DJIBOUTI PORTS & FREE ZONES AUTHORITY
LEADING PORTS IN THE REGION

AFC
AFRICA FINANCE CORPORATION

FMO
Entrepreneurial Development Bank

CLIMATE FUND MANAGERS

Ghoubet 60MW Onshore Windfarm

Environmental and Social Impact Assessment

Volume III : ESIA Annexes

Ghoubet 60MW Onshore Windfarm
ESIA Report

Client: DJIBOUTI CONSORTIUM

- Africa Finance Corporation
- Great Horn Investment Holding SAS (GHIH)
- Nederlandse Financierings-Maatschappij coor Ontwikkelingslanden N.V (FMO)
- Climate Investor One (CIO)

Ghoubet 60MW Onshore Windfarm Number: 0438399-R01

Status and Revision: Rev B

Date: July 2018

Prepared by: Ben Pizii

For and on behalf of
Environmental Resources Management

Approved by: Nicola Lee

Signed: 

Position: Partner

Date: July 2018

This page is a record of all revisions in this document. All previous issues are hereby superseded.

Client	Djibouti Consortium	**Number**	0438399-R01
Date	July-18	**Status and Revision**	Rev B

Summary

Revision	Date	Description	Prepared	Reviewed	Approved
A	09-04-2018	Draft	JP	BP	NL
B	13-07-2018	Final	JP	BP	NL

Environmental Resources Management Limited
Incorporated in the United Kingdom with registration number 1014622
Registered Office: 2nd Floor, Exchequer Crt, 33 St Mary Axe, London, EC3A 8AA

Annex A

Scoping Report

DJIBOUTI PORTS & FREE ZONES AUTHORITY
LEADING PORTS IN THE REGION

AFC
AFRICA FINANCE CORPORATION

FMO
Entrepreneurial Development Bank

CLIMATE FUND MANAGERS

Ghoubet 60MW Onshore Windfarm

ESIA Scoping Report

Final Draft

ERM

Ghoubet 60MW Onshore Windfarm
ESIA Scoping Report

Client: DJIBOUTI CONSORTIUM

- Africa Finance Corporation
- Great Horn Investment Holding SAS (GHIH)Nederlandse Financierings-Maatschappij coor Ontwikkelingslanden N.V (FMO)
- Climate Investor One (CIO)

Ghoubet 60MW Onshore WindfarmNumber: 0438399-R01

Status and Revision: Rev A

Date: February 2018

Prepared by:

For and on behalf of
Environmental Resources Management

Approved by: Nicola Lee

Signed: 

Position: Partner

Date: February 2018

This page is a record of all revisions in this document. All previous issues are hereby superseded.

Client	Djibouti Consortium	Error! Unknown document property name. **Number**	0438399-R01
Date	Feb-18	**Status and Revision**	Rev A

Summary

Revision	Date	Description	Prepared	Reviewed	Approved
A	08-02-2018	Final draft	JP	BP	NL

Environmental Resources Management Limited
Incorporated in the United Kingdom with registration number 1014622
Registered Office: 2nd Floor, Exchequer Crt, 33 St Mary Axe, London, EC3A 8AA

CONTENTS

LIST OF TABLES

LIST OF FIGURES

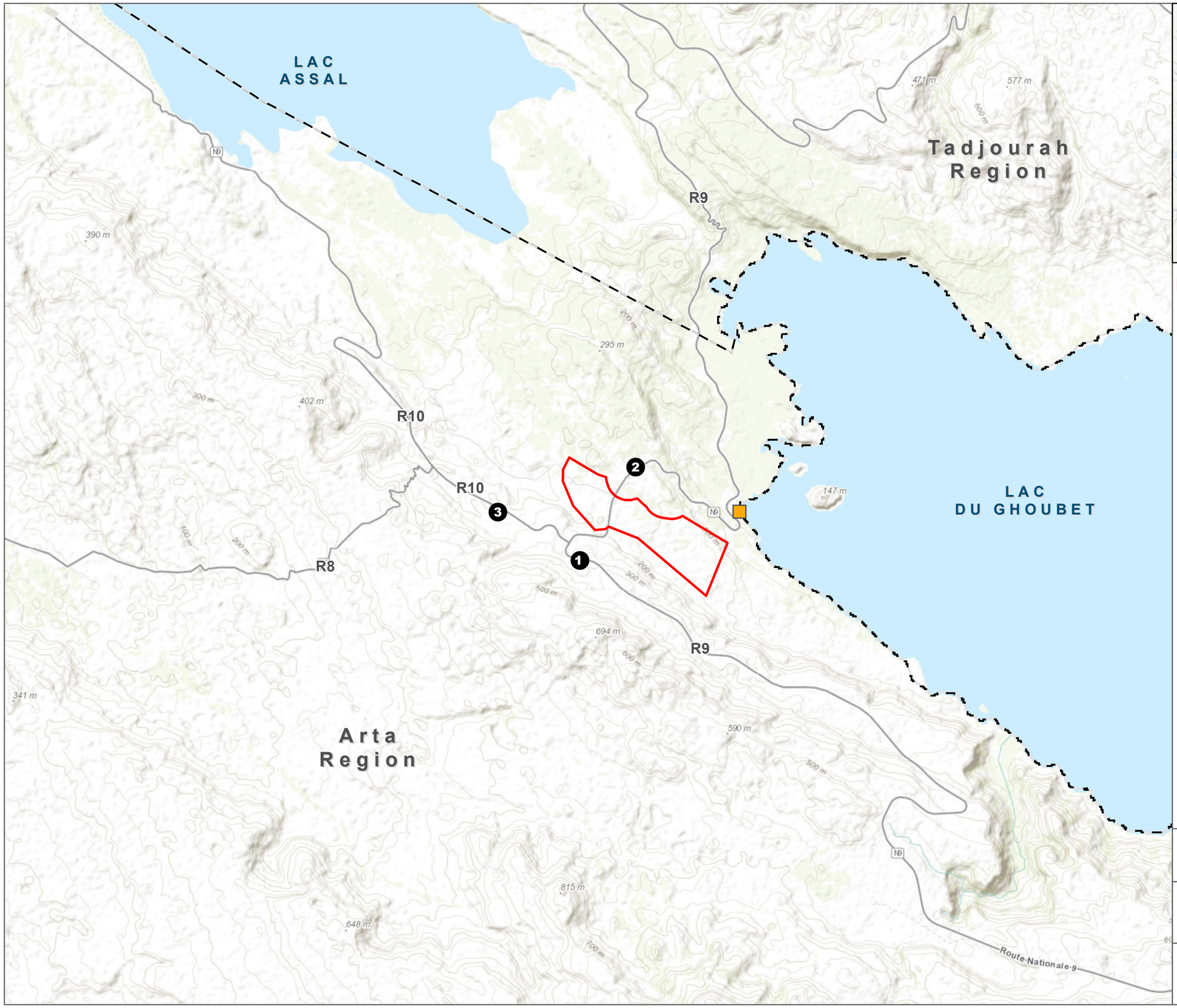
1 INTRODUCTION

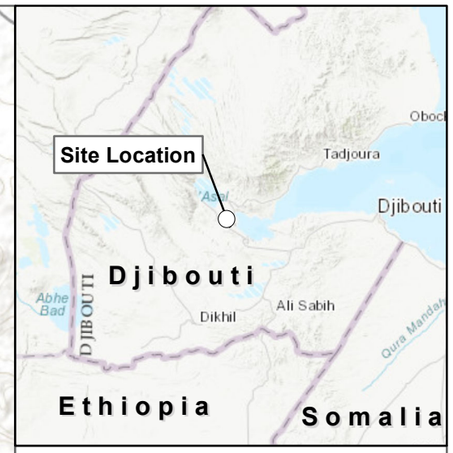
1.1 BACKGROUND AND SCOPE

This document is the Scoping Report for the Environmental and Social Impact Assessment (ESIA) of a 60 MW (megawatt) windfarm, dedicated transmission line (up to 5 km in length) and associated facilities located in Ghoubet, between Lake Assal and Lake Ghoubet in Djibouti, hereafter referred to as the Project. The report has been prepared for Africa Finance Corporation (AFC), Great Horn Investment Holding SAS (GHIH), Nederlandse Financierings-Maatschappij coor Ontwikkelingslanden N.V (FMO) and Climate Investor One (CIO) as part of a development consortium (the Consortium) by Environmental Resources Management (ERM), INSUCO and Combined Ecology. The location of the Project is shown in Figure 1.1.

The ESIA will be required to meet local permitting requirements to gain permission for construction and operation. In addition, the Project is seeking finance therefore the ESIA will also be completed to meet the International Finance Corporation (IFC) Performance Standards (PS), Equator Principles and World Bank Group's Environmental and Social guidelines.

A 38 km 230 kV double-circuit transmission line and substation will also be constructed by Electricté de Djibouti (EDD) for the evacuation of electricity from the windfarm and other nearby power projects. It should be noted that this 230kV transmission line is an independent project and is not considered in the scope of this ESIA.





Site Boundary

Regional Boundary

1 Lac Assal Village (Primary)

2 Lac Assal Village (Secondary)

3 Village (name to be confirmed)

Mineral Port

0 1 2 3 4

Kilometers

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: GB
PROJECT: 0438399	CHECKED: JP
DATE: 02/02/2018	APPROVED: BP

FIGURE 1.1 Project Location

PROJECTION: WGS 1984 Web Mercator Auxiliary Sphere

SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

Path: \\uklonsv01\DATA\London\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\0438399_ProjectLocation_A02.mxd

1.2 PLANNING AND DEVELOPMENT PHASE

The Project is currently in the planning and development phase, which includes the following activities:

- Identification of land requirement;
- Community consultation;
- Permitting including ESIA;
- Technical feasibility study;
- Environmental studies in support of the ESIA such as biodiversity surveys;
- Negotiations with the eventual off-taker; and
- Procurement of turbines and construction and logistics contractors.

1.3 PROJECT OVERVIEW

The 395 hectare Project site is located approximately one kilometre west of Lake Ghoubet, where the N9 and N10 roads intersect, in the Arta Region of Djibouti.

The Project will provide a total 60 MW of generating capacity, through a maximum of 15 wind turbines, each with a capacity of up to 4.8 MW. Generated electricity will be fed via either above ground collector lines or buried cables to a substation within the Project site. An overhead transmission line, up to 5 km in length, will connect the windfarm substation to the planned Ghoubet substation (not part of this Project) and the national grid system.

The nearest settlements are Lac Assal (primary) community, 600m south of the Project site, Lac Assal (secondary community), 500m north of the Project site, and Lac Assal (tertiary) community 1.5 km west of the Project site.

