressure on Local Medical Services

7.6.8.1 Impact Description

The Project may attract a significant influx of job seekers, many of whom migrate from surrounding districts and other regions in search of employment. This sudden population increase places pressure on local medical services and facilities, which may already be under-resourced or strained.

The quality and accessibility of existing health facilities are very poor and these services were meant for families residing in and around the Aysha Town and the surrounding Kebeles. The construction phase of the project is likely to attract a large workforce, which is likely to exert pressure on the already weak and inadequate social services. Therefore, this will reduce their effectiveness as far as the local population is concerned.

7.6.8.2 Impact Discussion

Such impacts are considered of short-term duration during the construction phase and of a negative nature. Before mitigation these would have a high intensity and have definite probability of occurring. In the unmitigated scenario the impact is considered **MEDIUM**. This changes to **LOW** in the mitigated scenario (Table 7-73).

TABLE 7-73: IMPACT SUMMARY – INFLUX OF WORKERS PLACING PRESSURE ON LOCAL MEDICAL SERVICES

Influx of Workers Placing Pressure on Local Medical Services		
Type	Direct	
Nature	Negative	
Phases	All	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Prominent change (High)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite / Continuous (Very high)	Possible / frequent (Medium)
Significance	Medium -	Low -

7.6.8.3 Mitigation Measures

The contractor should exercise a duty of care towards their workforce in relation to injuries sustained at work. Provision of adequate first aid facilities should be required. It is, therefore, recommended that the construction contractor must provide a first-aid post at the base-camp and is staffed on a full-time basis by a fully qualified paramedical attendant. Simple first aid materials, suitable for dealing with minor injuries, should always be available, at all worksites.

Considering its own healthcare needs (Project Staff and Construction Workforce), it is also proposed that the Project should provide support to one or two health facilities in the PAOI and upgrade their service delivery level to a certain reasonably acceptable standard.

Therefore, it is necessary to:

- Take into account its own healthcare needs (project staff and construction workforce), the construction contractor must provide a first-aid post at the work site;
- The First-aid post/clinic must be staffed by a qualified paramedical attendant on a full-time basis;
- First aid materials, suitable for dealing with minor injuries, shall be available at all times, at all worksites;
- Contractor to liaison and sign an agreement with the nearby hospital or higher clinic for the case of emergency;
- It is also necessary the Contractor to provide an ambulance service at the construction site to transport seriously injured persons. The ambulance must be made available on-site for 24 hours or first aid post for emergency situations;
- The Contractor is required to immediately notify to the Project Financiers within 2,448 hours in case of occurrence of fatality and serious injuries; and
- The Contractor must prepare emergency communication procedure and implemented at all construction sites.

In order to limit the impacts associated with inward migration, the following measures will be implemented as part of the Population/Labour Influx Management Plan Management Plan:

- No 'at-the-gate' recruitment will be permitted at the construction camp, active works sites or any ancillary sites. Recruitment will be undertaken only at centralised recruitment office.

- The Policies will be disclosed to local communities together with the precise number of new job opportunities and the focus on local recruits will be made public together with the required skills and qualifications. The duration of temporary work will be clearly indicated, and the relevant employees / Contractors provided with regular reminders and revisions throughout the temporary period.
- Good communication with all job seekers will be maintained throughout the recruitment process. The process will be seen and understood to be fair and impartial by all involved. The personnel in charge of resolving recruitment and procurement concerns will be clearly identified and accessible to potential applicants. Provide clear expectations in all platforms of communication of the number of jobs available and in what categories or fields of the Project. This would allow a clear indication of what types of jobs would be available (skilled versus unskilled).

7.6.9 Impact: Increased Community Tension and Conflict

7.6.9.1 Impact Description

Inappropriate management of security issues and incidents by security personnel towards local communities could result in resentment, distrust and escalation of events.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Influx of construction workers to site. Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Establishing stormwater controls. Construction of laydown areas. Establishment and upgrading of roads. Transportation of turbine components and equipment to site. Civil Works including general building activities. Erection, use and removal of scaffolding and cranes.
Operational	Influx of workers to site. Maintenance of roads and Substation areas. Operation of wind turbines.
Decommissioning	Clearance of land during the removal of infrastructure from the site. Dismantling and demolition of all infrastructure and removal of equipment.

7.6.9.2 Impact Discussion

Considering the number of people likely to move into the area during construction and operation, the intensity of the impact is considered medium. Such impacts will be of a long-term duration throughout the construction and operational phases of the Project. Impacts will extend beyond the boundary of the PAOI (local). Given that a relatively large portion of the workforce will be locally sourced, the probability of this impact occurring is low. The significance is **LOW** before mitigation measures are implemented. Following the implementation of mitigation measures, the significance of the residual impact can be reduced to **VERY LOW** significance (Table 7-74).

TABLE 7-74: IMPACT SUMMARY – INCREASED COMMUNITY TENSION AND CONFLICT

Increased Community Tension and Conflict		
Type	Direct	
Nature	Negative	
Phases	All	
Criteria	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Conceivable (Low)	Unlikely / improbable (Very low)
Significance	Low -	Very Low -

7.6.9.3 Mitigation Measures

The EPC Contractor and Project Operator is expected to prepare a Security Management Plan to be implemented for the construction and operation phase of the Project.

The plan must identify appropriate measures for hiring, rules of conduct, training, equipping, and monitoring of security personnel to control and manage such issues. The plan must also adhere to IFC PS 4 (Community Health, Safety and Security) in relation to the security guards employed. This requires that the behaviour for the security personnel is guided by the Voluntary Principles on Security and Human Rights in terms of hiring, rules of conduct, training, equipping and monitoring of such personnel. It also requires making reasonable inquiries to satisfy itself that those providing security measures are not implicated in past abuses, will ensure they are trained adequately in the use of force (and firearms if applicable) and appropriate conduct towards the workers and the local community. Force should only be used when strictly necessary, and to an extent proportional to the threat.

7.6.10 Impact: Hazardous Excavations during Construction resulting in Safety Risks to Third Parties and Animals

7.6.10.1 Impact Description

Concern was raised throughout the consultations relating to increased risks of falls by local community members and their livestock into unprotected excavation pits for turbine tower foundations.

According to consultations, many livestock have fallen into open excavations and died. In the past in other infrastructure development projects in the area, this has been a constant source of conflict between contractors and the local community.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks.

Phase	Activities
	Civil Works including general building activities.

7.6.10.2 Impact Discussion

Such impacts are considered of short-term duration during the construction phase, of a negative nature. As a result of the impact being death or injury, the intensity is high. The significance of the impact is considered **LOW**. Following the implementation of mitigation measures, the significance can be reduced to **VERY LOW**.

TABLE 7-75: IMPACT SUMMARY – HAZARDOUS EXCAVATIONS DURING CONSTRUCTION RESULTING IN SAFETY RISKS TO THIRD PARTIES AND ANIMALS

Hazardous Excavations during Construction resulting in Safety Risks to Third Parties and Animals		
Type	Direct	
Nature	Negative	
Phases	Construction	
Criteria	Without Mitigation	With Mitigation
Intensity	Prominent change (High)	Moderate change (Medium)
Duration	Short-term (1 to 5 years)	Short-term (1 to 5 years)
Extent	Within/ near site	Within/ near site
Consequence	Low	Low
Probability	Probable (High)	Conceivable (Low)
Significance	Low -	Very Low -

7.6.10.3 Mitigation Measures

The EPC Contractor is expected to prepare an Occupational Health & Safety (OHS). The plan should emphasize the measures that will be undertaken for protection of excavation pits, and which should the following:

- Install proper protection hard barricades around excavations that are suitable for the location and depth of excavations. This could include concrete hard barricades along with red and yellow barricade tapes.
- Ensure inspections of the excavation/trench, including adjacent areas and protective systems are conducted. Such inspections should take into account for evidence of situations that could result in possible cave-ins, indications of protective system failures, and indications of hazards. In addition, inspections should be conducted after rain events and any other potential hazard-increasing occurrences
- Ensure clear and proper safety signage with pictorial information as well is installed at all excavation areas in both Somali and English language that is informative in relation to the hazards expected. This should include for example, excavation Area, PPE required, caution fall hazards, etc.
- Undertake regular consultations/discussions with pastoralists that could be present within the area to inform them on key risk construction areas to be avoided, key health and safety risks and how they should be avoided, update on activities undertaken and durations and meanings of safety signage installed.

7.6.11 Project's Impact on Existing Infrastructure

7.6.11.1 Impact Description

The Project will require the transportation of its components to site, which can result in various impacts on the existing infrastructure onsite and within the local PAOI. Most of these impacts will occur during the construction phase. However, some impacts on the local infrastructure may occur during the operational phase of the Project.

Incorrect placing of Project components (turbines, roads, etc.) as well as overall management of construction activities (e.g. excavation activities) could damage and/or disturb the water networks and resources onsite (to include the water pipeline and water harvesting ponds).

Wind turbines are manufactured in factories and transported to the installation site where they are assembled. Wind turbine components have big dimensions and weight, and their transport poses a challenge to the existing roads and infrastructure.

Project components (turbines, roads, etc.) not located correctly, as well as overall management of construction activities (e.g. excavation activities) and onsite transportation activities (e.g. heavy load trucks passing over the railway) could damage and/or disturb the operations of the railway infrastructure recorded onsite. If transportation activities are not properly managed, they could entail safety concerns on drivers and workers as they cross the road-railway intersection (e.g. potential for accidents).

Inappropriate siting of Project components (turbines, roads, etc.) as well as overall management of construction activities (e.g. excavation activities) could damage and/or disturb the operations of the electricity networks recorded onsite. Furthermore, if not placed correctly, the project components could damage and/or disturb the telecommunication fibre cable, as well as the broadcasting tower recorded onsite.

Any tall structure, such as wind turbines, could impact aircraft safety if located near airports or known flight paths and routes, including civil aviation and military aviation. In order to safeguard aerodromes and/or airports, and as a standard procedure for all wind farm development projects, formal communications must be established with the official governmental authorities responsible for the development of civil and military aviation safety and security.

The impact sources linked to the Project's activities and facilities, and in which phases they are likely to occur are tabulated below.

Phase	Activities
Construction	Site Preparation including bush clearance, stripping and stockpiling of soil resources, establishing contractor's camp. Earthworks. Civil Works including general building activities.
Operational	Maintenance of wind turbines

7.6.11.2 Impact Discussion

In the unmitigated scenario the impacts will be moderate with a medium consequence and probability of occurring. This will result in a **LOW** significance. In the mitigated scenario this changes improbably and a **VERY LOW** significance (Table 7-76).

TABLE 7-76: IMPACT SUMMARY – PROJECT'S IMPACT ON EXISTING INFRASTRUCTURE

Project's Impact on Existing Infrastructure		
Type	Direct	
Nature	Negative	
Phases	Construction and Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Moderate change (Medium)	Moderate change (Medium)
Duration	Long-term (10 to 20 years)	Long-term (10 to 20 years)
Extent	Local	Local
Consequence	Medium	Medium
Probability	Possible / frequent (Medium)	Unlikely / improbable (Very low)
Significance	Low -	Very Low -

7.6.11.3 Mitigation Measures

The following mitigation measure must be implemented:

- The design and planning of the site will ensure all environmental constraints, as committed to in the ESIA are managed. Specifically:
 - Ensure that infrastructure is sufficiently setback from existing infrastructure.
 - Ensure that detailed design avoids placing any of the Project components (turbines, roads, buildings, etc.) within the rocky outcrop areas that have been delineated and are located in the most northern parts of the PAOI.
 - Minimise the presence of the ancillary structures on-site.
 - Conduct ongoing engagement, consultation, and communication with impacted groups from the beginning of Project development and throughout its duration, involving clan leaders, local government officials, local communities, and residents on-site (during their arrival to the PAOI).
- Establish formal communication with the Ethiopian Railway Corporation for the following at a minimum:
 - Obtain no-objection on layout of turbines and various project components.
 - Determine if any specific requirements need to be considered with regard to the railway infrastructure onsite (e.g. setback distance from such elements).
 - Approval for transportation activities over the railway (if required).
 - Implementation of appropriate safety measures for railways crossings which could include warning signage at both sides of crossing (if applicable).
- Detailed design must take into account the following:
 - The route of the telecommunication fibre cable will be avoided as part of the design.
 - A 100 m buffer distance will be considered from the Line-of-Sight connections of the broadcasting towers in the area to ensure no distribution to the Fresnel Zone of these connections.
- Establish formal communication with the Ethiopian Civil Aviation Authority and the Ethiopian National Defence Force/Ethiopian Air Force to obtain a non-objection letter on the Project development and layout of turbines and various project components. Generally, conditions are included in such permits which must be complied with and which could include the installation of aviation lights at the nacelles of the turbines, painting red stripes at the tip of the blades and others.

Refer to the Design Management plan included in section 5.1.1 of the ESMP..