Photographs showing the general characteristics of the Project site are provided in Figure 1.2. Figure 4.1 presents an overview of all Project components.

Figure 1.2 General Characteristics of the Site

Source: ERM (2018)

1.4 PURPOSE OF THE REPORT

The purpose of this Scoping Report is to focus the ESIA process on anticipated impacts of the Project that are likely to be significant. This report presents an early understanding of the Project and its social and environmental setting, which has been informed by scoping visits undertaken in December 2017 by ERM and secondary sources of existing data. It summarises the potential environmental and social impacts that may arise from the Project, as identified during the scoping stage, and those which need to be examined in more detail in the ESIA.

In summary, the scoping process documented here aims to:

- establish the institutional and regulatory context for the ESIA including the international standards and guidelines that the ESIA will adhere to;
- provide a description of the Project, including alternate design considerations;
- define the area of influence of the Project[1];
- describe the existing environmental and socioeconomic conditions;
- identify the potential environmental and socio-economic impacts associated with the Project;
- identify key data gaps that need to be filled for the ESIA;
- elicit any issues, comments or concerns from key stakeholders; and
- define a proposed Terms of Reference (ToR) for the ESIA study and an appropriate stakeholder engagement programme.

The ESIA will be reported in an Environmental Impact Statement (EIS) for submission to the Consortium and the Ministry of Energy and Natural Resources[2].

[1] This includes the primary Project site and related facilities, associated facilities, and areas potentially affected by cumulative impacts.
[2] Although the Ministry of Housing, Town Planning and Environmental Planning (MHUE) is mandated to drive environmental impact assessment processes in Djibouti, because the Project is a Foreign Direct Investment, the Project is managed by Ministry of Energy and Natural Resources under its Projects Management Directorate.

1.5 THE ESIA TEAM

The core ESIA team members involved in this ESIA are listed in Table 1.1.

Table 1.1 The ESIA Team

Name	Role	Qualifications, Experience
Ms Nicola Lee	Project Director (ERM)	BSc, MSc, 18 years
Mr Ben Pizii	Project Manager (ERM)	BSc, MSc, 13 years
Mr Peter Wright	Environmental lead (ERM)	BSc, MSc, 13 years
Ms Tracey Draper	Socio-economic lead (ERM)	BSc, MSc, 17 years
Mr Houssein Rayaleh	Environmental lead (Djibouti Nature)	20 years
Dr Pascal Rey	Socio-economic lead (INSUCO)	PhD, 15 years

Project Proponent: Djibouti Consortium:

- Africa Finance Corporation (AFC)
- Nederlandse Financierings-Maatschappij coor Climate Ontwikkelingslanden N.V (FMO)
- Great Horn Investment Holding SAS (GHIH)
- Investor One (CIO)

Contact: Osaruyi Orobosa

Address: Africa Finance Corporation
AVP, Project Development & Investment
3a Osborne Road Ikoyi
Lagos

Email: osaruyi.orobosa@africafc.org

Contact details for the ESIA manager are provided below.

Consultancy: Environmental Resources Management

Contact: Ben Pizii – Principal Consultant

Address: ERM Environmental Resources Management
2nd Floor, Exchequer Court
33 St Mary Axe
London EC3 8AA

Email: ben.pizii@erm.com

1.6 SCOPING REPORT STRUCTURE

The remainder of this Scoping Report is structured as follows:

Section 2	Legislation and Standards
Section 3	ESIA Process and Methodology
Section 4	The Project
Section 5	Baseline Conditions
Section 6	Identification of Environmental and Social Impacts
Section 7	Stakeholder Engagement
Section 8	Next Steps to Complete ESIA Process
Appendix *A*1	Applicability of International Guidelines and Standards
Appendix A2	Issues Scoped Out of ESIA

2 LEGISLATION AND STANDARDS

2.1 INSTITUTIONAL FRAMEWORK

Djibouti is a semi-presidential republic, with executive power resting in the central government, and legislative power in both the government and the Djiboutian National Assembly. The President is the foremost figure in Djiboutian politics; the head of state and commander-in-chief. The President shares executive power with their appointee, the Prime Minister. The Council of Ministers (cabinet) is responsible to the legislature and presided over by the President. The National Assembly (formerly the Chamber of Deputies) is the country's legislature, consisting of 65 members elected every five years.

2.2 RELEVANT MINISTRIES IN DJIBOUTI

The organisation and administrative structure applicable to this ESIA study and the proposed Project is discussed in this *Section*. It is based on the Decree n°2016-148/PRE dated 23 June 2016.

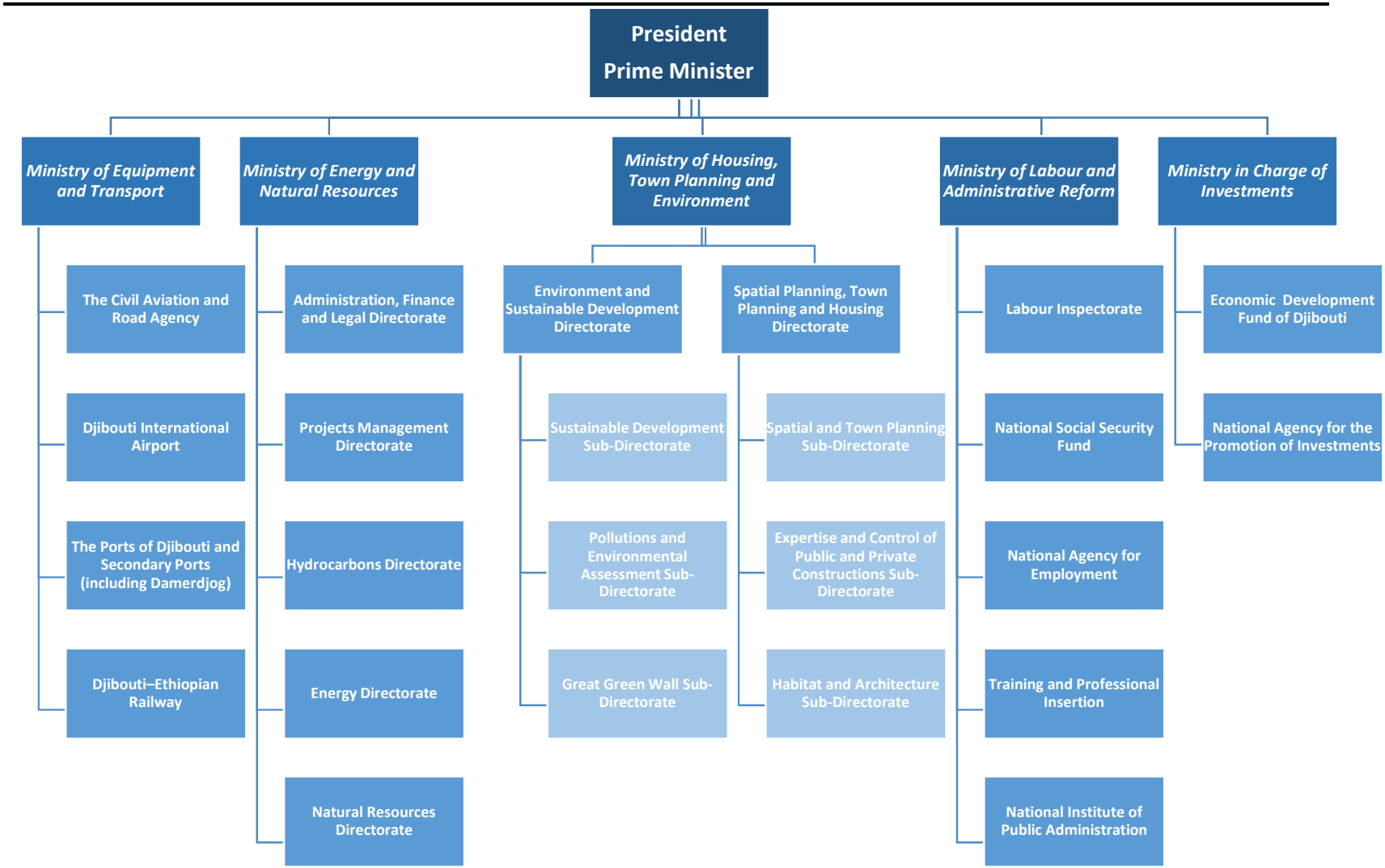
Table 2.1 Relevant Government Ministries in Djibouti

Ministry / Directorate	Relevance
Ministry in charge of Investments under the Presidence;	The Ministry oversees the administrative aspects of public and private investments, links the government strategies with the Ministries and coordinates the Ministries to facilitate investments in the country. The Ministry also engages with private investors to enable government programmes and public-private partnerships.
Ministry of Labour and Administrative Reform;	The Ministry is responsible for implementing government policy in the areas of labour, employment, employability, social relations, management of agents of the State and social protection. The Ministry drafts and implements the rules on working conditions, collective agreements and rights of employees. It also drafts and implements the administrative reform.
Ministry of Housing, Town Planning and Environment Planning	The Ministry is responsible for drafting and implementing policies related to the habitat, urban development, environment and spatial planning in order to promote a balanced and harmonious development of the territories. In addition, MHUE is tasked with drafting and implementing the urban and regional development policy. It is responsible for urban and regional planning between districts and between regions, including in terms of urban development, infrastructure and urban equipment, with the view to fight insecurity and social inequality. The Ministry also develops legislative and regulatory instruments, monitors environmental standards in the areas of infrastructure, housing, equipment, transport and energy in partnership with the other relevant ministries. It is in charge of enforcing and overseeing environmental impact studies.
Spatial Planning, Town Planning and Housing Directorate	The Directorate is tasked with drafting, implementing and controlling, over the territory, the ministerial policies in relation to territory development and spatial planning, town planning, habitat as well as public and private constructions.
Environment and Sustainable Development Directorate	The Directorate is tasked with drafting, implementing and controlling the ministerial policies in relation to the environment and sustainable development over the territory.

Ministry / Directorate	Relevance
Ministry of Energy and Natural Resources;	The Ministry is responsible for the implementation of the sectoral policies relating to energy and natural resources, including renewable energy, and to the promotion and development of oil and mining resources, both onshore and offshore. The Ministry is also tasked with implementing policies relating to access to and supply of electricity across the territory.
Ministry of Equipment and Transport.	The Ministry is responsible for the implementation and coordination of road, rail, sea and air transport policies as well as of the national meteorological services. It is also responsible for the management, operation, maintenance and renovation of public facilities. In addition, the Ministry is responsible for designing and implementing the government's policy on road, ports and airport infrastructure.
Ministry in charge of Investments under the Presidence;	The Ministry is responsible for Investments under the Presidence and oversees the administrative aspects of public and private investments, links the government strategies with the Ministries and coordinates the Ministries to facilitate investments in the country. The Ministry also engages with private investors to enable government programmes and public-private partnerships.

Figure 2.1 shows an organogram of the relevant Ministries, Directorates and Sub-directorates.

Figure 2.1 Organogram of Relevant Ministries and Directorates in Djibouti



Source: ERM (2018)

2.3 RELEVANT LEGISLATION IN DJIBOUTI

Table 2.2 outlines the Djiboutian legislation relevant to this Project.

Table 2.2 Relevant legislation in Djibouti

Name of Law	Relevance to Project
General	
Loi n°171/AN/91 establishing and organizing the public domain	Establishes the basic regime of the natural and artificial public domain of the State and the relative easements to which land and buildings of private property are subject. The minister in charge of the domain grants by decree the authorizations to occupy the public domain and to build there.
Loi n° **172** / AN / **91** / 2e L Regulating compulsory purchase order for public use	This law regulates the expropriation for public utility, which is carried out by authority of justice and whose procedure comprises 4 phases: the declaration of public utility; the cessation order, the essential purpose of which is to determine the properties to be expropriated and to give interested persons the opportunity to assert their rights and produce their titles; the pronouncement of expropriation by authority of justice; fixing the expropriation indemnity by a clerk.
Loi n° 177 / AN / 91 / 2eL organization of land ownership	Establishes a land conservation service, which is responsible for guaranteeing property owners the roles they have in these buildings by registering all the buildings with the land books and publishing them. Registration is mandatory and final.
Environmental Management	
Loi n°51/AN/09/6ème L bearing the code of the environment	Environmental Code establishes the basic rules and fundamental principles of national policy in the field of environmental protection and management.
Décret n°2011-029/PR/MHUEAT Revision of the environmental impact assessment procedure	Defines the scope of application and execution methods of environmental impact assessments. Any activity likely to induce negative impacts on the environment must be subject to a preliminary impact assessment.
Loi n° 121 / AN / 01 / 4th L approving the National Action Plan for the Environment (PANE) 2001-2010	This law is the approval of the National Action Plan for the Environment 2001-2010.
Décret n°2004-0065/PR/MHUEAT Biodiversity Protection	Applies the Convention of Biological Diversity to regulate or manage biological resources of importance for the conservation of biological diversity within and outside protected areas within Djibouti.
Loi n° 45 / AN / 04 / 5th L on the Establishment of Protected Terrestrial and Marine Areas	Applies the special provisions of the Convention on Biological Diversity, in particular in its paragraph 8a which states that each Contracting Party "shall establish a system of protected areas or areas where special measures shall be taken to conserve biological diversity"
Décret nº 80-62/PR/MCTT of 25 May 1980 on the protection of fauna and the seabed	Outlines measures to protect and conserve terrestrial and marine wildlife and the seabed focusing on islands. Including restriction of spearfishing, the maintenance of Musha Territorial Park and the creation of a protected area at Maskali.
Décret nº 83-021/PR/S.A.M. Recasting of the Commission for the protection of wildlife and underwater	Establishes the Commission for the protection of fauna and the seabed. The Commission is to study the issues of protection and enrichment of fauna and the seabed.

Name of Law	Relevance to Project
Décret n°2001-0108/PR/MAEM Approving the National Action Plan for the fight against desertification	The National Action Plan to Combat Desertification (NAP) is adopted as an instrument for the implementation of the National Action Plan for the Environment (PANE).
Loi n°10/AN/03/5ème L and Loi n°9/AN/03/5ème L Ratification of the Agreement on the Conservation of African-Eurasian Migratory Water birds	Provides for the protection of migratory birds (Africa-Eurasia) and ratification of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).
Loi n°133/AN/11/6ème L Ratification of the Great Green Wall Convention	Provides for the establishment of the Pan-African Agency for the Great Green Wall (Ratification of the Convention). The Great Green Wall is an African-led initiative to grow an 8000km 'wall' of vegetation across the width of Africa to combat desertification and impacts from climate change.
Décret n°2009-062/PR/MHUE establishes an inter-ministerial steering committee of the national component of the Great Green Wall	Provides for the establishment of the inter-ministerial committee for the Great Green Wall (with a Bureau dedicated to the related projects under Décret n°2011-036/PR/MHUEAT).
Loi No.38/AN/99/4emeL, Arrêté No.2003-0767/PR/MHUEAT and Décret No.2004-0066/PR/MHUEAT	Establishes a dedicated committee to fulfil the Vienna Convention for the Protection of the Ozone Layer (1985) and adopt a national plan to phase-out ozone-depleting substances, to regulate the import of substances that deplete the ozone layer with an annual quota.
Labour Laws	
Loi n°133/AN/05/5ème du 26 janvier 2006 The Labour Code	The Code regulates all activities involving the use of labour and imposes obligations on employees.
Loi n°28/AN/13/7 ème L Law on migrant workers	Establishes the level of fees applicable for work permits awarded to foreign workers.
Land and Building Laws	
Décret n°2004-0092/PR/MHUEAT Creation of a national commission for sustainable development	Responsible for drawing up a National Action Plan for Sustainable Development and a Strategic Framework.
Act No.178/AN/91/2nd L Property law	Regulates property law throughout the country.
Arrêté n°2000-0555/PR/MHUEAT Establishing a National Housing Committee	The National Habitat II Committee, formed on the basis of the Urban Planning Advisory Committee (CCU) during the preparation of the United Nations Conference on Human Settlements, Habitat II, in June 1996, is reorganized to integrate the new composition of Ministries and public services.
Décret n°2004-0230/PR/MHUEAT establishing a national council of regional planning (CNAT)	Creation of the National Council of Regional Planning for the development and monitoring of the land planning policy.
Act No.102/AN/05/5th L The Land Domain and Conservation Directorate	Set up under the Ministry of Economy, Finance and Land Planning (art.4), is in charge of managing public and private domain of the State (art.7).
Arrêté n°2006-0515/PR/MHUEAT Obligation for the Ministerial Departments, the Public Establishments and the Project Units to resort to the assistance of the State Technical Services during the realization of works of urban development and construction and during building permit applications	Carries requirements for Ministerial Departments, Public Institutions and Project Units to seek the assistance of state technical services during implementation of urban development and construction and when requesting permission to build.

Name of Law	Relevance to Project
Arrêté n°2007-0645/PR/MHUEAT amending and supplementing Order No. 73-1580 / SG / CG of 31 October 1973 on the organization of the procedure for examining and issuing the building permit	No building can be built without an Ordinary Building Permit issued under the conditions indicated by this decree. These provisions apply to all constructions built with permanent materials on public land registered in the territory's land register. The building permit is required for work performed on existing constructions if the work would change their external appearance.
Arrêté n°2010-0061/PR/MHUEAT Supplementing Order No. 2007-0645 / PR / MHUEAT amending and supplementing Decree No. 73-1580 / SG / CG of 31 October 1973 on the organization of the investigation procedure and issuance of the Building Permit	Regulates the procedure for the issuance of building permits.
Arrêté n°2007-0646/PR/MHUEAT Fees for building permits and earthquake control	Rules regarding tax on building permits and earthquake standards of control fee of 28 July 2007.
Arrêté n°2010-0409/PR/MHUEAT Obligation of design of construction projects by architectural and accredited studies offices	All construction projects requiring a regular building permit must be prepared by an architectural or design office that has the necessary authorizations to carry out this activity.
Energy	
Décret n°2009-0218/PR/MERN Establishing the National Energy Commission	This decree establishes the National Energy Commission, whose mission is to ensure the coordination of energy projects, and more generally to undertake studies of all the measures contributing to a better coordination of the country's energy development. This Commission is responsible for intervening in the strategic areas of energy development in the Republic of Djibouti including studies, prospecting, research, exploration, exploitation and commercial.

There are no national standards for physical environmental standards, for example air quality or noise emissions. Where no national legislation, policy or standard exists, international good practice (i.e. IFC Performance Standards) will be followed in the ESIA.

2.4 INTERNATIONAL CONVENTIONS, PROTOCOLS AND AGREEMENTS

Djibouti is signatory to a number of international conventions and agreements relating to environmental and social matters. This section outlines the most important environmental and performance standards required by financial institutions (refer to Table 2.4).

These include the requirements of the Equator Principles, World Bank Group Safeguard Policies and the IFC Performance Standards (IFC PS) which are described in Table 2.4. It should be noted that not all principles and standards are applicable to this Project. The applicability of these standards to the Project is outlined in Appendix *A*1.

A gap analysis will be included in the ESIA to highlight differences in national and international regulations.

Table 2.3 Summary of International Conventions

Name of Convention
Environment: General
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention since 1992.
International Union for Conservation of Nature and Natural Resources (IUCN).
Convention on Wetlands of International Importance especially the Water Fowl Habitats of Aquatic Birds (Ramsar Convention) (1975) since 2003 (Loi No.186/AN/02/4emeL)
United Nations Convention on Biological Diversity (CBD) (1992) (on protected areas and against land-based marine pollution in the Red Sea and Aden Gulf Loi No.137/AN/11/6emeL and Loi No.138/AN/11/6emeL)
United Nations Convention to Combat Desertification (UNCCD) ((196) (Loi No.128/AN/97/3emeL)
Environment: Climate Change
United Nations Framework Convention on Climate Change (UNFCCC) and the 1992 and 1997 Kyoto Protocol (1992 and 1997) (Loi No.148/AN/01/4emeL)
Montreal Protocol to Protect the Ozone Layer (including 1990 and 1999 amendments) (1987)
Waste
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989) (Loi No.127/AN/01/4emeL)
Convention on the Ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention) (1991) (not ratified)
Heritage
UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)
Labour
Abolition of Forced Labour Convention (No. 105) (1957)
Minimum Age Convention (No. 138) (1973)
Worst Forms of Child Labour Convention (No. 182) (1999)
Human Rights
Discrimination (Employment and Occupation) Convention (No. 111) (1958)
International Convention on the Elimination of All Forms of Racial Discrimination (1969)
International Covenant on Economic, Social and Cultural Rights (ICESCR) (1976)
Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1981)
Convention on the Rights of the Child (1990)
International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families (2003)
Convention on the Rights of Persons with Disabilities (ICRPD) (2008)