7.7 Summary of Impacts

A summary of the results from the impact assessment is provided in Table 7-77. Impact significance is provided for the unmitigated scenario and the mitigated scenario (residual impact). All negative residual impacts are Low to Very Low, with the exception of the following biological environmental impacts:

- **Habitat Fragmentation and Barrier Effect (Medium residual impact):** To compensate for the residual impact caused by habitat fragmentation and barrier effect, a BAP will be prepared which will outline specific avoidance, minimization and restoration measures. The BAP aims to ensure that the residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss.
- **Introduction of Alien Species affecting Ecosystem Functioning (Medium residual impact):** To compensate for the residual impact caused by the introduction of exotic or native species that managed to bypass prevention and monitoring protocols, a BAP will be prepared that will include a dedicated Alien Plant Management Plan. This will include the removal of mesquites *Neltuma juliflora*, which have caused large damage to the ecosystem and are abundant in the southwestern area. This measure will create a biodiversity net gain and contribute to restore the natural ecosystem functioning at the PAOI.
- **Disturbance to Bats due to Turbine Collisions (Medium residual impact):** To compensate for the residual impacts on bat populations from collision risk, a BAP will be prepared with a Restoration Action Plan with actions to restore native vegetation outside the turbine boundaries. Such plan should increase prey availability for bats, thereby bringing a net gain in biodiversity, while reducing attractiveness to foraging around turbines, thus reducing collision risk.

TABLE 7-77: SUMMARY OF IMPACT ASSESSMENT FOR THE PROJECT

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
BIOPHYSICAL	Loss of Soil and Land Capability through Physical Disturbance during Construction and Decommissioning Phase	X		X	Medium -	Very Low -
	Loss of Soil and Land Capability through Physical Disturbance during Operational Phase		X		Low -	Very Low -
	Pollution and Contamination of Soils and Water Resources	X	X	X	Medium -	Low -
	Abstraction from Water Resources affecting the Community during Construction Phase	X			Medium -	Very Low -
	Abstraction from Water Resources affecting the Community during Operation and Decommissioning Phase		X	X	Low-	Insignificant
	Risk of Floods on Project	X	X	X	Medium -	Low -
	Seismicity on the Project Components	X	X	X	Medium -	Low -

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
	Increase in Ambient Air Pollutants affecting Sensitive Receptors	X		X	Medium -	Very Low -
	Increase in Ambient Air Pollutants affecting Sensitive Receptors		X		Low -	Very Low -
	Climate-Related Risks for the Project	X	X		Low -	Very Low -
	Carbon Footprint and Project's GHG Emissions	X	X		Very Low -	Very Low -
BIOLOGICAL	Habitat Degradation and Loss due to Construction Activities	X			High -	Low -
	Habitat Fragmentation and Barrier Effect	X	X		High -	Medium -
	Disturbance to Soil Fauna due to Construction Activities	X			High -	Low -
	Pollution from Waste, Hazardous Materials and Chemical Spills affecting Flora and Fauna	X	X		High -	Very Low -
	Pollution from Dust and Air Pollutants due to Construction Activities affecting Flora and Fauna	X			Medium -	Very Low -

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
	Pollution from Noise affecting Fauna	X	X		Medium -	Low -
	Pollution from Light affecting Fauna	X	X		Medium -	Low -
	Disturbance to Fauna due to Illegal Wildlife Trading and Poaching	X	X		Very High -	Low -
	Fauna Mortality from Vehicular Collisions due to Increased Traffic	X	X		High -	Low -
	Introduction of Alien Species affecting Ecosystem Functioning	X	X		Very High -	Medium -
	Mortalities of Avifauna and Bats due to Overhead Transmission Line Collisions		X		Very High -	Low -
	Mortalities of Avifauna due to Turbine Collisions		X		Very High -	Low -
	Mortalities of Bats due to Turbine Collisions		X		Very High -	Medium -
	Disturbance to Fauna during Decommissioning Activities			X	High -	Low -
	Increased Erosion during Decommissioning Activities which			X	High -	Low -

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
	may Prevent Recolonisation by Natural Vegetation					
CULTURAL HERITAGE	Loss of or Disturbance of Tangible Cultural Heritage Sites	X	X	X	Low -	Very Low -
	Loss of or Disturbance of Intangible Cultural Heritage Sites	-	-	-	No Impact	No Impact
SOCIO-ECONOMIC	Benefit: Increased Employment Opportunities	X	X		Medium +	Medium +
	Benefit: Contribution of Project to Ethiopia's Economy through Power Supply		X		High +	High +
	Economic Displacement / Land Use Restrictions during Construction and Decommissioning	X		X	Medium -	Very Low -
	Economic Displacement / Land Use Restrictions during Operation		X		Low -	Very Low
	Project's Impact on Vulnerable Groups	X	X	X	Medium -	Low -
	Spread of Culturally Unacceptable Behaviour	X	X	X	Low -	Very Low -

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
	Project's Impact on Indigenous People	-	-	-	Medium	Low
	Working Conditions on Labour	X	X	X	Medium -	Low -
COMMUNITY HEALTH, SAFETY AND SECURITY	Increase in Ambient Noise Levels for Proximate Sensitive Receptors		X		Medium -	Low -
	Shadow Flicker affecting Sensitive Receptors		X		Insignificant	Insignificant
	Visual Impact affecting Sense of Place during Construction Phase	X			Medium -	Low -
	Visual Impact affecting Sense of Place during Operational Phase		X		Low -	Very Low -
	Blade and Tower Flint of Wind Turbines as nuisance.		X		Very Low -	Insignificant
	Technical Failure of Wind Turbines due to Blade / Ice Throw		X		Low -	Very Low -
	Increase in Traffic Volumes during Construction and Decommissioning affecting the Safety of Road Users	X		X	Medium -	Low -
	Project's Risk of Gender Based Violence	X	X	X	Medium -	Low -

	Impact	Relevant Project Phase			Significance Rating Impact Assessment	
		Construction	Operation	Decommissioning	Unmitigated Scenario	Mitigated Scenario
	Influx of Workers Placing Pressure on Local Medical Services	X			Medium -	Low -
	Increased Community Tension and Conflict	X	X	X	Low -	Very Low -
	Hazardous Excavations during Construction resulting in Safety Risks to Third Parties and Animals	X			Low -	Very Low -
	Project's Impact on Existing Infrastructure	X			Low -	Very Low -

8 HUMAN RIGHTS AND GENDER RISK

This section aims at supplementing the updated ESIA report (MDI, 2025) with an assessment of human rights and gender risk for the Project in line with IFC PS and AfDB E&S OS.

Potential impacts on human rights and gender risk were not considered in the initial ESIA report (dated 2020) or the updated ESIA report (MDI, 2025). To ensure alignment with IFC and AfDB standards and requirements, a Human Rights and Gender Risk Assessment was undertaken by SLR, using the findings from previous 2020 social survey and the recent 2025 social survey.

The assessment of Human Rights and Gender Risk provided in this section is an additional component and supplements the updated ESIA report (MDI, 2025).

8.1 Data Collection

The assessment of human rights and gender risks for the Project is based on information sourced from the following:

- Review of the processes of assessing E&S risks within the Project context, to understand potential human rights risks associated with the Project;
- Review of available corporate and / or Project ESMS and other relevant documents to understand the capacity of the Project and the Project Company to manage the identified human rights risks; and
- Engaging with key internal organisational personnel, through interviews, to triangulate the information derived from document review, and to gain a better understanding of the human rights risks and the Project's and Project Company's capacity to manage them.

The assessment was undertaken in accordance with the Guidance Note on Implementation of Human Rights Assessment under the Equator Principles, and the African Development Bank requirements, the UNGPs on Business and Human Rights, and other international standards and frameworks.

8.2 Methodology

The Methodology for assessing the human rights risks was based on the UNGPs and is described below.

- The UNGPs are the global standard that requires businesses to demonstrate their respect for human rights, through identifying, preventing and/or mitigating the human rights risks related to their development and operational activities.
- The UNGPs are premised on three pillars requiring:
 - **States to protect human rights** through the formulation and enforcement of laws. The South African national laws, including the constitution, were considered in the Screening of human rights.
 - **Businesses to respect human rights** by refraining from violating human rights in their development, operations and supply chain.
 - **States and businesses to provide remedy** for human rights violations that have already occurred.
- The **salience of the risks** was assessed based on **severity**, which is a combination of scale, scope, and irremediability of the identified risks, as demonstrated in Table 8-1. Assessing salience is important under the UNGPs, to allow for prioritisation and appropriate allocation of resources to mitigate human rights risks.

TABLE 8-1: PARAMETERS FOR EVALUATING THE SEVERITY OF HUMAN RIGHTS

Parameters for evaluating risk severity (Adapted from the Danish Institute Human Rights Impact Assessment toolbox)	
Scale	The seriousness of the impact, including an assessment of vulnerability
A	Will cause death or adverse health effects that could lead to a significant reduction in quality of life and/or longevity
B	A tangible human right infringement of access to basic life necessities (including education, livelihood, etc.) Impact to cultural, economic, natural and social infrastructure/assets that have been identified as highly valued by identified groups or subject matter experts in the impact assessment process Impact to ecosystem services identified as priority to livelihoods, health, safety or culture in the impact assessment process
C	All other impacts
Scope	Number of people affected
A	Significant number of members of one community or across multiple communities
B	Multiple individuals or families
C	Single person or family
Irremediability	How easy or difficult it would be to remediate the impact
A	Difficult – complex technical requirements, little acceptance of remediation by the identified group, low capacity of implementation partner, no viable replacement for loss caused by impacts
B	Moderate – simpler technical requirements, acceptance by the identified group, implementation partner can deliver with some capacity development
C	Easy – simple technical requirements, acceptance by the identified group, implementation partner has the capacity to deliver
Severity	Attributes
Insignificant	CCC
Minor	BBC / CBC
Moderate	ABC / ACC / BBB
Major	AAB / ABB / AAC
Extreme	AAA

The salience of the risks is also based on the **likelihood of the risks**, which relates to the chances of a risk materialising in the Project context. This is measured from rare to certain/almost certain, as described in Table 8-2. It is important to note that High salience risks are treated as significant, even if their likelihood is low, due to the potential impacts of the risks on rightsholders.

TABLE 8-2: PARAMETERS FOR EVALUATING THE LIKELIHOOD OF HUMAN RIGHTS RISKS

Parameters for evaluating the likelihood of human rights risks	
Certain/almost certain	The adverse human rights risk is either certain or almost certain to occur, and/or it has occurred frequently before.
Likely	There is a high probability that the adverse human rights risk will occur, and/or it has occurred infrequently before.
Possible	It is possible that the adverse human rights risk could occur, and/or it has occurred previously more than once.
Unlikely	There is a low probability of the adverse human rights risk ever occurring, and/or it has happened at some point previously.
Rare	There is an extremely low probability of the adverse human rights risk ever occurring. The risk has never been known to occur.

Human rights risk mitigation is based on the involvement of the business in the risks, whether the business may potentially cause, contribute to, or be directly linked to the risks. This informs the actions that the business ought to take to manage the identified risks. The following responsibilities apply based on the association of the business to the risks:

- **Cause:** the business must prevent or mitigate the risk;
- **Contribute:** the business must prevent or mitigate the risk to the extent of its contribution, and use or increase its leverage with other responsible parties to prevent or mitigate the risks;
- **Directly linked:** the business must use or increase its leverage with other responsible parties to seek to prevent or mitigate the risks.

The Matrix for rating human rights risks based on severity and likelihood is demonstrated in Table 8-3.

TABLE 8-3: HUMAN RIGHTS RISKS RATING MATRIX

	Severity Based on the scale, scope, and irremediability of the risks on rightsholders				
Likelihood	Negligible	Minor	Moderate	Major	Extreme
Almost certain/ certain	Medium	Significant	High	Severe	Severe
Likely	Medium	Medium	Significant	High	Severe

	Severity Based on the scale, scope, and irremediability of the risks on rightsholders				
Possible	Low	Medium	Medium	Significant	High
Unlikely	Low	Low	Medium	Significant	High
Rare	Low	Low	Low	Medium	Significant

8.3 Summary of Human Rights Risks Identified

A summary of the potential violations of human rights which may be caused by the Project and the likelihood of the risk materialising is provided in Table 8-4.

Most of these risks are already prevented or mitigated by measures which have been included in the updated ESIA (MDI, 2025), the ESMP and in this SLIP. Any additional measures required to adequately prevent these risks from materialising have been included in the Projects Human Rights Risk Assessment (HRRRA) and Gender Risk Assessment (GRA) Management Plan. Following mitigation, the risks remain medium. A robust management system has been developed in the HRRRA and GRA Management Plan to ensure that human rights violations are prevented and monitored across the Project's operations and supply chain.

8.3.1 Supply Chain Risks

The construction and operation of the Aysha I Project requires the services of several suppliers and contractors that need to be procured. This supply chain can be associated with several human rights risks including the use of child and forced labour, unfair labour practices, discrimination, environmental risks including risks to water resources and land acquisition and displacement.

8.3.2 Labour and Working Conditions Risks

A dedicated workforce will be required for the Project, especially during construction with approximately 1,000 workers required during this phase and about 25 workers required during operations. Due to the nature of the construction work, it tends to be dominated by males. This results in the risk of women being underrepresented especially in skilled and supervisory roles. Construction exposes workers to various risks including OHS hazards, inadequate working conditions, unfair labour practices, and workplace discrimination. The construction of a WEF may include risks associated with working at heights, exposure to electrical and mechanical hazards, manual handling injuries, inhalation of dust from construction activities, and potential fire or explosion incidents.

Other labour-related concerns may involve excessive or unregulated working hours, unpaid or delayed wages, insufficient overtime compensation, poor sanitation in worker facilities, unclear terms of employment, and restricted rights to freedom of association and collective bargaining. Women may face additional challenges such as lack of access to gender-sensitive sanitation facilities, unsafe accommodation and discriminatory recruitment practices.

8.3.3 Gender-Based Violence and Other Gender-Related Risks

Due to the remoteness of the Project, risks such as sexual harassment and abuse, intimidation, discrimination, and the exclusion of women from meaningful participation in recruitment, training and decision-making processes may be exacerbated.