Table 2.4 International Guidelines and Standards

Name of Guidelines and Standards
The Equator Principles
The Equator Principles (EPs) are a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. 1. Review and categorisation 2. Social and environmental assessment 3. Applicable environmental and social standards 4. Environmental and social management systems and equator principles action plan 5. Stakeholder engagement 6. Grievance mechanism 7. Independent review 8. Covenants 9. Independent monitoring and reporting 10. Reporting and transparency The EPs require that Projects conduct an ESIA process in compliance with the IFC Performance Standards on Environmental and Social Sustainability. The IFC Performance Standards are discussed below.
World Bank Group Safeguard Policies
The World Bank has ten environmental and social Safeguard Policies that are used to examine the potential environmental and social risks and benefits associated with World Bank lending operations. The guidelines and standards serve as relevant standards for international good practice. These safeguard policies include the following: 1. Environmental Assessment; 2. Natural Habitats; 3. Forests; 4. Pest Management; 5. Physical Cultural Resources; 6. Involuntary Resettlement; 7. Indigenous Peoples; 8. Safety of Dams; 9. Projects in International Waterways; and 10. Projects in Disputed Areas.
International Finance Corporation (IFC) Performance Standards
The Performance Standards are directed towards providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate and, manage risks and impacts as a way of doing business in a sustainable way. PS1 Assessment and management of environmental and social risks and impacts PS2 Labour and working conditions PS3 Resources efficiency and pollution prevention PS4 Community, health, safety and security PS5 Land acquisition and involuntary resettlement PS6 Biodiversity conservation and sustainable management of living natural resources PS7 Indigenous peoples PS8 Cultural heritage

Name of Guidelines and Standards
IFC Environmental, Health and Safety Guidelines
The Environmental, Health and Safety (EHS) Guidelines are technical reference documents that address IFC's expectation regarding the industrial pollution management performance of projects. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. In the context of the proposed project, the most relevant EHS Guidelines to be considered are: • World Bank Group General EHS Guidelines (2007); and • World Bank Group EHS Guidelines for Wind Energy (2015).

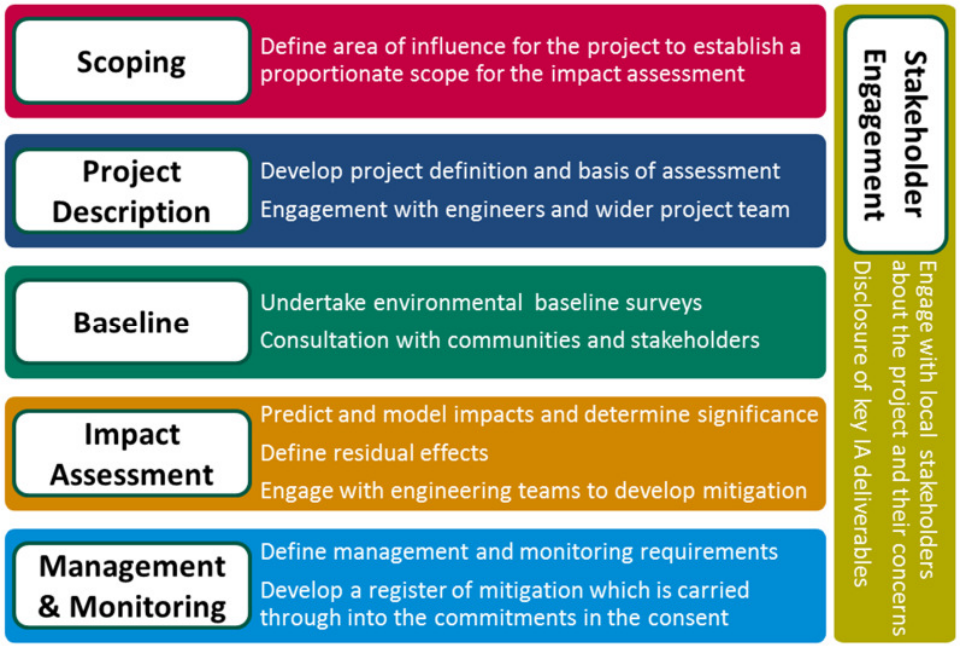
3 ESIA PROCESS AND METHODOLOGY

3.1 INTRODUCTION

ESIA is a systematic process that predicts and evaluates the impacts a project is likely to have on key aspects of the physical, biological and socioeconomic environment. The ESIA process identifies measures that a project will take to avoid, reduce, remedy, offset or compensate for adverse impacts, and also to provide benefits, to the extent these are reasonably practicable. ESIA is an iterative process in which findings are regularly fed back into the assessment process.

The ESIA process to be implemented for the Project is illustrated in a number of stages, as shown in *Table 3.1.*

Table 3.1 ESIA Process



Source: ERM (2018)

3.2 SCOPING

3.2.1 *General Considerations*

Scoping has an important role to play in achieving proportionate and effective ESIA by focusing subsequent work on the significant issues. The Scoping Report provides as much reasonably available information as possible (and associated evidence base and assessment where possible) so that the subsequent ESIA work is focused on the most material aspects of the Project.

The Scoping Report presents the results of the baseline desk studies and uses the evidence base to justify proposed approaches to the assessment, the levels of detail for different topics and clear arguments for scoping certain matters out, if they

reasonably can be. Those issues that are less material can be formally scoped out or at least an agreement can be reached that they can be addressed at a lesser level of detail (refer to *Appendix A2* of this report).

The scope of the ESIA will fall under three broad categories:

- technical scope
- spatial scope; and
- temporal scope.

The scoping process for the Project involves setting out the scope of the ESIA for these categories and then, based on knowledge of the intended activity at the time of scoping and the Project's environmental and socioeconomic setting, identifying the key issues for the ESIA to address.

The scoping process is informed by interaction with the Project design team but can also be further refined based on consultation with a range of stakeholders during its preparation.

The Scoping Report will determine the Terms of Reference for the ESIA. However, it should be noted that scoping is effectively an ongoing aspect of ESIA, allowing the ESIA process to consider new information, respond to it and include it in the ESIA as required.

3.2.2 *Technical Scope*

Potential environmental and social issues associated with the Project have been considered as part of the Scoping Report preparation, and also informed by discussion with the project team and some stakeholders. This has helped to determine the extent to which topics will need to be taken forward into the ESIA, having regard to whether they are likely to give rise to significant impacts, including direct impacts and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative impacts.

3.2.3 *Spatial Scope*

The spatial, or geographical, scope of the assessment will take into account the following factors:

- the physical extent of the proposed works, as defined by the Project design;
- the nature of the baseline environment and the manner in which the impacts are likely to be propagated; and
- the pattern of governmental administrative boundaries (e.g. districts), which provide the planning and policy context for the Project.

An appropriate Area of Influence, AoI, (or study area) will be considered and determined for the Project, which may vary according to each of the topics included in the assessment, and in agreement with the relevant consultees.

The AoI is defined in IFC PS1 as:

- *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.*

Based on *Figure 4.4* and the definitions of the IFC categories, the components that make up the windfarm Project are set out *Table 3.2.*

Table 3.2 Classification of Project Components

IFC Category	Project Component
Core component	• On-site access roads, foundations, crane pads, turbines, cabling, temporary laydown areas, temporary camps, transformer, substation and meteorological mast. • Overhead transmission line connecting windfarm to Ghoubet substation and national distribution network
Associated facilities	• Borrow pits used to supply aggregate to the site to make cement for turbine foundations and on-site access road construction • Cement batching plant • Road transport of construction materials and equipment
Third party activities	• Waste disposal sites • Water provision and transport • Port for delivery of construction materials

3.2.4 *Temporal Scope*

General Considerations

The temporal scope of the ESIA generally refers to the time periods over which impacts may be experienced. This is established for each technical topic, where appropriate through discussion with the relevant statutory consultees. In general, the following terms will be considered:

- Short-term, when the impact is temporary and lasts for up to 12 months.
- Medium-term, when the impact lasts for in the region of 2 to 3 years (e.g. for the whole period of construction or for the initial period of operation).
- Long-term, when the effect remains for a substantial time, perhaps permanently.

Construction Phase

The construction phase is expected to last for 18 months in total. Impacts may potentially arise during this period from the construction activities. However, due to the fact that the turbines are likely to be installed sequentially, the duration of construction activities at any one location will be much shorter within the Project site.

The assessments will also take into account the time of year or day during which

works are going to be undertaken, notably whether they are undertaken with seasonal focus as well as during daytime or night-time periods.

Operational Phase

For the operational phase, the temporal scope is determined by the predicted lifetime of the Project which is expected to be approximately 25 years.

Decommissioning Phase

The decision on whether to replace or remove the turbines will take place nearer the end of the Project lifetime and is not covered in this report.

3.2.5 *Cumulative Impacts*

The Project will be considered in the context of both baseline conditions (that include the impacts of existing human activities) and together with other plans and projects that are in development or may be developed in the future. These impacts are termed cumulative impacts.

The assessment will consider the accumulation of impacts on people and the environment, even if the Project, when assessed on an individual basis, only has minor significant impacts.

It should be noted that only plans and projects that could reasonably be presumed to go ahead and for which sufficient information was available at the time of assessment can be taken into account.

3.3 EXISTING ENVIRONMENT AND SOCIAL BASELINE

Baseline conditions are defined using a combination of published data sets and other publically available information sources as well as specially commissioned surveys. Each technical topic will have its relevant study area in terms of scale and/or receptor groups included, and the specific data sources it has drawn from (including dedicated surveys).

3.4 PROJECT DESCRIPTION

This Scoping Report includes a description of the Project as it is currently understood. However, it is important to note that certain aspects of the Project will not be finalised until later in the design process, some of which will occur post-application and possibly post-approval. In order to accommodate this required flexibility and at the same time maintain a rigorous ESIA process a reasonable worst case approach will be taken for each topic assessment. This will include consideration of turbine layout, scale of construction support facilities, durations of temporary activities and for each topic will ensure that the likely significant impacts of the Project have been assessed in a manner that captures the full 'envelope' of possible impacts, with suitable mitigation included.

3.5 IMPACT ASSESSMENT METHODOLOGY

The assessment of impacts is an iterative process underpinned by four key questions:

1. Prediction: what change to the physical or chemical environment will occur if the Project were to happen?
2. Evaluation: what are the consequences of this change? How significant will its impact be on human and biological receptors?
3. Mitigation: if it is significant can anything be done about it?
4. Residual Impact: is it still significant after mitigation?

Where significant residual impacts remain, further options for mitigation will be considered and where necessary impacts are re-assessed until they are reduced (see below). This is part of an iterative ESIA process. The result of the process (once the proposed mitigation is incorporated into the project design and the project is assessed in its entirety) is reported in the ESIA.

The methodology that will be used to identify impacts is shown in *Figure 3.1*.

The detailed impact assessment methodology that will be used complies with international best practice.

3.6 MITIGATION

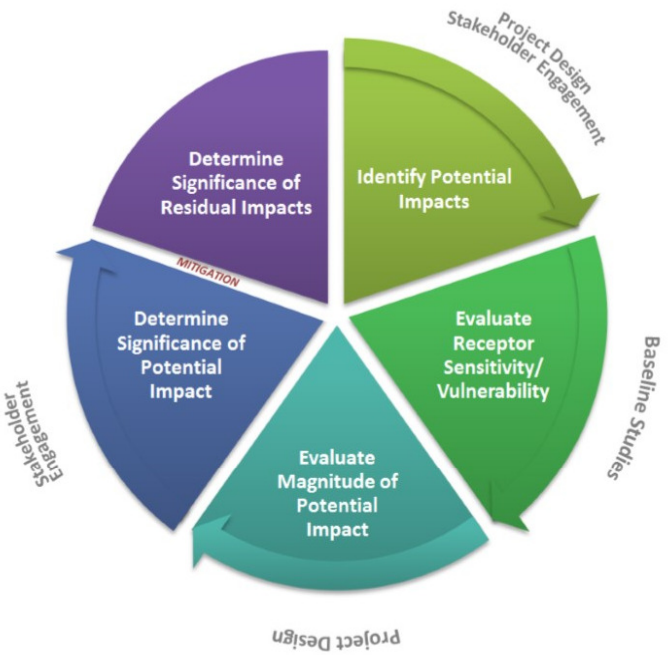
One of the key objectives of an ESIA is to identify and define socially and environmentally acceptable, technically feasible and cost effective mitigation measures. These should avoid unnecessary damage to the environment; safeguard valued or finite resources, natural areas, habitats and ecosystems; and protect humans and their associated social environments. For each significant adverse impact of the Project identified during the ESIA process, the specialists undertaking the assessments will identify mitigation measures that are consistent with statutory requirements and good practice in their respective field.

Figure 3.1 Environmental and Social Impact Assessment Methodology

Overview

The purpose of the impact assessment process is to identify any likely significant effects on receptors/resources as a result of impacts from a Project and develop appropriate mitigation measures to effectively manage these environmental and social effects. The process is iterative and can be summarised by the figure to the right.

The detailed impact assessment methodology that will be used complies with international best practice for impact assessment. The overarching principles of this methodology are illustrated here, but note that each ESIA topic area will have specific criteria for defining receptor sensitivity/vulnerability and impact magnitude.



Evaluation of Significance

The significance of the potential effect on receptors/resources is determined through the combined consideration of:

- **the sensitivity/vulnerability of the affected environment, and**
- **the magnitude of the potential impact.**

Note that the term '**magnitude**' is used as shorthand to encompass various possible dimensions of the predicted impact, such as:

- the nature of the change (what is affected and how);
- its size, scale or intensity;
- its geographical extent and distribution;
- its duration, frequency, reversibility ; and
- where relevant, the probability of the impact occurring as a result of accidental or unplanned events.

Magnitude of Impact	Sensitivity/Vulnerability/Importance of Receptor or Resource		
	Low	Medium	High
Negligible	Not Significant	Not Significant	Not Significant
Small	Not Significant	Minor	Moderate
Medium	Minor	Moderate	Major
Large	Moderate	Major	Major

There is no statutory or agreed definition of significance however, for the purposes of this assessment, the following practical definition is proposed:

An impact will be judged to be significant if, in isolation or in combination with other impacts, the effects will be a notable change from baseline conditions and may require mitigation to management environmental/social effects/risks.

Magnitude and vulnerability/sensitivity will be looked at in combination to evaluate whether an impact is significant and if so its degree of significance. The principle is illustrated here.

The impact assessment process evaluates both beneficial and adverse impacts, however the magnitude rating is only assigned for adverse impacts.

Residual Impacts/Effects

Is it still significant?

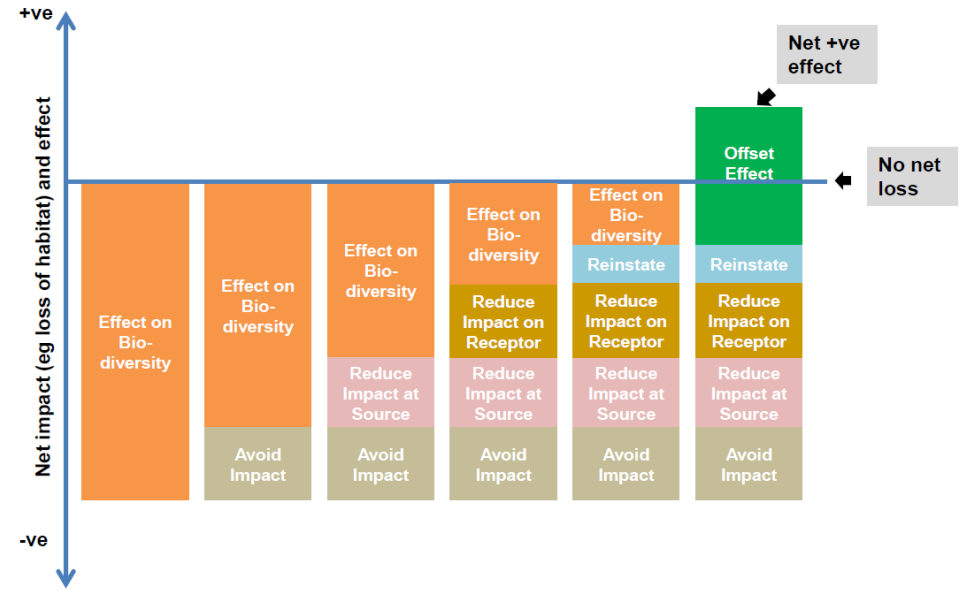
Once mitigation has been identified, a re-assessment of impacts to determine the magnitude and significance of any residual effects (after mitigation) will be undertaken.

The results will be represented in the final ESIA Report and with an explanation of how the impacts have been reduced to as low as reasonably practicable (ALARP) and why further mitigation of any remaining significant effects is not technically or financially feasible.

Source: ERM (2018)

Mitigation measures are developed to avoid, minimise, reduce or remedy (e.g. reinstate or restore) any negative impacts identified, and to create or enhance positive impacts such as environmental and social benefits. In this context, mitigation measures are taken to include design measures and construction practices, as well as management actions. In some instances mitigation alone may not be sufficient to reduce an impact or effect to acceptable levels and other measure such as offsets can be considered. However, it is good practice to consider mitigation measures in the form of a hierarchy (see *Figure 3.2*) where avoidance is the primary objective and offset is a last resort.

Figure 3.2 Mitigation Hierarchy



Source: ERM (2018)

These measures are often established through industry standards and may include:

- changes to the design of the Project during the design process (e.g. location of components, size of structures);
- construction working practices (e.g. routing of construction traffic, dust suppression); and
- operational plans and procedures (e.g. Environmental Management Systems).

For impacts that are initially assessed to be of major significance, a design change is usually required to avoid, minimise or reduce these, followed by a reassessment of significance. For impacts assessed to be of moderate significance, specific mitigation measures such as engineering controls are usually required to reduce the impacts and their impacts to levels as low as reasonably practicable. This approach takes into account the technical and financial feasibility of mitigation measures. Impacts assessed to be of minor significance are usually managed through the implementation of management plans, good industry practice, operational plans and procedures.

3.7 REPORTING SIGNIFICANT IMPACTS

Residual impacts, once mitigation measures have been applied, will be classified as not significant or still significant (albeit reduced), as appropriate. Where impacts are still significant, the mitigation options considered and the reasons for selecting particular measures will be reported in the ESIA.

Reporting the significance of a residual impact in the ESIA will be based on:

- the predicted magnitude of an impact taking into consideration all the mitigation measures the Project is committed to that are relevant to that impact; and (where appropriate)
- the quality or importance of the receptor and its sensitivity (to a specific impact).

Where a quantified standard exists, e.g. for noise or water quality, the evaluation process will be a simpler one of comparing the predicted magnitude of the (mitigated) impact with the appropriate standard.

The degree of significance attributed to residual impacts is related to the weight the ESIA team considers should be given to them in making decisions on the Project and, where appropriate, the application of conditions to approval.

Ideally through the design, ESIA and consultation processes, by the time of an application a project should be designed to avoid residual impacts of major significance.

Impacts of moderate significance are considered important to decision making, warranting careful attention to ensure conditions regarding mitigation and monitoring employ the most appropriate (technically feasible and cost-effective) measures.

Impacts of minor significance are brought to the attention of decision-makers but will be identified as warranting little if any weight in the decision; mitigation will typically be achieved using normal good practice, e.g. for construction.

Where concerns remain over the significance of residual impacts and there is no scope to reduce the significance of the impact through practicable mitigation measures aimed directly at the impact then the ESIA will consider and present ways to offset the impact.

4 PROJECT DESCRIPTION

4.1 INTRODUCTION

This section provides a description of the Project, detailing project alternatives, project components and project activities during the development, construction, operation and decommissioning phases. This is based on the information available at the time of writing the Scoping Report. Some details of the Project such as final location of the turbines are still in development and, although not known at this stage, will be available for consideration in the ESIA.

4.2 PROJECT BACKGROUND

Djibouti is heavily reliant on imported fossil fuels and power which exposes the country to economic uncertainty due to fluctuating oil prices. Therefore, Djibouti is moving to develop its own power resources to reduce its dependency on volatile international energy markets.

Djibouti's master develop plan 'Vision 2035' sets the ambitious objective to supply 100% of domestic energy demand through renewable energy by 2020. Djibouti has significant renewable energy resources including geothermal, wind and solar.

The Government of Djibouti has explored wind energy since 2000, including site selection studies and pre-feasibility studies[1]. The studies identified the Gulf of Ghoubet as one of the most suitable areas in Djibouti for a windfarm due to its consistent high wind speeds throughout the year.

The Project site was chosen as an area with good feasibility for a windfarm due to its proximity to existing road infrastructure and planned grid connections. This was further supported by wind data, collected by a met mast deployed at the Project site Q4 2012 to Q4 2015. The data collected has been analysed in an interim feasibility study by Tractebel Engineering[2] and concludes that the Project site is highly suitable for a windfarm development.

4.3 PLANNING AND DEVELOPMENT PHASE

The Project is currently in the planning and development phase, which includes the following activities:

- identification of land requirement;
- community consultation;
- permitting (including ESIA);
- technical studies including grid study, topographical and geotechnical investigations;
- environmental studies in support of the ESIA (such as biodiversity surveys);
- negotiations with the eventual off-taker; and
- procurement of turbines and construction and logistics contractors.

[1] Studies on site selection and pre-feasibility of wind power have been conducted by the Centre for Studies and Research of Djibouti (CERD) under The Ministry of Higher Education and Research in 2002 and 2005.