There is a potential for paid security forces to be contracted under the Project in order to ensure delivery of services/ infrastructure in insecure areas. Having military or paid security forces contracted as part of

the Project can increase the risk of GBV (MDI, 2025). These groups are often predominantly or entirely male and may exploit the power imbalance arising from their position to engage in inappropriate or harmful behaviour.

8.3.4 External Stakeholder Engagement and Grievance Management

The Project may also impact various external stakeholder located in and around the PAOI including residents in the Aysha town and the Lasarat village, as well as the pastoralists that move through the PAOI. These impacts may include land degradation, potential in-migration and related socio-economic risks, traffic hazards and impacts on grazing land.

8.3.5 Security Risks

The PAOI is located near Somalia and Djibouti borders, where there have been cases of armed clashes between ethnic groups. The development of the Project will involve the procurement of valuable construction equipment, electrical components, and related equipment, which could attract criminal activity such as vandalism and theft.

TABLE 8-4: SUMMARY OF HUMAN RIGHTS RISKS IDENTIFIED FOR THE PROJECT

Human Rights Risk Areas		Rights Potentially Impacted	Severity	Potential Involvement
1	Supply chain risks: adverse human rights risks to supplier employees and communities affected by potential supplier non-compliance to international standards and laws safeguarding human rights.	Right to just and favourable conditions of work; right to an adequate standard of living; right to a safe environment; and right to protection from exploitation.	Medium	Directly linked
2	Labour and working conditions: adverse human rights risks to the Project's Contractor employees and the Project Company's employees if the EPC contractor fails to comply, and where the Project Company does not implement sufficient and consistent oversight.	Right to just and favourable working conditions; right to adequate standard of living; right to equality and non-discrimination; right to health; and right to safety.	Medium	Cause/ Directly linked
3	Gender-based Violence and Harassment: adverse human rights risks to women working in the Project, those in the supply chain, and those in the local communities due to identified gender-related risks.	Right to just and favourable working conditions; right to equality and non-discrimination; right to health; right to life; and right to safety.	Medium	Cause/ Directly linked
4	Risks to external stakeholders: adverse human rights risks to members of the local communities within the PAOI, due to identified risks related to the Project.	Right to information; right to self-determination; and freedom of public participation.	Medium	Cause
5	Security risks: adverse human rights risks to Project workers onsite, including security personnel, and local communities due to identified security risks in the PAOI or related to the Project.	Right to health; right to safety; and right to security of persons.	Medium	Cause

8.4 Statement on Human Rights Risk Assessment

The human rights risks identified for the Aysha I Project relate to five key areas: supply chain risks, labour and working conditions, GBVH, risks to external stakeholders, and security-related risks. Each of these areas presents potential adverse impacts on specific human rights, including the rights to just and favourable working conditions, health and safety, non-discrimination, information, and protection from exploitation. These risks are material to the Project's operations, supply chain and stakeholder relationships, and have all been rated as medium in significance.

Targeted measures will be implemented to mitigate the identified risks. These include integrating human rights considerations into supplier and contractor compliance monitoring, potentially through third-party traceability audits; ensuring that EPC contractor HR policies align with the UNGPs, national laws, and the Project Company's ESMS; and developing mechanisms to monitor compliance on labour practices, particularly where labour brokers are used. Worker accommodation will be developed to meet IFC/EBRD standards, ensuring safety, dignity, and gender sensitivity, including separate sanitation facilities and safe spaces for women. Gender considerations will be embedded in community development planning and labour systems, with clear targets for women's participation in employment, training, and engagement, and incorporated into supply chain due diligence and grievance handling.

The Project SEP and GM aligned with the IFC and UNGP standards will be implemented in collaboration with community members and leaders, ensuring the inclusion of women and other vulnerable groups. Monitoring mechanisms will be implemented to track the EPC contractor's implementation of the SEP, GM, and compliance with the Project Company's ESMS and international standards. The appointed CLO and Social Specialist will be trained in gender sensitivity and vulnerability awareness. The implementation of security management plans aligned with the Project Company's standards will be closely monitored.

9 ECOSYSTEM SERVICES

This section aims at supplementing the updated ESIA report (MDI, 2025) with an assessment of ecosystem services for the Project in line with IFC PSs and AfDB E&S OSs.

The initial ecosystem services assessment lacked quantitative baseline data, which is a limitation to prepare and monitor adequate mitigation measures. This section has incorporated a quantitative assessment of provisioning services (grazing lands, water access) and regulating services (air quality, water quality) in line with IFC PS6 and AfDB ISS OS6 requirements. This will include three management measures:

- Baseline quantification of provisioning services (type I), namely grazing capacity (ha/year), water availability (m³/season) in the Aol, both based on remote sensing data (e.g., NDVI for vegetation cover), quantified water consumption targets for construction and operation phases relative to available community supply, and local pastoralist surveys to estimate livestock density and seasonal water sources. Collaboration with pastoralist communities and appropriate authorities is expected to validate the data.
- Specific mitigation measures for temporary disruption of grazing lands during construction. Some examples include looking for and signal alternative corridors for pastors and maintaining access to existing water sources, or building temporary ones if these become inaccessible. These water sources will be mapped to ensure pastoralists and grazers have access to similar amounts of freshwater that would have occurred in the absence of construction activities.
- Baseline quantification for regulating services (type II), in particular air, soil and water quality, and biodiversity provided services such as pollination and pest control.
- Continuous monitoring of ecosystem services, with assessments of vegetation and water cover at least once every trimester during construction and once every semester during operation.

Furthermore, a Grievance Mechanism for local communities and pastoralists to complain about project related impacts (e.g. livestock deaths near turbines, loss of grazing access, water contamination) will be deployed. Biodiversity related grievances will be tracked, and the Stakeholder Engagement Plan – where the Grievance Mechanism is featured – will specify how reported incidents will be integrated into the monitoring database and potentially resolved.

These measures are designed to meet the proportionality principle under IFC PS6 (Section 3) and AfDB OS6, which requires mitigation to be commensurate with the significance of impacts on ecosystem services. The BMP will report on these indicators to AfDB and IFC, with annual reviews to ensure continuous improvement.

In terms of PS 6 of the IFC, ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organised into four types:

- **Provisioning services**, which are the products people obtain from ecosystems, which may include but are not limited to food, freshwater, timber and medicinal plants.
- **Regulating services** are the benefits people obtain from regulating ecosystem processes, which may include surface water purification, carbon storage and sequestration, climate regulation, and protection from natural hazards.
- **Cultural services**, which are the non-material benefits people obtain from ecosystems and which may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment.
- **Supporting services**, which are the natural processes that maintain the other services and which may include soil formation and nutrient cycling.
- The ecosystem services review was undertaken through the following steps:
 - **Identification assessment:** Identifying ecosystem services that may occur within the study area.
 - **Prioritisation assessment:** Prioritising the identified ecosystem; and

- **Impact assessment:** Identifying the impacts to ecosystem services and their human beneficiaries as a result of the project.

9.1 Identification Assessment

An ecosystem services screening assessment was undertaken to determine the likely ecosystem service values that could be potentially important to affected communities.

The scoping exercise was undertaken to identify the following:

- **Potential Beneficiaries:** Known and potential beneficiaries for a service were identified by interviewing the local community in Aysha to gather information about their dependency on ecosystem services.
- **Sources of Impact:** Potential sources of impact were considered based on the field investigations and engagement with local communities that were undertaken on the PAOI in September—October 2025.
- **Project Dependence:** IFC PS 6 requires that the ecosystem services assessment take into consideration any services that the project may rely upon during construction, operation and/or decommissioning. All services for which there is a potential project dependency were scoped into the prioritisation stage.

The goal of the scoping exercise was to identify a list of ecosystem services to be assessed during the surveys (refer to Table 9-1).

TABLE 9-1: ECOSYSTEM SERVICES SCREENING ASSESSMENT

Ecosystem service	Presence in the AOI
Provisioning services	
Food from crops, livestock, capture fisheries, aquaculture, and wild foods	The project site is used seasonally by pastoralist nomads and communities. They take advantage of the summer rains that stimulate vegetation growth and fill the project site with water sources. These are used by their cattle for grazing and drinking, providing an important stopover for these communities.
Biological raw materials from timber and other wood products, fibers and resins, animal skins, sand, and ornamental resources	Timber and wood products are often collected by local communities for house construction.
Biomass fuel	Illegal charcoal mining has been observed at the project site
Freshwater	Seasonal importance for wildlife, livestock and local communities
Genetic resources	Negligible
Biochemicals, natural medicines, and pharmaceuticals	Some plant species have medicinal uses, although their use by local communities has not been documented
Regulating services	
Regulation of air quality	Low, considering the low vegetation cover present across the AOI

Ecosystem service	Presence in the AOI
Regulation of local, regional, and/or global climate	The project will favor the reduction of greenhouse gases to produce energy in Ethiopia
Regulation of water timing and flows	Low
Erosion control	Low
Water purification and waste treatment	Negligible
Regulation of diseases	Local communities are often affected by diseases such as malaria
Regulation of soil quality	Low
Regulation of pests	The project's AOI has several species of reptiles, birds and bats that can regulate the growth of pest species
Pollination	The presence of bats and bees and other birds in the area helps pollinate certain flora species and disperse their seeds
Regulation of natural hazards	Low
Cultural services	
Recreation and ecotourism	The AOI has potential for ecotourism activities considering it is occupied by species with a conservation status
Ethical and spiritual values	Several burial sites are present within the project site
Educational and inspirational values	Several burial sites are present within the project site
Supporting services	
Habitat	Negligible
Nutrient cycling	Low, considering the low vegetation cover present across the project's AOI
Primary production	Low
Water cycling	Low

9.2 Impact Prioritisation Process

The IFC PS 6 require that priority ecosystem services are identified and impacts to those services are assessed. The prioritisation process is aimed at identifying those services for which project impacts would be most likely to result in adverse impacts on project affected communities and other beneficiaries. These are classified as follows:

- Type I: Provisioning, regulating, cultural and supporting ecosystem services, over which the client has direct management control or significant influence, and where impacts on such services may adversely affect communities.
- Type II: Provisioning, regulating, cultural and supporting ecosystem services, over which the client has direct management control or significant influence, and on which the project directly depends for its operations.

The priority of ecosystem services was classified according to these types (Table 9-2).

TABLE 9-2: ECOSYSTEM SERVICE PRIORITISATION MATRIX

Priority of Type I ecosystem services: beneficiaries					
		Low: The service is used and valued by parts of the community, but it is not important in maintaining quality of life or livelihoods of project affected communities.	Medium: The service is readily used by some members of the project affected communities for income or subsistence, but they are not dependent upon the service for their livelihoods, and not everyone utilises the service.	High: The service is highly important in maintaining the livelihoods of the project affected communities and is used by most of the community regularly.	Essential: The service is essential to maintain the health of the project affected communities, and the service is used by all members of the community.
Priority of Type II ecosystem services: operations	Low: The service is not used during project operations	Negligible	Low	Moderate	Major
	Medium: Project operations depend indirectly on this service	Low	Moderate	Major	Major
	High: Project operations depend partly on this service	Moderate	Major	Major	Critical
	Essential: Project operations depend fully on this service	Major	Major	Critical	Critical

The results from the systematic assessment of the ecosystem services is provided in Table 9-3.

TABLE 9-3: RESULTS FROM THE SYSTEMATIC ASSESSMENT OF ECOSYSTEM SERVICES

Ecosystem Service	Affected Communities	Project Operations	Risks	Priority	Mitigation
Food from crops for livestock and wild foods	High: Nomad pastoralists depend heavily on pasture for cattle grazing and, consequently, an income source	Independent	Displacement of nomad pastoralists, biodiversity loss	Moderate	Project layout that minimises impact on flora and habitats
Biological raw materials from timber and other wood products, fibers and resins, sand, and ornamental resources	Medium: Affected communities use wood and other materials to build houses, and sometimes to light fires for cooking	Independent	Walk longer distances to obtain these materials or use alternatives	Low	Project layout that minimises impact on flora and habitats
Biomass fuel	Low: A small proportion of pastoralists engage in fuelwood and charcoal production	Independent	Loss of fuel sources	Negligible	Project layout that minimises impact on flora and habitats
Freshwater	Essential: Local communities but mostly nomad pastoralists are heavily dependent on seasonal water sources for their livelihood	Medium: impacts on water sources may lead to displacement of local communities, which compromises the livelihood of workers of the Project	Community displacement, biodiversity loss	Major	Project layout should avoid construction on seasonal water sources
Biochemicals, natural medicines, and pharmaceuticals	Low: not used by affected communities	Independent	None	Negligible	Project layout that minimises impact on flora and habitats
Regulation of pests and diseases	Medium: Diseases such as malaria and pests can impact affected communities and livestock on which they depend on	Medium: Worker safety and health is essential to keep the project operational	Compromised health of affected communities, changes in ecosystem function	Moderate	See impact assessment section for mitigation measures to preserve biodiversity
Pollination	Medium: pollination	Independent	Lower food production,	Low	Project layout that

Ecosystem Service	Affected Communities	Project Operations	Risks	Priority	Mitigation
	regulates food production, which is important for livestock and affected communities		biodiversity loss, changes in ecosystem function		minimises impact on flora and habitats
Recreation and ecotourism	Low: Tourism is nearly non-existent in Aysha	Independent	None	Negligible	None
Ethical and spiritual values	High: Affected communities have important spiritual areas and burial grounds located on the PAOI	Independent	Loss of important sites and backlash from affected communities against the project	Moderate	Avoid siting on important spiritual areas and burial grounds

The expected impacts on ecosystem services identified in the PAOI are low. This is to be expected in an ecosystem with a hot desert climate, where a low vegetation cover and seasonal precipitation do not provide many utilities to either nomad or local communities but also to wildlife itself.

Conversely, the Project has the potential to bring cheap access to electricity to local communities and general citizens of Ethiopia. Furthermore, the production of renewable electricity will contribute to the reduction of GHG emissions and the Growth and Transformation Plan put forward by the Government of Ethiopia to increase renewable energy production.

10 ASSESSMENT OF CUMULATIVE IMPACTS

This section aims at supplementing the updated ESIA report (MDI, 2025) assessment of cumulative impacts for the Project in line with IFC PS and AfDB E&S OS.

The updated ESIA report (MDI, 2025) included and assessed cumulative impacts for the Project. However, the assessment of cumulative impacts was not undertaken in line with the IFC's good practice handbook "Cumulative Impact Assessment and management: Guidance for the Private Sector in Emerging Markets (2013)."

Accordingly, the Assessment of Cumulative Impacts provided in this section should be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).

10.1 Cumulative Impact Scoping

According to the *Manual of Good Practice*, IFC PS 1 (Assessment and Management of Environmental and Social Risks and Impacts) recognises that cumulative impact assessment and management is an essential framework for the management of wide risk factors (for example, the decline of species biodiversity and degradation of ecosystem services).

Cumulative impacts are defined as those impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity (development) when added to other existing, planned, and/or reasonably anticipated future developments.

The cumulative impact assessment has been prepared following the guidelines of the *Manual of Good Practice*. The cumulative impact scoping comprises:

- Identification of the Valued Environmental Components (VECs) to be studied and the spatial and temporal boundaries of each VEC.
- Identification of neighbouring past, present and future projects and natural and social stressors.

10.1.1 Identification of VECs

VECs were identified by the SLIP Project team based on their assessment of the environmental, cultural and social impacts and discussions with stakeholders during stakeholder engagement activities. The VECs identified in Table 10-1 below are based on their importance to local communities and ecosystems.

TABLE 10-1: SELECTION OF VECs FOR THE CUMULATIVE IMPACT ASSESSMENT

VEC	Rationale for Selection	Boundaries	
		Spatial	Temporal
VECs Scoped In			
Habitats / Flora (Biodiversity)	Permanent habitat loss from turbine foundations, access tracks, and substations Introduction of exotic species and potential loss of endemic and vulnerable species (e.g. <i>Jatropha horizontalis</i>)	Core PAOI 3 km around core PAOI 15 km around core PAOI 75 km around core PAOI	Construction, Operation and Decommissioning
Terrestrial Fauna (Biodiversity)	Displacement of endangered species (<i>Nanger soemmerringii</i> , <i>Gazella dorcas</i>) due to noise/human activity Pollution risks (e.g., light, noise, fuel spills affecting water sources)		

VEC	Rationale for Selection	Boundaries	
Bats (Biodiversity)	Collision risk during spring/summer (e.g., <i>Mops pumilus</i> , <i>Tadarida aegyptiaca</i>)		
Birds (Biodiversity)	Collision risk for vultures (<i>Gyps africanus</i> , <i>Neophron percnopterus</i>) and sandgrouses Disturbance to breeding sites (e.g. <i>Chelictinia riocourii</i> , a Vulnerable species)		
Contribution to economy and employment opportunities (Socio-economic)	Positive cumulative impact on the national, regional, and local economy, as well as contribution to employment opportunities and an increase in local business	Beyond core PAOI	All phases
Noise (Community Health, Safety and Security)	Cumulative increase in noise levels for surrounding sensitive receptors	Noise receptors within the modelled 35 dB(A) buffer	Operation
Visual (Community Health, Safety and Security)	Incremental increase of negative visual views of wind farms	Critical visual receptors occur within 5 km around core PAOI (MDI, 2025)	Construction and Operation
VECs Scoped Out			
Soil, Water Resources and Hydrology	VEC is unlikely to experience significant cumulative pressure in the region. Soils and water resources are affected at a localised site level and are managed through standard rehabilitation measures.		
Seismicity	VEC is unlikely to experience significant cumulative pressure in the region. Seismicity is affected at a localised site level and can be managed through standard mitigation measures.		
Air Quality	VEC is unlikely to experience significant cumulative pressure in the region. Key impacts are mainly related to site specific dust generation from construction activities for the Project.		
Legally Protected Areas	The PAOI does not overlap with any formally protected area.		
Ramsar Sites	The PAOI does not overlap with any Ramsar sites.		
Cultural Heritage	VEC is unlikely to experience significant cumulative pressure in the region, as there are no direct impacts on cultural heritage resources.		
Socio-economic	VECs are unlikely to experience significant cumulative pressure in the region, as impacts are considered to be site specific.		
Shadow Flicker (Community Health, Safety and Security)	VEC is unlikely to experience significant cumulative pressure in the region, as direct impacts are insignificant.		
Remaining VECs categorised under Community Health, Safety and Security	VECs are unlikely to experience significant cumulative pressure in the region, as impacts are considered to be site specific and largely limited to construction-phase activities. These activities will not overlap temporal or spatial boundaries with those of other existing developments.		

10.1.2 Neighbouring Projects (Past, Present and Future)

According to the updated ESIA report (MDI, 2025), two Kebeles are believed to have experienced impacts (land take in particular) from multiple ongoing and or completed infrastructure development projects. These projects include Ethiopia-Djibouti railway (existing), highway road (existing), Ethiopia-Djibouti water

supply line (existing), electricity transmission lines (existing), underground telecommunication fibre cable (existing), Aysha Industrial Park (planned), and the Aysha II Wind Farm (under construction).

10.1.2.1 Ethiopia-Djibouti Railway

The Addis Ababa–Djibouti Railway modernisation project is the first cross-border electrified railway in Africa. The railway line is a 753 km electrified single-track standard gauge line between Ethiopia's capital Addis Ababa and the Port of Djibouti, with 45 stations in total. The new standard gauge line runs parallel to and replaces an abandoned 1 m gauge railway, which was built more than 100 years ago.

As a landlocked country, the line serves as the main transport corridor for Ethiopia to its gateway of the Port of Djibouti, which handles over 90% of Ethiopia's international trade. The line runs from Addis Ababa / Sebeta through the two large Ethiopian cities of Adama and Dire Dawa and links industrial parks and dry ports.

The railway was constructed by Chinese state-owned companies CREC and CCECC, which are operating the railway for a period of six years following construction completion. The line was opened for freight in October 2015 and was formally inaugurated for passenger services in October 2016. It became officially commercially operational as of January 2018.

10.1.2.2 Ethiopia-Djibouti Highway Road

According to the updated ESIA report (MDI, 2025), a principal asphalt highway runs on the eastern border of the PAOI. This highway is known as the Dire Dawa-Aysha-Dewele-Djibouti express highway. This highway is the main road network which provides access to Aysha town.

10.1.2.3 Ethiopia-Djibouti Water Supply Line

According to the updated ESIA report (MDI, 2025), the pipeline is known as the Ethiopia-Djibouti groundwater supply pipeline and originates from Adigala Area (around 40 km southeast of the PAOI) and is the main source of potable water supply for the Kebeles in the area including Aysha and Lasarat.

10.1.2.4 Electricity Transmission Lines

According to the updated ESIA report (MDI, 2025), two types of electric power transmission lines were recorded in the PAOI, this includes: (i) a low voltage electricity transmission line (32 kV); and (ii) two high voltage electricity transmission lines (230 kV). In addition, one 230 kV substation is also located within the PAOI in the same area of the high voltage transmission lines, while another substation under construction is located outside of the PAOI to the east.

10.1.2.5 Underground Telecommunication Fibre Cable

According to the updated ESIA report (MDI, 2025), an underground telecommunication fibre cable was recorded that runs within the northern parts of the PAOI. In addition, one broadcasting tower was located at the south-eastern part of the PAOI.

10.1.2.6 Aysha Industrial Park

There is limited information available regarding the Aysha Industrial Park. The development is planned by the Ethiopia Industrial Parks Development Corporation, however, financing on this development was rejected in 2022.

10.1.2.7 Aysha II Wind Farm

According to the updated ESIA report (MDI, 2025), the Aysha II Wind Farm is located directly adjacent to the east of the PAOI (Figure 10-1) and is being developed by a Chinese developer known as Dongfang

Electric (DEC). The project includes 48 turbines each of 2.5 MW in capacity and have a hub height of 80 m, a rotor diameter of 103m and tip height of around 132 m. The total generation capacity of the Project is 120 MW. The Project is currently under the construction phase, and operation of the Project is expected before 2028.

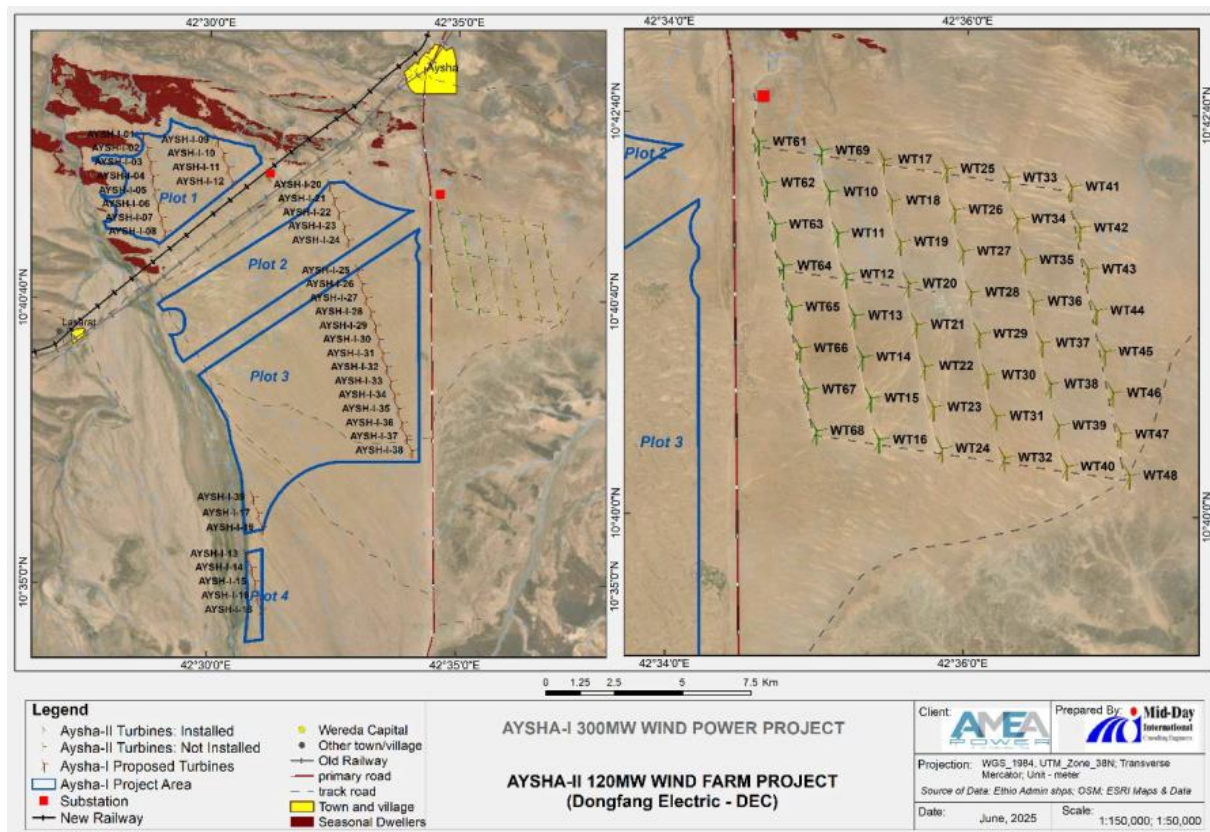


FIGURE 10-1: LOCATION OF AYSHA II WIND FARM IN RELATION TO THE PAOI

10.1.2.8 Aysha III Wind Farm

The Aysha Project is approximately 10km away and is currently at the project feasibility stage. The project aims to generate 150 MW of clean electricity and enhance Ethiopia's renewable energy capacity.

10.1.3 Anthropogenic Activities

As part of the cumulative impact assessment, other anthropogenic (human-caused) activities in the same area that can interact and add to impacts, in addition to the Project, must be considered.

10.1.3.1 Livestock Grazing

Livestock grazing is an important economic activity for households in the PAOI and local communities. Local households rear mainly goats and sheep, but cattle, poultry, donkeys and cattle are also farmed with to smaller extents. The communal grazing land is the single most important source of pasture for livestock.

Pastoralism as a way of life is synonymous with migration; and pastoralists' migration is very often triggered by the need for adequate pasture and water for their livestock. The purpose of livestock rearing by pastoralist communities in the Project Woreda is beyond means of livelihoods. The local pastoralist communities tend to keep a large number of livestock for different purposes that may include source of food for family members, risk averting means in case of drought and diseases that affects number of livestock and sign of a high social prestige among the pastoral communities. The one who has a large

number of livestock is considered as the richest person among the pastoral and agro-pastoral communities in the PAOI.