[2] *Global Feasibility Study: Interim Report – 60MW WINDFARM PROJECT* (2017) Tractebel Engineering S.A.

4.4 PROJECT LOCATION

The 395 hectare Project site is located approximately one kilometre west of Lake Ghoubet, where the N9 and N10 roads intersect, in the Arta region of Djibouti. The nearest settlements are Lac Assal Primary community, 600m south of the Project site, Lac Assal Secondary community, 500m north of the Project site, and Lac Assal Tertiary community 1.5 km west of the Project site. The Project site location and extent is shown in Figure 4.1.

- Site Boundary
- Project Substation
- Project Transmission Line
- New EDD Ghoubet Transformer (proposed)
- New EDD Transmission Line (proposed)
- New Ghoubet – Tadjourah Transmission Line (proposed)
- Road
- 1 Lac Assal Village (Primary)
- 2 Lac Assal Village (Secondary)
- 3 Village (name to be confirmed)
- Salt Investment S.A. Compound
- Mineral Port

0 250 500 750 1,000
Meters

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: GB
PROJECT: 0438399	CHECKED: JP
DATE: 02/02/2018	APPROVED: BP

FIGURE 4.1
Project Components and Surrounding Area

PROJECTION: WGS 1984 Web Mercator Auxiliary Sphere

SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

Path: \\uklonsv01\DATA\London\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\0438399_DetailedProjectLocation_A02.mxd

4.5 PROJECT ALTERNATIVES

A description of the alternative sites considered for the Project, leading to the site selection and proposed scheme, will be provided in the ESIA.

4.6 TURBINE TECHNOLOGY AND LAYOUT

Three different scenarios (i.e. turbine technology, number of turbines and layout) are currently being considered for the Project, as outlined in *Table 4.1.* Possible turbine layouts of each scenario are shown in *Figure 4.3.* The turbine layout will be revised iteratively as technical assessments, including the ESIA, progress through constraints mapping to determine the developable area within which turbines should be placed.

Table 4.1 Turbine Scenarios

	Scenario 1	Scenario 2	Scenario 3
Number and type of turbines	13 Nordex N133 4.8MW	14 Siemens SWT-DD-120 4.3MW	15 Vestas V117 4.0MW
Turbine hub height (m)	84m	83m	85m
Blade diameter (m)	133m	120m	117m
Total installed capacity (MW)	62.4	60.2	60

The Consortium will use the most efficient technology available for the site at the time of construction. The exact model of turbine will be determined later in the development process. A photo of Vestas turbines in operation is shown in *Figure 4.2*.

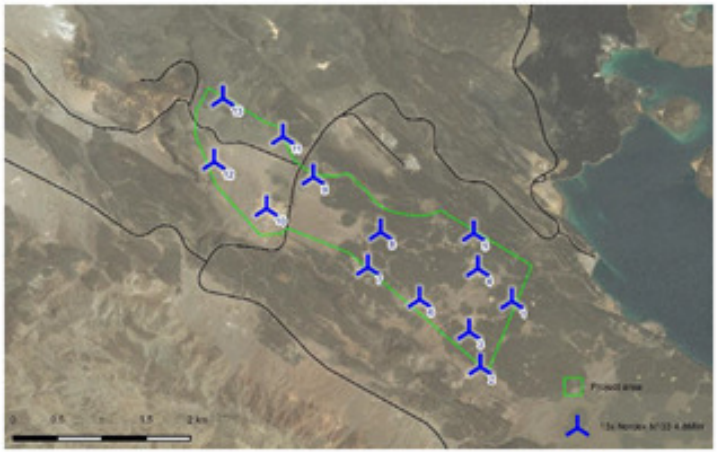
In addition, due to the Project site's location close to Lake Assal and the sea, the turbines will be covered in a protective coating to prevent saline corrosion.

Figure 4.2 Vestas Turbines in Operation

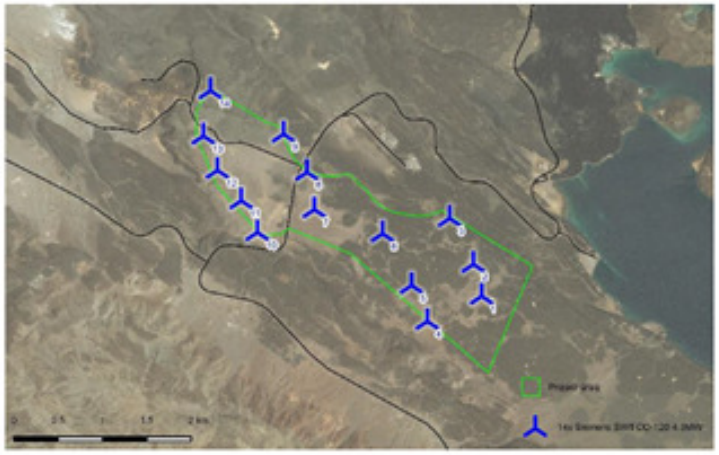
Source: Vestas (2018)

Figure 4.3 Turbine Layout Scenarios[1]

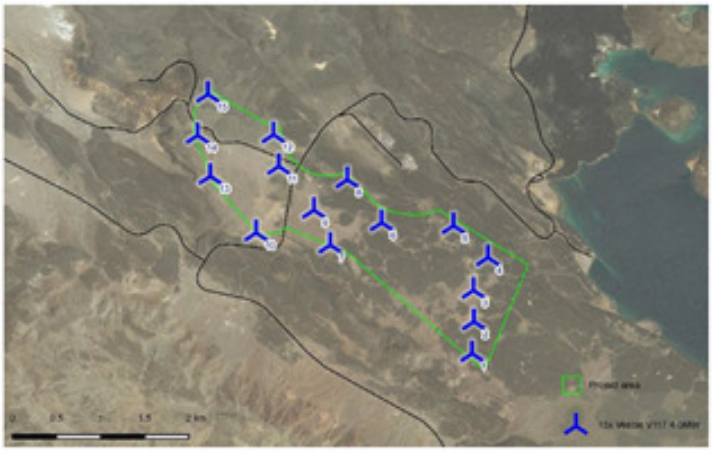
Scenario 1



Scenario 2



Scenario 3



Source: Tractebel (2017)

[1] Figures from Feasibility Studies 2017 by Tractebel

4.7 PROJECT COMPONENTS

The Project will comprise of the following components:

- turbine foundations;
- up to 15 turbines;
- cabling;
- substation;
- a high voltage overhead transmission line (up to 5 km in length);
- new on-site access roads and crane platforms;
- concrete batching plant; and
- a permanent meteorological mast.

The wind turbines are made up of three parts: a tower, a nacelle and the rotary blades. Based on the current scenarios being considered at this stage (refer to *Table 4.1)*, the turbine hub height will be between 83 and 85 m. The turbine blades are likely to be between 117 and 133 m in diameter. Therefore maximum blade tip height of an installed turbine will be up to 150 m above ground level.

The distance between turbines will depend on the model and layout selected but is likely to be approximately 400 m. Turbines will be sited a minimum of 500 m from any residential dwellings within proximity to the site to ensure occupants are not affected by operational noise emissions; this distance could increase based on noise modelling to be undertaken through the ESIA process. The land between the turbines will continue to be available for community activities such as grazing livestock.

It is anticipated that less than 10 km of new compacted gravel access roads will be constructed across the site to link the turbine sites to the existing road network. Once constructed these roads will be available for use by the local communities.

4.7.1 *Meteorological Mast*

A temporary meteorological (met) mast was deployed at the Project site from Q4 2012 to Q4 2015 to record 38 months of wind data. At time of writing, its specifications are not known and it is no longer in-situ on the Project site. A new, met mast will be erected on site for the operational lifetime of the Project.

4.8 CONSTRUCTION

4.8.1 *Access and Logistics*

At time of writing, construction materials and turbine components are planned to be delivered to Doraleh Multipurpose Port, 85 km from the Project site. A logistics survey (separate to the ESIA process) will be undertaken to ensure that Project equipment can be safely stored at the chosen port. During construction it will be transported to the Project site via national roads, N3, N1 and N9. National roads are generally in good condition and will be capable of handling 90 t to 100 t loads.

However, studies into the feasibility of using Ghoubet Port, ~1 km from the Project site, are being conducted. In which case, only a short section of national road N9 would be used to transport construction materials and turbine components to site.

To allow for turbine component delivery during construction, roads used will need to accommodate large vehicles of up to 50 m long and 4 m wide to transport the turbine towers, nacelle, blades and foundation rings. Due to this, some existing road infrastructure will have bypasses constructed and/or temporary adaptations such as adjustment of roundabouts to allow the safe passage of oversized vehicles.

Vehicle movements generated by the following Project activities will be calculated to be used in the ESIA process:

- Delivery of turbine components (including an indicative delivery schedule);
- Delivery of aggregate for foundations to be sourced from a small quarry or borrow pits within 10 km of the Project site;
- Delivery of water for the concrete batching plant; and
- Delivery of concrete from a concrete batching plant (to be sited within a 10 km radius of Project site).

4.8.2 *Turbine Foundations*

The wind turbine foundation pad diameter is expected to be between 16 m to 17 m. Each turbine is likely to require 90 – 110 m^3 of concrete. However, final design (i.e. exact dimensions, depths and reinforcement requirements) will be conducted after completion of geotechnical surveys (post ESIA). Due to the presence of hard basalt rock, some foundations may need to be pre-split, rock hammered or blasted.

4.8.3 *Cable Laying*

The turbines will be connected to the substation using a 63 kV or 230 kV cable network. The hard rock substrate means that the turbines may be connected via an aerial network rather than underground cabling. However, underground options are also still being explored.

4.8.4 *Substation*

A 63-230 kV air insulated substation with full expansion possibility will be constructed within the Project site. Its location at time of writing is approximately 500 m east of the N9 road (*see Figure 2.1*). The layout will also allow for future extension for connection to a geothermal plant if constructed in future.

The approximate footprint of the substation compound has not yet been determined. The compound will consist of a metal-enclosed, 20 kV, air insulated switchgear in an acclimatized building, transformers, circuit breakers and security fencing. The substation is designed to be unmanned and remotely controlled.

The substation will be connected by a high voltage overhead line to the Ghoubet transformer (to be constructed by EDD) south of the Project site.

4.8.5 *High Voltage Overhead Transmission Line*

The high voltage overhead line will be single or double circuit, 63 kV or 230 kV, depending on the voltage of the windfarm connection. The overhead line will be up to 5 km in length running between the windfarm and the substation, its indicative route at time of writing is shown in *Figure 4.1*).

4.8.6 *Access Roads & Crane Platform Area*

Access roads will be constructed to the Project site from existing road connections and used during construction and operation. It is currently estimated, based on proposed turbine layouts, less than 10 km of new access roads will need to be constructed. The topography of the site is such that no road existing or newly constructed will have a slope more than 5%.

A crane hardstanding will be required at each turbine location to erect the turbine components. It is estimated that these will be approximately 25 m by 20 m in area to accommodate a crawler crane.

As part of this construction, some areas of hard rock will be pre-split or rock hammered in order to clear pathways for access roads and/or to level areas for the crane platform.

4.8.7 *Concrete Batching Plant and Local Quarry / Borrow Pits*

Due to the climate of the Project area, fresh concrete cannot be easily transported. Therefore, a remote batching plant will be constructed as close as possible to the Project site. This will include a local quarry and/or borrow pits to extract rock to process into appropriate aggregate for construction purposes e.g. cobbles, gravel and sand. Water and cement will be transported to the batching plant (source to be determined).

The approximate volume of water required to produce the concrete for the turbine foundations will be ~2000 m^3, assuming a total of 15 turbines each requiring up to 110 m^3 of concrete per turbine foundation. The frequency of requirement of water for concrete is ~250 m^3 per week, for a period of seven to eight weeks of turbine foundation construction.

4.8.8 *Workforce*

For the 18 month construction period, during the busiest periods, it is expected there will be up to 500 staff directly employed by the Project, comprising:

- 70% civil jobs (groundwork / general labour)
- 30% specialised jobs (electrical, mechanical, machine operators, surveyors etc.)

It is expected there will be one temporary staff compound during construction to accommodate the workforce. The exact location of the compound was still to be confirmed at the time of writing this report.

It is expected that at the peak of the busiest construction period, 500 staff would require approximately 12,500 litres for the staff compound per day (~25 litres per worker per day) for domestic use, e.g. welfare facilities. An additional 2,500 litres of potable water would be required for staff consumption (based on the high temperatures).

4.8.9 *Waste Generation*

Solid waste will be generated during the Project construction phase and will likely consist of:

- Very limited biodegradable waste such as cleared vegetation;
- General waste such as paper, packaging, plastics, food waste; and
- Construction related waste such as rubbles, metal off cuts, etc.

A high-level review of local/regional waste processing facilities currently available to receive Project waste will be included in the ESIA report to inform the development of an appropriate waste management plan.

Wastewater will also be generated from Project activities such as hand washing on the site and from water used for construction purposes such as washing tools covered in excess cement. It is proposed that any areas set aside for washing of hands or tools must be located in excess of 100 m from any water resource.

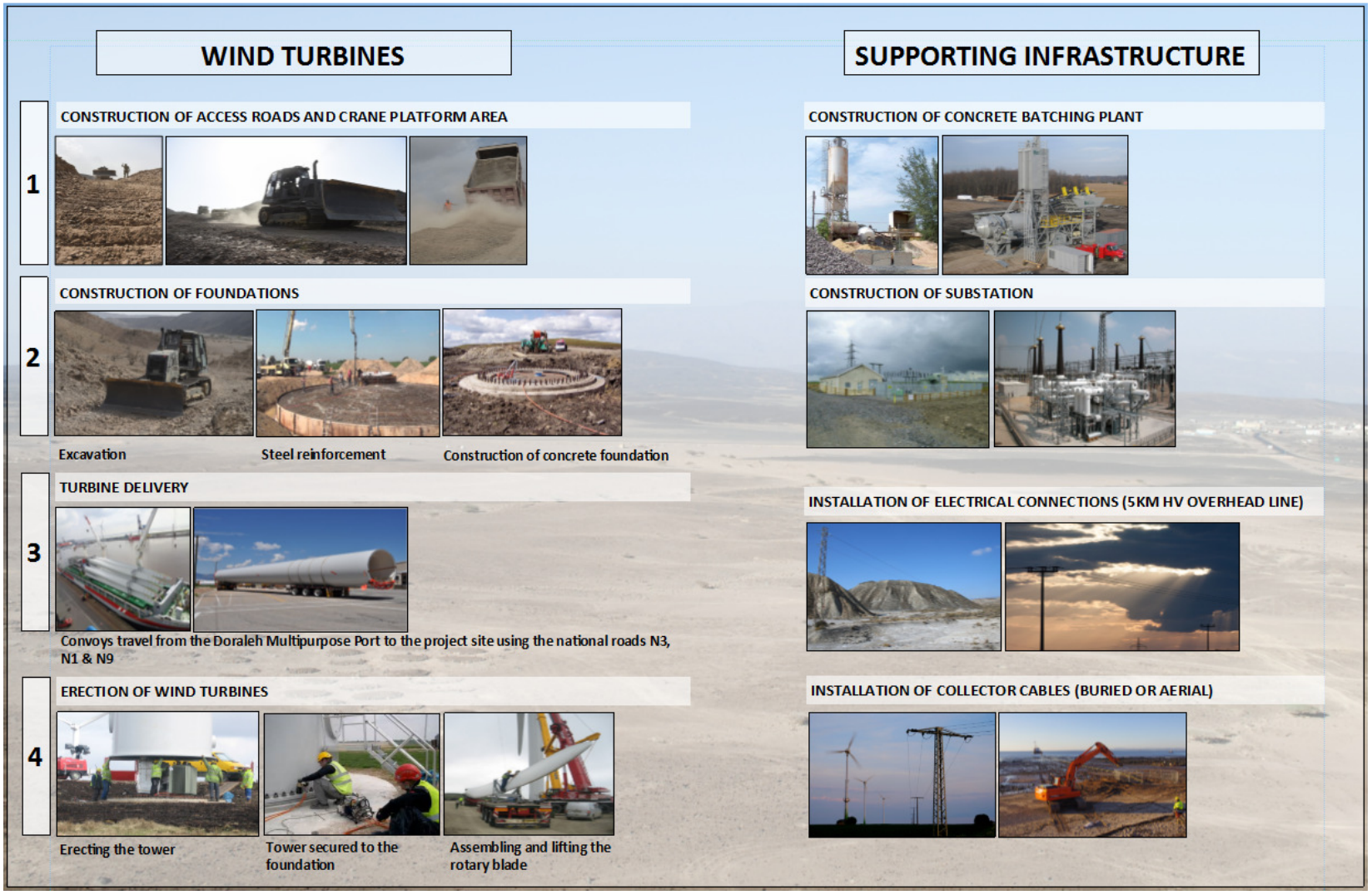
Sewage will also be generated on site and thus portable toilets will be installed on a designated space on the construction site. These will be maintained and emptied regularly to a suitable processing facility.

Figure 4.4 outlines the Project components and construction process.

4.8.10 *Construction Timetable*

A detailed construction timetable will be included in the ESIA report.

Figure 4.4 Project Components and Construction Process



Source: ERM (2018)

4.9 OPERATION

4.9.1 *Meteorological Mast*

A new, met mast will be erected on site for the operational lifetime of the Project. An on-site maintenance inspection will be carried out on the met mast at regular intervals to ensure the wind data is being recorded and stored correctly. Safety checks will also be carried out at regular intervals to ensure the mast continues to be structurally safe.

4.9.2 *High Voltage Overhead Transmission Line*

The transmission line will be maintained by EDD during operation. Once the transmission line has been installed only intermittent maintenance will be required.

4.9.3 *Traffic*

Traffic during operation will be limited to maintenance vehicles and movement of employees around site.

4.9.4 *Workforce*

During operation it is expected there will be a limited number of (<20) full time employees working on the site in security, operation and civils/caretaker roles. Security and caretaker personnel with be onsite 24/7 during operation. Welfare facilities will be provided on the Project site.

5 BASELINE CONDITIONS

5.1 OVERVIEW

A scoping survey was undertaken of the Project site in December 2017 by an ERM-led team supported by INSUCO and Djibouti Nature for Djiboutian social and environmental expertise respectively. The objective of the survey was to characterise the key physical, biological and socio-economic features within the Project site and immediate surroundings. The baseline described in this section has been informed by this visit and existing data (data sources are outlined in Table 8.1).

The Project site covers an area of approximately 395 hectares (not including area for associated facilities such as the batching plant or borrow pits/quarry). The site is typified by a mix of flat and undulating land composed of fine material and basalt rock with sparse desert trees and shrubs found in the ephemeral wadi bed in the east of the site. There are no communities within the Project site and the surrounding area is sparsely populated, with small village communities to the north and south, a salt processing plant to the north and a small mineral port to the north east on Lake Ghoubet's west shore.

The site is intersected by two roads, the R9 main road leading to the mineral port (north of the site) and a private road, both located in the northwest of the site. A security check point is situated along the R9 on the entrance of Lac Assal Village - Secondary. The Project area also contains a network of footpaths used by the local communities. Along these footpaths there are stone structures assembled by local herders to provide enclosures and shelter for their goats. Near the north-western boundary of the site (north of the R9 road from Lac Assal Village - Primary) is a graveyard containing some graves which are reportedly more than 100 years old.

A summary of key environmental and social baseline sensitivities identified during the scoping visit is presented in Figure 5.1.

Overall, the southeast of the Project site contains more sensitive environmental features than the northwest due to the presence of the wadi system, its associated flora and fauna and value to local communities as an area where they can graze and shelter their goats. Additionally, outside of the wadi channels, the majority of the southeast of Project site consists of basalt rock out-crops meaning that constructing turbines in this area will require blasting the rock to form the foundations.

Community *[key sensitivity]*

There are no communities within the Project site. The primary Lac Assal village is 650m to the south of the Project boundary on top of the escarpment. The secondary Lac Assal village is 500m north of the Project boundary.

There are approximately 100 families in the villages housed in a mixture of traditional huts and purpose built houses (funded by a Saudi Arabian entity). There is also a mosque and a school. Water is scarce in the region; potable water is trucked in regularly by the government and stored in a purpose built structure. The villages do not have electricity and there are no waste management facilities.

Soils, terrain, landscape and visual setting

The site covers an area of ~390 hectares. Along the southern boundary it is bordered by an escarpment (~100 m higher in elevation than the Project site). Along the northern boundary the terrain rises slightly before descending again down to Lake Ghoubet and the mineral port.

The eastern half of the site is typified by undulating, basalt outcrops interspersed with deposits of finer-material through the drainage channels / wadi systems.

The western half of the site forms a plateaux covered with compacted (but dusty) finer-material, lowering towards the drainage channels running along the southern edge of the site (at the foot of the escarpment).