Livestock grazing in the area can contribute to cumulative impacts on biodiversity by adding incremental pressure to habitats already affected by other land uses or development activities. Grazing can lead to habitat degradation, including the loss of sensitive plant species. These changes can alter vegetation structure and reduce habitat quality for fauna. Continuous or poorly managed grazing may also promote the spread of invasive plant species, further impacting biodiversity.

Additionally, livestock can cause disturbance to wildlife, particularly ground-nesting birds, small mammals, and reptiles, through trampling, displacement, and noise. Where grazing overlaps with other pressures such as construction activities, road and railway developments, other wind farms, etc, the combined effects can reduce ecosystem resilience and recovery potential. As a result, livestock grazing can act as a cumulative stressor, incrementally contributing to long-term declines in species abundance, diversity, and habitat condition.

10.1.3.2 Settlements

The Project is located within Ethiopia's Somali Regional State in Aysha Woreda. The closest towns are Aysha (~ 5 km to the northeast and Lasarat (~ 3 km to the west). The residents of these town are permanent settlers. However, a relatively small number of households are pastoralists / seasonal dwellers that migrate out of their villages in search of pasture and water for their livestock.

A lack of market infrastructure, veterinary service and waste management is the major problem reported by local authorities and communities with infrastructure in the Woreda (MDI, 2025).

Access to potable water source is vital for the well-being of the community. Information obtained from Woreda administration officials and local community members indicate that most of the Kebeles including urban Kebeles in Aysha and Dewele towns, rural Kebele like Lasman and other Kebeles found in the Woreda are crossed by the water pipeline stretched from Adigala Woreda to Djibouti. Therefore, the residents in these Woredas and Kebeles have better access to potable water from this water line. Moreover, rural Kebeles in the Woreda like Dhagago, Maracadays and other Kebeles located along the main asphalt road that connects Dire Dawa and Djibouti have also access to potable water from ground source (MDI, 2025).

Rural settlements contribute to cumulative biodiversity impacts by increasing the level of human presence and land-use pressure within the broader landscape. Expansion of settlements often leads to habitat loss or fragmentation through clearing of vegetation for housing. These activities can reduce habitat connectivity, limiting the movement and dispersal of fauna.

In addition, rural settlements generate ongoing disturbance to fauna through daily human activity, livestock movement, noise, and the presence of domestic animals such as dogs, which may chase or prey on wildlife. Settlements can also contribute to resource extraction pressures, including harvesting of plants, grazing of communal lands, and water abstraction, all of which can reduce ecosystem resilience when combined with other Project-related changes.

No formal waste collection and management systems for household waste disposal is known for these towns. No communal waste system bins and waste collection trucks are known. Sanitary and domestic wastewater is likely discharged without safe treatment. Poorly managed waste and wastewater from rural households may degrade nearby habitats and watercourses. When these effects interact with other development activities such as construction activities, increased traffic, or land clearing, the combined influence can create incremental, long-term pressure on species diversity, habitat quality, and ecological function across the area.

10.1.4 Environmental Stressors

As a result of current and future climate change, potential risks exist to the Project that can result in negative impacts to the Project. Global climate change is largely attributed to human activities, such as burning of fossil fuels, population influx and vehicle emissions. These ongoing and future global activities thus have a cumulative effect on climate and weather globally, contributing to the impact.

10.1.4.1 Temperature

In the near-term (2025), mean annual temperature is projected to increase by 2.1% (1.7% to 2.6%). In the medium-term (2050) mean annual temperature is projected to increase by 5.1% (3.9% to 6.1%). In the long-term (2075), mean annual temperature is projected to increase by 7.3% (5.6% to 8.8%). Rising temperature and extreme heat conditions will result in significant impacts on human and livestock health and biodiversity.

10.1.4.2 Precipitation

The projected change in daily extreme precipitation relative to the historical period (2005) for a range of recurrence intervals (1:2; 1:5; 1:10; 1:25; 1:50; 1:100; 1:200; 1:500; 1:1,000) for the SSP2-4.5 scenario. In all three time periods, daily extreme precipitation is projected to increase for all recurrence intervals (between 2.5% and 24.7%). The projected change in daily extreme precipitation relative to the historical period (2005) for a range of recurrence intervals for the SSP5-8.5 scenario. Mirroring the SSP2-4.5 projections, all three time periods yield an increase for all recurrence intervals (between 2.8% and 40.6%), however, exhibit an intensified increasing trend. Increases in rainfall variability may create weather conditions which support a drought.

10.1.4.3 Climate-Related Natural Hazards

Several natural hazards are identified for the broader PAOI. Wildfire and extreme heat have been assigned a high hazard rating, while river flood, urban flood and water scarcity has been assigned a medium hazard rating. Landslide and cyclone have been assigned a very low hazard rating.

10.1.4.4 Climate Change Risks for the Project

The projected changes in climate in the near-term (2025) and long-term (2050 to 2075) are unlikely to significantly increase the physical risks for the Project provided that the recommended mitigation measures are implemented.

The transition to a lower carbon economy is also unlikely to increase the risk for the Project with respect to the Project Company's reputation.

10.2 Assessment of Cumulative Impacts

The assessment considers projects, anthropogenic activities, external factors and environmental stressors in the catchment that could contribute to the alteration of the baseline conditions of each VEC. For each VEC, a parameter is identified that is used as a metric to estimate the relative contribution of each contributor (project, activity, factor, stressor) to the overall alteration of the VEC. Cumulative impacts are considered significant when there is more than one main contributor to the overall impact. The cumulative impact on each VEC is discussed in the following paragraphs.

10.3 Cumulative Impacts

The Aysha I WPP operates within a highly dynamic regional context, where cumulative impacts from adjacent projects and regional stressors (e.g., climate change, land-use shifts) can amplify biodiversity risks. This section summarizes the cumulative impacts identified in the Rapid Cumulative Impact Assessment (RCIA) (GROUP BE 2025c) and outlines the BMP's adaptive management framework to mitigate, monitor, and validate these impacts in line with AfDB OS6 and IFC PS6 requirements.

The cumulative impact assessment covers the following projects:

- Aysha II Wind Power Plant: Proximity and shared ecological receptors (birds, bats, terrestrial fauna, habitats).

- Addis Ababa–Djibouti Railway: Habitat fragmentation, human disturbance, and indirect effects (e.g., invasive species spread).
- Aysha III Wind Power Plant: New WPP 10KM from the project;
- Overhead Transmission Lines: From Aysha I and Aysha II.

These projects have key cumulative impacts that are summarized in the table below. Mitigation measures have been assessed for each of these impacts.

Valued Environmental Component (VEC)	Key Impacts	Cumulative Effects	Mitigation Measures
Habitats/Flora	Permanent habitat loss from turbine foundations, access tracks, and substations.	Minor to Moderate: Combined footprint with Aysha II WPP and railway may amplify habitat fragmentation and degradation of seasonal water sources.	Micrositing to avoid sensitive areas (e.g., water ponds); Biodiversity Action Plan (BAP) for net gain in degraded habitats.
	Introduction of exotic species and potential loss of endemic and vulnerable species (e.g. <i>Jatropha horizontalis</i>).	Minor: Increased human movement from nearby projects increases likelihood of spreading exotic species	Invasive species management plan (e.g., mesquite removal).
Terrestrial Fauna	Displacement of endangered species (<i>Nanger soemmerringii</i> , <i>Gazella dorcas</i>) due to noise/human activity.	Moderate: Cumulative disturbance from both WPPs and railway could alter regional wildlife movement and reduce habitat connectivity	Implement wildlife safe corridors and enhance habitat connectivity .
	Pollution risks (e.g., light, noise, fuel spills affecting water sources).	Minor: Cumulative disturbance from light and noise	Low-noise equipment and spill containment .
Bats	Collision risk during spring/summer (e.g., <i>Mops pumilus</i> , <i>Tadarida aegyptiaca</i>).	Minor to Moderate: Similar ecosystems in Aysha I/II WPPs may amplify bat activity disruptions.	Turbine curtailment during peak bat activity.
Birds	Collision risk for vultures (<i>Gyps africanus</i> , <i>Neophron percnopterus</i>) and sandgrouses.	Moderate: Cumulative barrier effects for soaring birds (e.g., raptors).	Shut-Down on Demand based on real-time monitoring.
	Disturbance to breeding sites (e.g. <i>Chelictinia riocourii</i> , a Vulnerable species).	Minor: Railway and WPPs may disrupt migratory routes along the area.	Seasonal construction restrictions (March–July).

10.3.1 Habitats / Flora (Biodiversity)

10.3.1.1 Description of the VEC and the Spatial and Temporal Boundaries

Construction activities have the potential to degrade or destroy terrestrial habitat either directly through excavation, compaction, or modification (e.g. vegetation removal) of the soil, or indirectly as a result of dewatering or from the accidental release of fuels, lubricants or other chemicals. The construction of turbine foundations, new access tracks and the substation would cause permanent habitat loss. Habitat loss and modification include all areas replaced and potentially modified by the Project infrastructure, e.g. turbine foundations and permanent hard standing, access tracks and the substation site.

Six habitats were identified within the EAAA. Water ponds and the valley where water flows or concentrates seasonally can be classified as sensitive habitats due to their importance in providing water for local communities and biodiversity in a hot desert climate. These habitats occupy nearly 5% of the PAOI. Moreover, much of the valley area resides outside the Project boundaries and will not be impacted by construction. Some line connections will cross water holes that hold water temporarily, but these should not affect the integrity of the holes.

As for sensitive plant species, only one of the species recorded in the EAAA is listed in the IUCN Red List as VU, *Jatropha horizontalis*. It is a small shrub that was only known from the Negele-Filtu area, south of Ethiopia, which makes this finding more important. This species was found outside the Aysha I Project boundary but within the Aysha II Project boundary.

Two other species with restricted ranges were recorded, *Rhynchosia ramose* and *Mesembryanthemum* spp. *Rhynchosia ramose* is endemic to the Horn of Africa – Ethiopia and Somalia – while the genus *Mesembryanthemum* is not featured in the Ethiopian Flora Book. *Rhynchosia ramose* was found in a single location, near the old railway. Moreover, proximity to the old railway suggests the species may have potentially been impacted by the construction of the new Addis Ababa – Djibouti railway. *Mesembryanthemum* spp. was observed in a single location and only in winter. Like *J. horizontalis*, it was found within the Aysha II Project boundary.

In terms of habitat loss and degradation of functional ecosystems, the spatial boundaries are defined by the area likely to be affected by Project activities, associated infrastructure, or indirect impacts on biodiversity and ecosystem services. It is essential that the PAOI extends beyond the immediate core PAOI to ensure an ecologically meaningful assessment. This approach allows for the identification of sensitive receptors, ecological corridors, and species that may be indirectly impacted by habitat modification, fragmentation, or increased human activity.

In this context, the spatial boundary for the Biodiversity Assessment was defined as follows:

- The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project. This includes a 3 km buffer around the core PAOI.
- The area for wildlife displacement impacts into adjacent territories, that extends beyond the PAOI, which includes a 15 km buffer.
- The area for impacts of introduced and proliferation of species extends beyond the PAOI, encompassing a 75 km buffer, to account for (1) potential major invasive spread and (2) secondary impacts resulting from the displacement of less competitive fauna into adjacent areas.

The temporal boundary includes the Project's construction activities occurring within the next five years, finishing in 2030, and the first two years of the operational phase.

10.3.1.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Extent of habitat loss – proxy for reduction in available habitat for flora and fauna.
- Number of floral sensitive plant species affected – proxy for alteration of species composition.
- Extent and spread of alien invasive plant species – proxy for habitat degradation.
- Indicators of erosion and altered runoff – proxy for habitat degradation.

10.3.1.3 Assessment

No information is available about the habitats present for the Aysha II Wind Farm, although the habitat survey revealed a valley in the rocky outcrops east of the Aroueina-Aysha road.

The west valley and the northern area of the PAOI are covered by invasive mesquites of the species *Neltuma juliflora*. Removal of these invasive species and recovery of species destroyed by construction

activities will be part of the recommended BAP for the Project, further mitigating impacts and even bringing a net-positive effect to the PAOI.

Medium cumulative impacts on habitats and flora are expected with the combined footprint with the other developments as this may amplify habitat fragmentation and degradation of seasonal water sources. Table 10-2 provides a summary of the assessment of the cumulative impacts on habitats/flora.

TABLE 10-2: ASSESSMENT OF CUMULATIVE IMPACTS ON HABITATS / FLORA (BIODIVERSITY)

Contributors to Cumulative Impact	Description of impact on Habitats / Flora	Spatial / Temporal Overlap of Impacts
Habitat Loss and Introduction of Exotic Species		
Proposed Project		
Proposed Project	Clearance of vegetation and introduction of alien invasive species – Loss of habitat and sensitive plant species	X
Significance Pre-mitigation: Medium -		
Significance Post-mitigation: Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Ethiopia-Djibouti Highway	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Ethiopia-Djibouti Water Supply Line	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Electricity Transmission Line	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Underground Fiber Optics Line	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Aysha Industrial Park	Potential clearance of vegetation and introduction of alien invasive species – May contribute to loss of habitat and sensitive plant species	X
Aysha II Wind Farm	Previous and current clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Existing Anthropogenic Activities		
Livestock Grazing	Grazing – Habitat fragmentation, loss of sensitive plant species and introduction of alien invasive species	X
Rural Settlements	Previous clearance of vegetation and introduction of alien invasive species – Contributed to loss of habitat and sensitive plant species	X
Future Environmental Stressors		
Climate Change	Climate change may affect habitat disturbances through wildfires and droughts.	

10.3.1.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on habitats / flora is possible, with a **MEDIUM** significance rating pre-mitigation. However, the impact can be reduced to a **LOW** significance rating through implementation of mitigation measures outlined in the ESMP for this Project.

10.3.2 Terrestrial Fauna (Biodiversity)

10.3.2.1 Description of the VEC and the Spatial and Temporal Boundaries

Faunal species typically inhabit locations for sleeping, breeding and/or hibernating (hereafter referred to as “resting places”) either underground or within vegetation. The construction of the Project has the potential to damage or destroy shelters within vegetation and underground. The loss (destruction) of a shelter would be an adverse one-time, high magnitude permanent direct impact upon the individual or population of a species inhabiting it and cause them to seek territory elsewhere, in possibly less favourable locations where it would be necessary to find or construct a new shelter. Such impacts need to be assessed considering the additional impacts of displacement from the railway construction and the Aysha II Wind Farm, which is currently under construction.

Species will face human disturbance from increased activity, noise, and habitat fragmentation. Construction traffic, machinery, and workforce presence can disrupt wildlife behaviour, particularly for nocturnal and sensitive species (e.g., hyenas, foxes, or rodents). Temporary roads and infrastructure may alter movement patterns, leading to increased predation, avoidance behaviour, or even displacement from the PAOI.

Additionally, pollution risks such as fuel spills, dust, and waste can affect fauna directly (e.g., contamination of water sources) or indirectly (e.g., loss of vegetation cover). Proper spill containment, waste management, and erosion control should be implemented to protect soil and water quality, as outlined in the ESMP for this Project.

The spatial boundary for the Biodiversity Assessment was defined as follows:

- The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project. This includes a 3 km buffer around the core PAOI.
- The area for wildlife displacement impacts into adjacent territories, that extends beyond the PAOI, which includes a 15 km buffer.
- The area for impacts of introduced and proliferation of species extends beyond the PAOI, encompassing a 75 km buffer, to account for (1) potential major invasive spread and (2) secondary impacts resulting from the displacement of less competitive fauna into adjacent areas.

The temporal boundary will be the next five years, including the Project’s construction activities finishing in 2030 and the first two years of the operational phase.

10.3.2.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Extent of habitat loss – proxy for reduction in available habitat for flora and fauna.
- Habitat fragmentation and connectivity – proxy for reduced landscape permeability and increased barriers to fauna movement.
- Disturbance indices (noise, lighting, blasting, traffic) – proxy for breeding disturbance.
- Incidents of poaching or illegal harvesting – proxy for faunal disturbance.

10.3.2.3 Assessment

Impact magnitude and severity depend on the species' size, life cycle and threat assessment. In the case of the Project, two gazelle species were identified as sensitive due to their conservation status as VU and relative abundance at the PAOI. Considering the historical presence of human activities near Aysha, including pastoralist nomads, grazing and plant uses, it is presumed these species have a decent tolerance to human presence and should not be significantly affected by the Project.

While ecologically significant impacts on terrestrial faunal species and their resting places are possible, they can be effectively reduced through the effective implementation of the BAP and other mitigation measures outlined in the ESMP for this Project.

Medium cumulative impacts on terrestrial fauna are expected with the combined footprint with the other developments as this may disturb fauna, alter regional wildlife movement and reduce habitat connectivity. An effort should be made to reduce impacts through effective implementation of the proposed mitigation plan for the Project. Table 10-3 below provides a summary of the assessment of the cumulative impacts on fauna.

TABLE 10-3: ASSESSMENT OF CUMULATIVE IMPACTS ON TERRESTRIAL FAUNA (BIODIVERSITY)

Contributors to Cumulative Impact	Description of impact on Terrestrial Fauna	Spatial / Temporal Overlap of Impacts
Displacement of Endangered Fauna Species and Pollution Risks		
Proposed Project		
Proposed Project	Disturbance of fauna – barriers to fauna movement and increased susceptibility of fauna	X
Significance Pre-mitigation: Medium -		
Significance Post-mitigation: Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Previous disturbance of fauna – Contributed to barriers to fauna movement and increased susceptibility of fauna	X
Ethiopia-Djibouti Highway	Previous disturbance of fauna – Contributed to barriers to fauna movement and increased susceptibility of fauna	X
Ethiopia-Djibouti Water Supply Line	Previous disturbance of soil fauna – Contributed to barriers to soil fauna movement and increased susceptibility of fauna	X
Electricity Transmission Line	Previous disturbance of fauna – Contributed to barriers to fauna movement and increased susceptibility of fauna	X
Underground Fiber Optics Line	Previous disturbance of soil fauna – Contributed to barriers to soil fauna movement and increased susceptibility of fauna	X
Aysha Industrial Park	Potential disturbance of fauna – May cause barriers to fauna movement and increased susceptibility of fauna	X
Aysha II Wind Farm	Previous and current disturbance of soil fauna – Contributed to barriers to soil fauna movement and increased susceptibility of fauna	X
Existing Anthropogenic Activities		
Livestock Grazing	Grazing – Resulting in habitat loss and disturbance to fauna	X

Contributors to Cumulative Impact	Description of impact on Terrestrial Fauna	Spatial / Temporal Overlap of Impacts
Rural Settlements	Previous disturbance of fauna – Contributed to barriers to fauna movement and increased susceptibility of fauna	X
Future Environmental Stressors		
Climate Change	Climate change may affect fauna through wildfires, excessive heat and droughts.	

10.3.2.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on terrestrial fauna is possible, with a **MEDIUM** significance rating pre-mitigation. However, the impact can be reduced to a **LOW** significance rating through implementation of mitigation measures.

10.3.3 Bats (Biodiversity)

10.3.3.1 Description of the VEC and the Spatial and Temporal Boundaries

Bats are the mammals most sensitive to Wind Farm developments. Many international studies have demonstrated the effect of wind turbines and the prevailing environmental conditions on some bat species. Even though they live the longest relative to their size (typically up to 30 years), they are characterized by very special niche requirements and slow reproduction rates. Bats give birth to one, rarely two, pups each year, which makes them among the slowest reproducers with respect to their size.

Wind turbines can induce bat mortality either through 1) collision or 2) barotrauma. Bats have different behaviours and flight styles, and this affects their sensitivity to collision with wind turbines. Bat species that fly and forage in open space like *Mops pumilus* and those that migrate long distances at high altitude like *Nyctalus* spp. are more at risk of collision with the wind turbines. Conversely, gleanings bats that fly close to vegetation face less risk of collision with wind turbines.

Two species dominated most of the records, the little free-tailed bat (*Mops pumilus*) and the Egyptian free-tailed bat (*Tadarida aegyptiaca*). Eleven other species were detected but were less common. All these species are classified as LC in the IUCN Red List. However, the identification of some of them is not totally confirmed due to Ethiopia not having echolocation libraries.

Nearly 2,000 bat sounds were recorded for the Project using static bat detectors that recorded sounds from April until August, when bats are more active in the region. That gives nearly 11 passages each night during spring/summer. Most of these sounds were detected near the ground, where collision risk is lower, and for this reason the project is expected to have a minor adverse impact on bat populations. The same pressures are expected for the Aysha II Wind Farm development considering its close location to the Project.

The spatial boundary for the Biodiversity Assessment was defined as follows:

- The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project. This includes a 3 km buffer around the core PAOI.
- The area for wildlife displacement impacts into adjacent territories, that extends beyond the PAOI, which includes a 15 km buffer.
- The area for impacts of introduced and proliferation of species extends beyond the PAOI, encompassing a 75 km buffer, to account for (1) potential major invasive spread and (2) secondary impacts resulting from the displacement of less competitive fauna into adjacent areas.

The temporal boundary will be the next five years, including the Project's construction activities finishing in 2030 and the first two years of the operational phase.

10.3.3.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Extent of habitat loss – proxy for reduction in available habitat for flora and fauna.
- Habitat fragmentation and connectivity – proxy for reduced landscape permeability and increased barriers to fauna movement.
- Disturbance indices (noise, lighting, blasting, traffic) – proxy for breeding disturbance.
- Incidents of poaching or illegal harvesting – proxy for faunal disturbance.

10.3.3.3 Assessment

Bats can be vulnerable to collision risk or disturbance from wind turbines when foraging and migrating. Autumn and winter surveys detected almost no bats at the PAOI, which means no ecologically significant impacts are expected in these seasons. However, there is potential for moderate ecological impacts during spring and summer, which accumulate with the impacts caused by the Aysha II Wind Farm. Considering both Wind Farm's share a similar ecosystem, the magnitude and severity of impacts are similar. Ecologically significant effects are still possible when confirmation of the bat species detected on recordings is achieved. Some animals might adjust their behaviour post-construction, but habitat fragmentation and destruction, human activity, sound pollution and opening of roads expose these species to more threats. In addition, lack of resources including feeding, roosting and hibernating sites may affect population size.

No bat roosts were observed at the PAOI, making the loss or disturbance of roosts a negligible impact for this Project. Nonetheless, considering the relatively low abundance of bats at the PAOI, it is predicted that collision risk does not represent an irreversible impact on bat populations.

Medium cumulative impacts on bats are expected with the combined footprint with the other developments. An effort should be made to reduce impacts through effective implementation of the proposed mitigation plan for the Project. Table 10-4 provides a summary of the assessment of the cumulative impacts on fauna.

TABLE 10-4: ASSESSMENT OF CUMULATIVE IMPACTS ON BATS (BIODIVERSITY)

Contributors to Cumulative Impact	Description of impact on Bats	Spatial / Temporal Overlap of Impacts
Collision Risk of Bats during Spring / Summer		
Proposed Project		
Proposed Project	Collision risks of bats from turbines	X
Significance Pre-mitigation: Medium -		
Significance Post-mitigation: Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Current potential collisions with bats from vehicles	X
Ethiopia-Djibouti Highway	No collision impacts on bats.	-
Ethiopia-Djibouti Water Supply Line	No collision impacts on bats.	-
Electricity Transmission Line	Current potential collisions with bats from OHTLs.	X
Underground Fiber Optics Line	No collision impacts on bats.	-
Aysha Industrial Park	No collision impacts on bats.	-

Contributors to Cumulative Impact	Description of impact on Bats	Spatial / Temporal Overlap of Impacts
Aysha II Wind Farm	Current potential collisions with bats from turbines	X
Existing Anthropogenic Activities		
Livestock Grazing	No collision impacts on bats.	-
Rural Settlements	No collision impacts on bats.	-
Future Environmental Stressors		
Climate Change	Climate change may affect bats through wildfires, excessive heat and droughts.	

10.3.3.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on bats is possible, with a **MEDIUM** significance rating pre-mitigation. However, the impact can be reduced to a **LOW** significance rating through implementation of mitigation measures.

10.3.4 Birds (Biodiversity)

10.3.4.1 Description of the VEC and the Spatial and Temporal Boundaries

Birds in the PAOI face potential collision risks and habitat disturbances from wind turbine operations, particularly for species sensitive to infrastructure or reliant on the site's semi-arid ecosystems. While the Project lies near the Asian-East African Flyway, baseline surveys indicate no large-scale migratory activity at the site. However, the presence of 140 bird species, including 75 regular residents and 15 non-breeding migrants, highlights the need to address impacts on both abundant species (e.g., *Pterocles exustus*) and conservation priorities (e.g., vultures, *Chelictinia riocourii*).

The spatial boundary for the Biodiversity Assessment was defined as follows:

- The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project. This includes a 3 km buffer around the core PAOI.
- The area for wildlife displacement impacts into adjacent territories, that extends beyond the PAOI, which includes a 15 km buffer.
- The area for impacts of introduced and proliferation of species extends beyond the PAOI, encompassing a 75 km buffer, to account for (1) potential major invasive spread and (2) secondary impacts resulting from the displacement of less competitive fauna into adjacent areas.

The temporal boundary will be the next five years, including the Project's construction activities finishing in 2030 and the first two years of the operational phase.

10.3.4.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Extent of habitat loss – proxy for reduction in available habitat for flora and fauna.
- Habitat fragmentation and connectivity – proxy for reduced landscape permeability and increased barriers to fauna movement.
- Disturbance indices (noise, lighting, blasting, traffic) – proxy for breeding disturbance.
- Incidents of poaching or illegal harvesting – proxy for faunal disturbance.

10.3.4.3 Assessment

Cumulative effects with the other developments could amplify risks, necessitating targeted mitigation for soaring birds, ground-nesters, and migratory species. Though irreversible population-level effects are unlikely given current abundance data, proactive mitigation for the Project (including turbine siting adjustments, operational curtailment, and habitat management) will be critical to ensuring that residual impacts remain non-significant and aligned with Ethiopia's biodiversity conservation goals.

Collision risk models were developed for eight species that were deemed as ecologically sensitive to wind turbines either due to their sheer abundance at the PAOI (e.g. chestnut-bellied sandgrouse *Pterocles exustus*) or due to their conservation status. Results revealed that most species have a very low collision risk (less than one collision each year) with wind turbines in the current Project layout. Considering the low bird abundance typically found in hot desert climates such as that in Aysha, it is predicted that collision risk does not represent an irreversible impact on bird populations.

Medium cumulative impacts on birds are expected with the combined footprint with the other developments. An effort should be made to reduce impacts through effective implementation of the proposed mitigation plan for the Project. Table 10-5 below provides a summary of the assessment of the cumulative impacts on fauna.

TABLE 10-5: ASSESSMENT OF CUMULATIVE IMPACTS ON BIRDS (BIODIVERSITY)

Contributors to Cumulative Impact	Description of impact on Birds	Spatial / Temporal Overlap of Impacts
Collision Risk of Birds and Disturbance to Breeding Sites		
Proposed Project		
Proposed Project	Collision risks of birds from turbines and disturbance to breeding sites.	X
Significance Pre-mitigation: Medium -		
Significance Post-mitigation: Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Current potential collisions with birds from vehicles and disturbance to breeding sites.	X
Ethiopia-Djibouti Highway	Previous disturbance to breeding sites.	X
Ethiopia-Djibouti Water Supply Line	Previous disturbance to breeding sites.	X
Electricity Transmission Line	Current potential collisions with birds from OHTLs and disturbance to breeding sites.	X
Underground Fiber Optics Line	Previous disturbance to breeding sites.	X
Aysha Industrial Park	Previous disturbance to breeding sites.	X
Aysha II Wind Farm	Current potential collisions with birds from turbines and disturbance to breeding sites.	X
Existing Anthropogenic Activities		
Livestock Grazing	Grazing - Disturbance to breeding sites.	X
Rural Settlements	Previous disturbance to breeding sites.	X
Future Environmental Stressors		

Contributors to Cumulative Impact	Description of impact on Birds	Spatial / Temporal Overlap of Impacts
Climate Change	Climate change may affect birds through wildfires, excessive heat and droughts.	

10.3.4.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on birds is possible, with a **MEDIUM** significance rating pre-mitigation. However, the impact can be reduced to a **LOW** significance rating through implementation of mitigation measures.

10.3.5 Contribution to Economy and Employment Opportunities (Socio-economic)

10.3.5.1 Description of the VEC and the Spatial and Temporal Boundaries

Wind farms play a pivotal role in driving economic growth at the regional, national and local levels. In the broadest sense, all activities associated with a wind farm bring employment and business opportunities to local villages. The creation of jobs from a wind farm provides direct employment opportunities which support local livelihoods. Locally, the renewable energy sector supports community development by creating employment opportunities and increasing the purchasing power of residents, which in turn stimulates demand for goods and services, particularly during the construction and operational phases of the wind farm.

The spatial boundaries extend beyond the core PAOI as these impacts influence livelihoods and the broader economy. The assessment covers all phases of the Project.

10.3.5.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Number of jobs created – proxy for employment creation.
- Household income levels – proxy for the wellbeing of affected communities.
- Local procurement and expenditure by the Project Company – proxy for the performance of the local and regional economy.

10.3.5.3 Assessment

The Project is expected to contribute significantly to the national and local economy by increasing Ethiopia's supply of reliable, low-cost renewable energy and reducing reliance on hydropower, which is vulnerable to seasonal variability. Combined with the Aysha II Wind Farm development, these benefits extend beyond the PAOI and contribute to broader economic upliftment within the Aysha area and the Somali Region of Ethiopia. The cumulative addition of renewable energy capacity from Aysha I and II will support increased energy security and reliability in Ethiopia, which contributes to improved conditions for industrial and commercial growth.

These other developments in the area further strengthen the positive cumulative socio-economic impacts. Collectively, they enhance the regional development footprint, improve accessibility, and expand socio-economic opportunities for the local communities. The impact of the combined developments results in wider availability of short-term and long-term job creation, reducing local unemployment.

Table 10-6 provides a summary of the assessment of the cumulative impacts on socio-economic aspects.

TABLE 10-6: ASSESSMENT OF CUMULATIVE IMPACTS ON SOCIO-ECONOMIC ASPECTS

Contributors to Cumulative Impact	Description of Impact on Socio-economic Aspects	Spatial / Temporal Overlap of Impacts
Contribution to Economy and Employment Opportunities		
Proposed Project		
Proposed Project	All construction and operation activities – Increased job creation and positive contribution to the economy	X
Significance Pre-mitigation: High +		
Significance Post-mitigation: High +		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Previously increased job creation and positive contribution to the economy	X
Ethiopia-Djibouti Highway	Previously increased job creation and positive contribution to the economy	X
Ethiopia-Djibouti Water Supply Line	Previously increased job creation and positive contribution to the economy	X
Electricity Transmission Line	Previously increased job creation and positive contribution to the economy	X
Underground Fiber Optics Line	Previously increased job creation and positive contribution to the economy	X
Aysha Industrial Park	Potential increase in job creation and positive contribution to the economy	X
Aysha II Wind Farm	Previously increased job creation and positive contribution to the economy	X
Existing Anthropogenic Activities		
Livestock Grazing	Does not contribute to the cumulative impact.	-
Rural Settlements	Does not contribute to the cumulative impact.	-
Future Environmental Stressors		
Climate Change	No impact on socio-economic aspects.	

10.3.5.4 Significance of the Cumulative Impact

The cumulative impact on these socio-economic aspects is definite and positive, with a **HIGH** significance rating. The Project will enhance these positive impacts to maximise local benefits.

10.3.6 Noise (Community Health, Safety and Security)

10.3.6.1 Description of the VEC and the Spatial and Temporal Boundaries

The PAOI comprises a diverse mix of rural land uses that are highly sensitive to external disturbances. It includes scattered settlements occupied by both seasonal and permanent dwellers, as well as Lasarat Village, where irrigated plots support small-scale subsistence farming. Extensive communal grazing lands also provide critical resources for pastoral communities that rely on livestock rearing. The area is traversed by major transport infrastructure, including the Ethiopia–Djibouti Toll Road on the eastern boundary, a key trade corridor carrying an estimated 250–300 heavy vehicles per day.

The main sources of noise noted in the updated ESIA report (MDI, 2025) were traffic, places of worship, and existing turbines.

Sensitive receptors within a 15 km radius of the PAOI were selected for discrete modelling. The temporal boundaries apply to the operational phase.

10.3.6.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Noise levels – proxy for noise impacts.
- Complaints register – proxy for excessive noise levels.

10.3.6.3 Assessment

The noise source inventory developed for the Noise Impact Assessment includes the existing Aysha II wind farm and the Dire Dawa-Ayesha-Dewele-Djibouti express highway road as part of the cumulative assessment. The existing wind farm was included in the cumulative assessment, with corresponding sound levels and locations added to the model, while the main road was incorporated to account for traffic-related noise contributions. The railway was excluded as it is an intermittent noise source. In contrast, the main road was included due to high-frequency traffic, which can significantly influence cumulative noise levels at sensitive receptors.

Noise contour maps for the cumulative assessment scenario are shown in Figure 10-2. Key findings are summarised as follows:

- The highest cumulative LAeq is 60.1 dB(A) and occurs around the existing wind farm (i.e. non-residential receptor), reflecting the combined presence of operational turbines.
- Sites where the model simulation is zero for proposed and cumulative scenarios (e.g., Ged Goble Village, Lasarat Shet', Duc, Somadu, Saman, Mordale, Elan) indicate that no measurable contribution from the project or cumulative sources is predicted at these receptors.
- Under the cumulative scenario, the highest predicted LA90 levels increase to 59.11 dB(A) at the existing wind farm and 46.58 dB(A) at Degego Kebele.
- The PAOI for noise has been defined based on the predicted 35 dB(A) contour, which represents the lowest relevant IFC WEF threshold for residential receptors. This PAOI has been determined based on the cumulative (project-related and baseline noise) model, as the Project will not operate in isolation (Figure 10-3).

Sufficient design information for Aysha III (layout, turbine specifications, timelines) was not available to enable quantitative cumulative noise impact assessment. A qualitative cumulative noise screening has been undertaken. The qualitative assessment considered the separation distance between the projects, the expected spatial attenuation of wind turbine noise, and the presence of intervening background noise sources. At a distance of approximately 10 km, operational noise emissions from Aysha III are expected to have attenuated to levels well below audibility and well below applicable IFC residential noise guideline values at receptors assessed for Aysha I.

Based on this screening-level review, it is concluded that cumulative operational noise effects from Aysha I and Aysha III are unlikely to result in any material increase in noise levels at permanent residences or areas of seasonal use associated with Aysha I. Consequently, cumulative noise impacts are assessed as **negligible to low significance**, and no additional mitigation beyond standard good practice operational controls is required at this stage

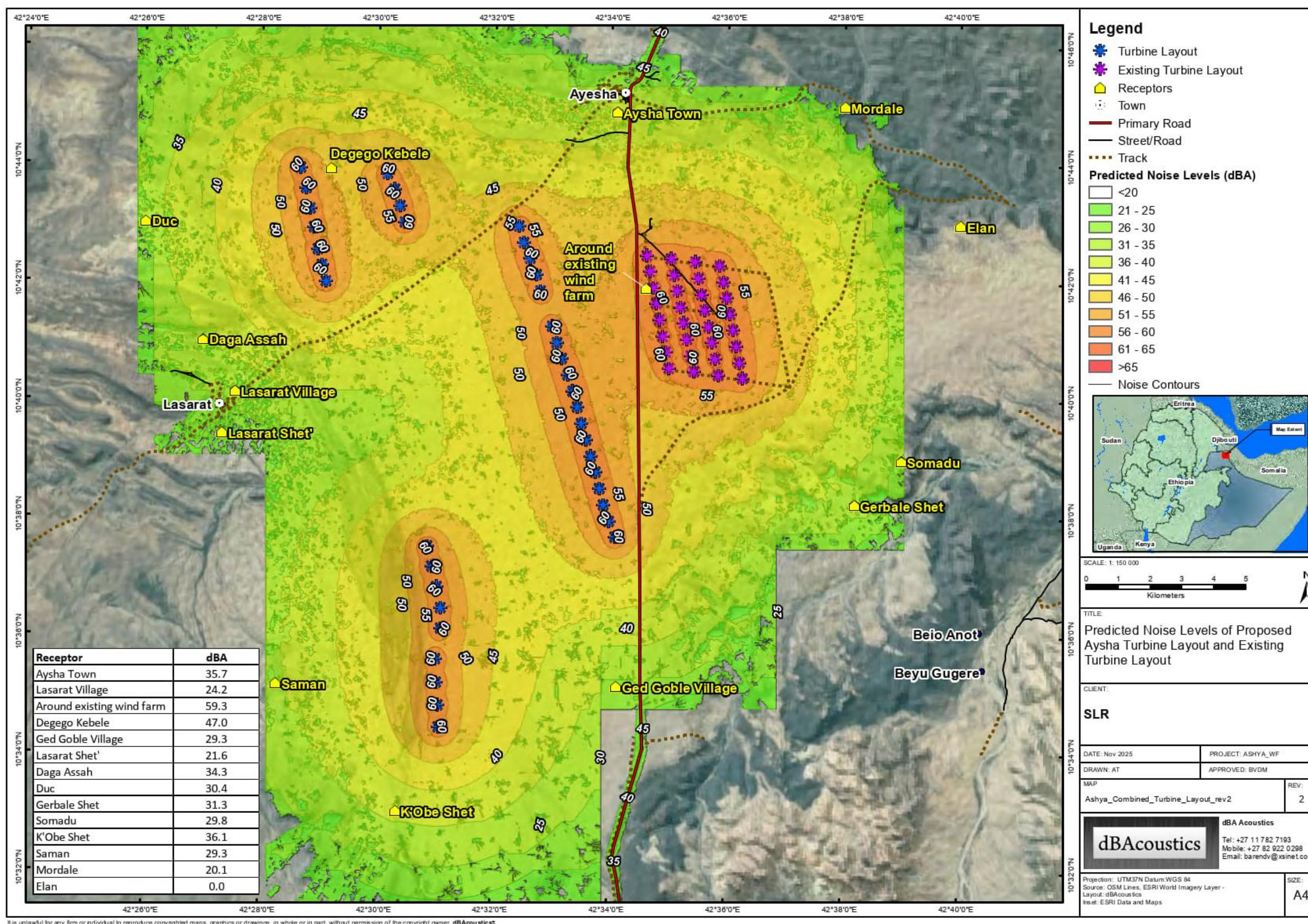


FIGURE 10-2: PREDICTED NOISE LEVELS (dBA) – CUMULATIVE

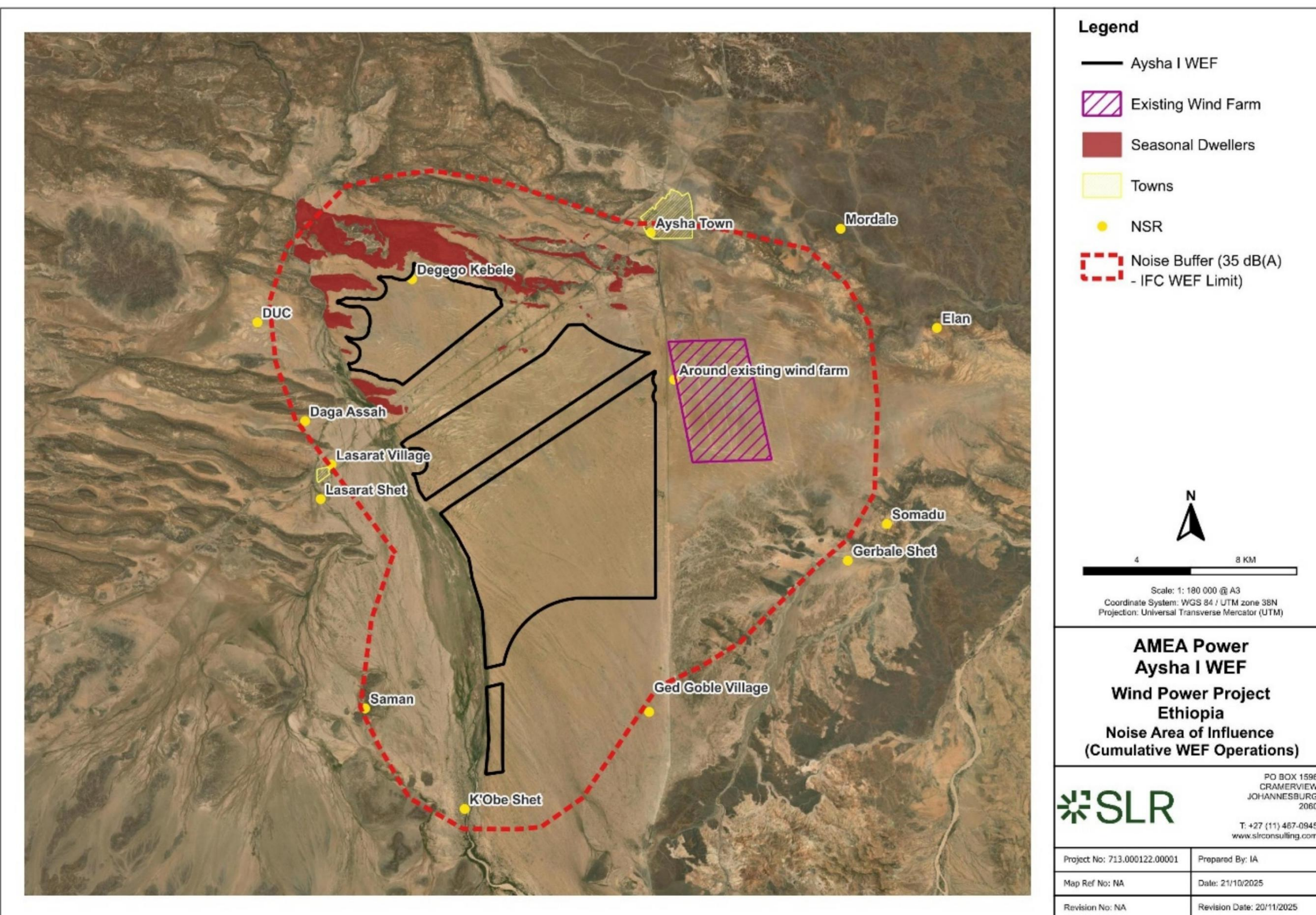


FIGURE 10-3: NOISE PAOI (35 dB(A)) BUFFER BASED ON CUMULATIVE NOISE ENVIRONMENT

When considered in combination with other existing developments in the region, the potential for cumulative noise impacts is medium. Table 10-7 below provides a summary of the assessment of the cumulative impacts on noise levels.

TABLE 10-7: ASSESSMENT OF CUMULATIVE IMPACTS ON NOISE LEVELS

Contributors to Cumulative Impact	Description of impact on Noise	Spatial / Temporal Overlap of Impacts
Increased Ambient Noise Levels for Proximate Sensitive Receptors		
Proposed Project		
Proposed Project	Wind farm operation activities – Contributing to elevated noise levels	X
Significance Pre-mitigation: Medium -		
Significance Post-mitigation: Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Current railway operations – Contributing to elevated noise levels	X
Ethiopia-Djibouti Highway	Current road traffic – Contributing to elevated noise levels	X
Ethiopia-Djibouti Water Supply Line	No impact on noise levels.	-
Electricity Transmission Line	No impact on noise levels.	-
Underground Fiber Optics Line	No impact on noise levels.	-
Aysha Industrial Park	Potential industry operations – May contribute to elevated noise levels	X
Aysha II Wind Farm	Future wind farm operation activities – May contribute to elevated noise levels	X
Aysha III Wind Farm	Future wind farm operation activities – No	X
Existing Anthropogenic Activities		
Livestock Grazing	Livestock – Contributing to minimal elevated noise levels	X
Rural Settlements	People within households, schools, shops, roads, etc – Contributing to elevated noise levels	X
Future Environmental Stressors		
Climate Change	No impact on noise levels.	

10.3.6.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on noise is possible due the rural nature of the area, with a **MEDIUM** significance rating pre-mitigation. However, the impact can be reduced to a **LOW** significance rating through implementation of mitigation measures.

10.3.7 Visual (Community Health, Safety and Security)

10.3.7.1 Description of the VEC and the Spatial and Temporal Boundaries

Cumulative impacts on visual aesthetics are relevant for both Aysha I and Aysha II wind farms (MDI, 2025). This is typically related to interaction of the turbines (e.g. colour, height, and number) with the character of the surrounding landscape and the visual receptors.

The updated ESIA report (MDI, 2025) assessed visual sensitive receptors within a 10 km radius of the PAOI. The temporal boundaries for this cumulative impact assessment apply to the operational phase.

10.3.7.2 Assessment Metrics

Since cumulative impacts cannot easily be measured directly with the level of information of other projects available, proxy metrics have been selected to indicate the likely scale of the impact. Assessment metrics selected as proxies for the assessment of impacts comprise the following:

- Complaints register – proxy for negative views complaints.

10.3.7.3 Assessment

According to the updated ESIA report (MDI, 2025), there are no key sensitive visual receptors, and aesthetic issues are by their nature highly subjective. In addition, based on consultations with local communities, no key issues of concern were raised related to visual impacts.

Therefore, visual cumulative impacts for the Project combined with other developments in the area have been considered but are assessed to have a low impact. Table 10-8 provides a summary of the assessment of the cumulative impacts on visual aesthetics.

TABLE 10-8: ASSESSMENT OF CUMULATIVE IMPACTS ON VISUAL AESTHETICS

Contributors to Cumulative Impact	Description of impact on Visual Aesthetics	Spatial / Temporal Overlap of Impacts
Negative Views affecting Sense of Place for Sensitive Receptors		
Proposed Project		
Proposed Project	Wind farm operation activities – Contributing to visual impacts affecting sense of place	X
Significance Pre-mitigation: Low -		
Significance Post-mitigation: Very Low -		
Neighbouring Projects		
Ethiopia-Djibouti Railway	Current railway operations – Contributing to visual impacts affecting sense of place	X
Ethiopia-Djibouti Highway	Current road traffic – Contributing to visual impacts affecting sense of place	X
Ethiopia-Djibouti Water Supply Line	No impact on visual aesthetics (assumed to be underground)	-
Electricity Transmission Line	Current OHTLs – Contributing to visual impacts affecting sense of place	X
Underground Fiber Optics Line	No impact on visual aesthetics (assumed to be underground)	-
Aysha Industrial Park	Potential industry operations – May contribute to visual impacts affecting sense of place	X

Contributors to Cumulative Impact	Description of impact on Visual Aesthetics	Spatial / Temporal Overlap of Impacts
Aysha II Wind Farm	Future wind farm operation activities – May contribute to visual impacts affecting sense of place	X
Existing Anthropogenic Activities		
Livestock Grazing	No impact on visual aesthetics due to the rural nature of the site	-
Rural Settlements	Villages – Contributing to visual impacts affecting sense of place	X
Future Environmental Stressors		
Climate Change	No impact on visual aesthetics	

10.3.7.4 Significance of the Cumulative Impact

It is assessed that the cumulative impact on visual aesthetics is possible due the rural nature of the area, with a **LOW** significance rating pre-mitigation. However, the impact can be reduced to a **VERY LOW** significance rating through implementation of mitigation measures.

11 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN UPDATE

This section aims at supplementing the updated ESIA report (MDI, 2025) environmental and social management plan for the Project in line with IFC PS and AfDB E&S OS.

To ensure compliance with the IFC PS and the AfDB E&S OS, an ESMP is required as a component of the SLIP to support the ESIA (MDI, 2025). Additional impacts were identified from the additional specialist studies that were undertaken for the Project. The existing ESMP (MDI, 2025) is, therefore, required to be updated to reflect all additional mitigation and monitoring measures. Accordingly, this ESMP should therefore be regarded as the final version, superseding that in the updated ESIA report (MDI, 2025).

The purpose of an ESMP provides a practical plan for managing and monitoring the E&S impacts associated with the Project's activities during the different phases of the Project, as well as to facilitate meaningful and inclusive multi-stakeholder consultations and engagement throughout the Project's lifecycle. The ESMP includes specific actions, responsibilities, timelines, and monitoring requirements tied directly to the Project's risks and impacts. The ESMP further aims to assist the Project Company and the contractors in maintaining and/or improving their ESMS during the Project's preparation and implementation.

12 CONCLUSION

This section provides a conclusion summary of the outcome of the SLIP.

The Project has received an Environmental Clearance from MoWE on 07 November 2025 under the national / local requirements. This SLIP has been developed to complement the updated ESI report (MDI, 2025) to ensure the Project aligns with international lender standards and requirements (IFC and AfDB).

All significant environmental and social impacts have been identified and assessed for the Project. It is concluded that these impacts (direct and cumulative) are acceptable and manageable, with the proposed mitigation measures recommended for the Project. All negative residual impacts are Low to Very Low, with the exception of the following biological environmental impacts:

- Habitat Fragmentation and Barrier Effect (Medium residual impact): To compensate for the residual impact caused by habitat fragmentation and barrier effect, a BAP will be prepared which will outline specific avoidance, minimization and restoration measures. The BAP aims to ensure that the residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss.
- Introduction of Alien Species affecting Ecosystem Functioning (Medium residual impact): To compensate for the residual impact caused by the introduction of exotic or native species that managed to bypass prevention and monitoring protocols, a BAP will be prepared that will include a dedicated Alien Plant Management Plan. This will include the removal of mesquites *Neltuma juliflora*, which have caused large damage to the ecosystem and are abundant in the southwestern area. This measure will create a biodiversity net gain and contribute to restore the natural ecosystem functioning at the PAOI.
- Disturbance to Bats due to Turbine Collisions (Medium residual impact): To compensate for the residual impacts on bat populations from collision risk, a BAP will be prepared with a Restoration Action Plan with actions to restore native vegetation outside the turbine boundaries. Such plan should increase prey availability for bats, thereby bringing a net gain in biodiversity, while reducing attractiveness to foraging around turbines, thus reducing collision risk.

The ESMP developed for the Project provides the measures for managing and monitoring the environmental and social impacts associated with the Project's activities. The proposed mitigation measures are practical, implementable, and consistent with GIIP. With regards to residual impacts, the mitigation measures from the biodiversity impact assessment need to follow the mitigation hierarchy and ensure no net loss requirements caused by Project impacts.

The ESMP will form a component of the Project Company's ESMS Manual, which is a broader organisational framework that defines the Project Company's overall approach, procedures, commitments and responsibilities for managing environmental and social risks (not just the identified impacts) for the Project. The Project Company has committed to establishing and maintaining an ESMS Manual for the Project.

Stakeholder engagement has been thoroughly conducted in an appropriate manner for the Project and will continue throughout the project lifecycle. Grievance mechanisms have been developed for the Project.

Based on the assessment, the Project is considered environmentally and socially feasible and compliant with international lender standards and requirements (IFC and AfDB), subject to implementation of the ESMP and associated management plans.

13 REFERENCES

Provides a list of references to support the information provided in the SLIP.

- African Development Bank Group. (2023). *Updated Integrated Safeguards System*.
- Asfaw E and Tessema Z. (2022). *Impacts of climatic factors on vegetation species diversity, herbaceous biomass in borana, southern Ethiopia*. *Journal of Environment and Earth Science*. 12(5):1.
- Band, B. (2012). *Using a collision risk model to assess bird collision risks for offshore wind farms*. *The Crown Estate* p 62.
- Band, W., Madders, M., & Whitfield, D. P. (2007). *Developing field and analytical methods to assess avian collision risk at wind farms*.
- Bošnjaković, M., Katinić, M., Santra, R. and Marić, D. . (2022). *Wind Turbine Technology Trends, Appl. Sci.* 2022, 12(17), 8653.
- Equator Principles. (2020). *The Equator Principles (EP4): A financial industry benchmark for determining, assessing and managing environmental and social risk in projects*.
- Ethiopian Heritage Authority. (2023). *Xeer Ciise: Oral customary laws of Somali-Issa communities in Ethiopia, Djibouti and Somalia* .
- Federal Democratic Republic of Ethiopia. (2016). *Growth and Transformation Plan II (GTP II) (2015/16–2019/20): Volume I: Main Text*. National Planning Commission, Addis Ababa.
- IFC. (2012). *IFC's Performance Standards on Environmental and Social Sustainability*.
- IFC. (2013). *Cumulative Impact Assessment and management: Guidance for the Private Sector in Emerging Markets* .
- Lewis, I. M. (1994). *Peoples of the Horn of Africa: Somali, Afar, and Saho* (1st Red Sea Press, Inc. ed. 4th ed. London Press).
- MDI. (2025). *AMEA Power Aysha 1 – 300MW Wind Farm Project: Environmental and Social Impact Assessment* .
- Scottish Natural Heritage. (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms (Guidance Note)*.
- SLR. (2025). *Gap Analysis Report. Aysha 1 300MW Wind Power Project*.
- Tefera, S., Enawgaw, C., Tekle, D., Eid, A., Olibui, O., LaTosky, S., Detona, M., Nigatu, A., & Flintan, F. E. (2016). *Pastoralists do plan! Community-led land use planning in the pastoral areas of Ethiopia*.
- Word Bank Group. (2007). *Environmental, Health, and Safety (EHS) Guidelines*.
- World Bank Group . (2015). *Environmental, Health, and Safety Guidelines for Wind Energy* .