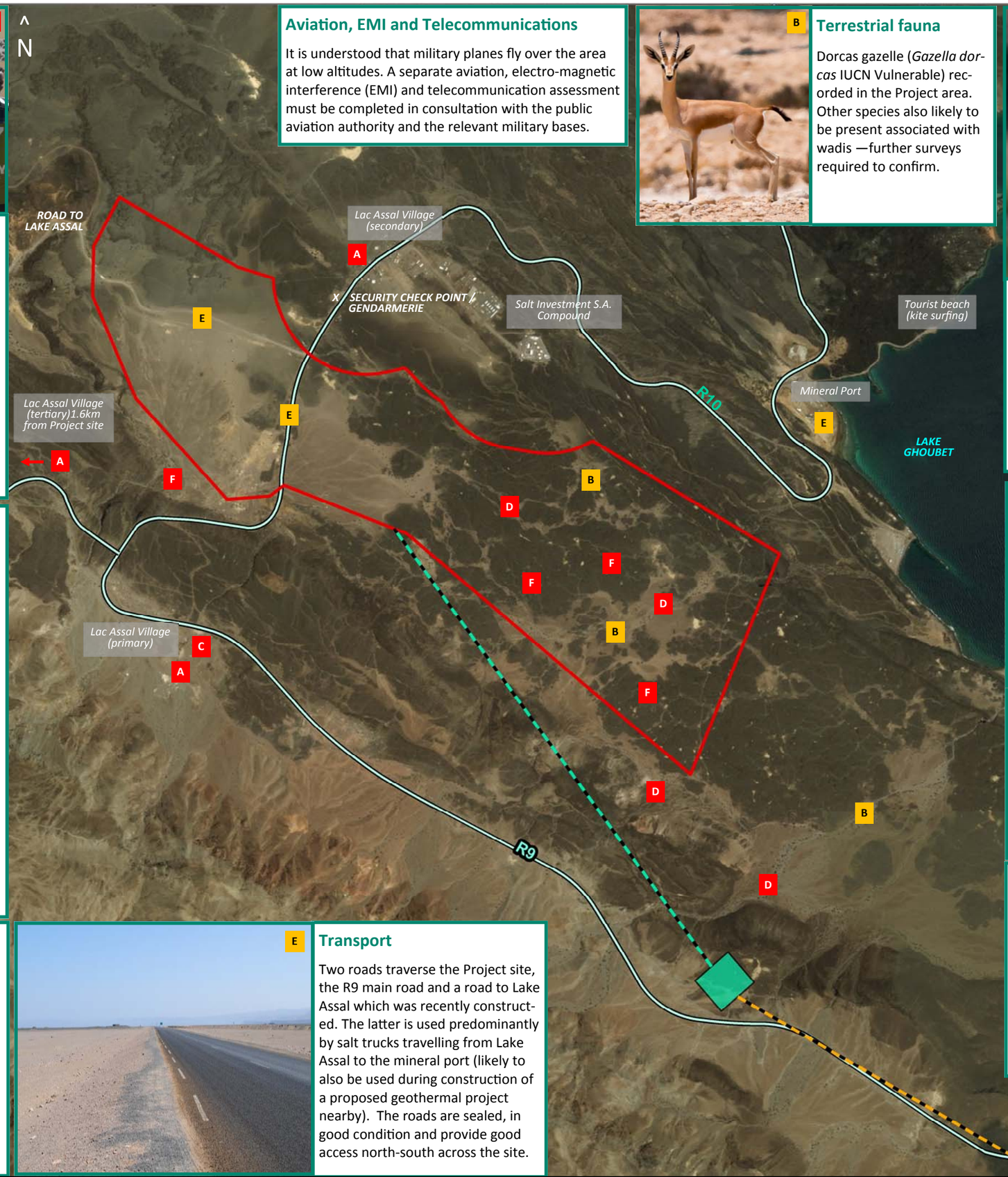
The Government of Djibouti has initiated a proposal with UNESCO to declare the Lake Assal zone and the Ardoukoba volcano (approximately 8km north of the Project site) as a World Heritage Site—status to be investigated through consultation.

Cultural heritage *[key sensitivity]*

A single graveyard identified in proximity to the north-western Project boundary (accessed across the site). Across the site, there are also multiple stone structures used by herders as shelter for their goats

Transport

Two roads traverse the Project site, the R9 main road and a road to Lake Assal which was recently constructed. The latter is used predominantly by salt trucks travelling from Lake Assal to the mineral port (likely to also be used during construction of a proposed geothermal project nearby). The roads are sealed, in good condition and provide good access north-south across the site.



Aviation, EMI and Telecommunications

It is understood that military planes fly over the area at low altitudes. A separate aviation, electro-magnetic interference (EMI) and telecommunication assessment must be completed in consultation with the public aviation authority and the relevant military bases.

Terrestrial fauna

Dorcas gazelle (*Gazella dorcas* IUCN Vulnerable) recorded in the Project area. Other species also likely to be present associated with wadis —further surveys required to confirm.

Birds & bats *[key sensitivity]*

Egyptian vulture (*Neophron percnopterus* IUCN Endangered) resident in Lac Assal village area associated with poor waste management; long range forager so likely to be present on Project site. Other protected species of bird, and possibly bat, (resident and migratory) are also likely to be present —further field surveys required to confirm.

Water resources & drainage *[key sensitivity]*

Ephemeral watercourses (wadi systems): support native flora and fauna; provide grazing for local herders (goats and camels); and provide access for locals as a natural network of well defined footpaths and shelter when dry (easier walking conditions as sand rather than rock as found elsewhere on site).

Ambient noise *[key sensitivity]*

The loudest sources of noise in the area are from vehicles using the sealed roads. The movement of trucks and HGVs (associated with the salt extraction) between Lake Assal and the port/compound are a recent addition to ambient noise levels. The topography and prevalent wind carry noise at the level of the site up to Lac Assal community on top of the escarpment. Ambient noise monitoring surveys required to establish baseline conditions.

AFC AFRICA FINANCE CORPORATION

FIGURE 5.1 Environmental and Social Baseline Sensitivities Overview

Ref: 0438399 *Size:* A3 *Scale:* N/A

Date: January 2018

Photo credits: ERM / Wikipedia

ERM The business of sustainability

6 IDENTIFICATION OF ENVRONMENTAL AND SOCIAL IMPACTS

Windfarms have been constructed both on and offshore in many countries. Whilst the technology employed is constantly changing generic project activities are well established and hence key issues and impacts are also generally well understood. Each project will also have its own set of unique impacts linked to the site specific social and environmental setting within which the windfarm is to be constructed.

The objective of the scoping phase of ESIA is to identify site specific issues and impacts to assess at a high level those that are likely to be significant. Scoping also includes elements of consultation with stakeholders which is important in terms of identifying specific sensitivities and key issues, resources and receptors that may be affected by the project.

In undertaking the scoping process for this project, the ESIA team has drawn upon:

- knowledge of sources of potential impact associated with onshore windfarm;
- development including the World Bank's EHS Guidelines for wind energy (1);
- the EIA Guideline for the Energy Sector Volume I and II (2011);
- experience gained through undertaking similar projects in West Africa;
- existing knowledge and experience of windfarm development; and
- findings and observations from the December 2017 scoping visit.

6.1 IDENTIFICATION OF POTENTIAL INTERACTIONS

The first step of defining the technical scope is to identify whether there are potential interactions between project activities and site specific sensitive resources and receptors.

Project activities that are considered as part of this scoping process are identified in Section 4.

Table 6.1 sets out potential interactions between the key activities as presented in *Section 4* and the site specific resources and receptors (*Section 5*).

Table 6.1 Potential Impacts 'Scoped In' for Assessment

	Physical							Biological					Social											
	Soils	Land take	Landscape	Visual environment	Surface and groundwater	Air quality	Ambient noise	Flora and habitats	Terrestrial fauna	Bats	Birds	Protected areas	Tourism	Aviation	Telecommunications / electromagnetic interference	Local economy	Cultural heritage	Road infrastructure	Community health & safety	Access to areas for grazing	Access to local footpath networks	Waste management	Access to Services
CONSTRUCTION																								
Presence of workforce							o	o	o		o		o			+			o			o	o
Site geotechnical and groundworks (preparing project footprint)	o	o	o	o	o	o	o	o	o			o	o				o	o	o	o	o	o	o
Establishment of site compounds and lay down areas		o	o	o		o	o	o	o								o	o	o	o	o	o	o
Installation of access tracks / road improvements		o	o	o	o	o	o	o	o				+				o	+	o	+	+	o	+
Aggregate sourcing and transportation *[from on-site quarry]*	o	o	o	o	o	o	o	o	o								o	o	o	o	o	o	o
Water sourcing, transportation and use *[source TBC]*					o			o	o									o					
Construction of turbine foundations		o	o	o	o	o	o	o	o								o		o	o		o	o
Delivery of equipment and turbines						o	o		o				o					o	o				o
Turbine erection			o	o						o	o			o									o
Cable trenching and laying		o			o	o	o	o	o								o	o	o	o		o	o
Construction of substation		o	o	o	o	o	o	o	o								o	o	o	o		o	o
Construction of transmission line		o	o	o	o	o	o	o	o								o	o	o	o		o	o
Unplanned events	o				o	o	o	o	o				o					o	o				o
OPERATION																								
Presence of workforce (security, maintenance)											o					+			o			o	o
Operation/presence of wind turbines			o	o			o			o	o	o	+	o	o				o	o	o		o
Operation/presence of transmission line			o	o						o	o	o		o	o				o	o	o		o
Vehicle movements						o	o		o										o				o
Equipment maintenance						o	o									+						o	o
Unplanned events	o				o	o	o	o	o				o					o	o				o

No interaction | o Potential impact | + Potential positive impact

6.2 IDENTIFICATION OF POTENTIALLY SIGNIFICANT IMPACTS

Table 6.1 indicates that there are a number of construction and operation activities which may give rise to changes to the existing environment, e.g. a change in noise. These changes may in turn affect a number of receptors in the Project AoI and as such will need to be assessed further in the ESIA.

The potential impact and key issues are discussed further in this section of the Scoping Report. Where there is currently insufficient baseline data to understand the sensitivity of the receptor detail is provided as to how additional baseline data will be collated as part of the ESIA.

6.2.1 *Soils and Geology*

The majority of the Project site (~65%) consists of hard basalt rock with pale, fine shallow solonchaks[12] soil over hard rock in the remaining areas. It is not expected that construction activities such as heavy vehicular movement will result in significant soil compaction or erosion. Therefore impacts on soils are not considered significant and will not be assessed further in the ESIA and no baseline soil data collation is proposed. However, surface geology might be blasted to allow site clearance and excavation during construction. If this technique, is to be used, a high-level assessment will be included in the ESIA.

A technical assessment of the geotechnical conditions of the site (including seismic activity) will inform the detailed Project design.

6.2.2 *Landscape and Visual*

The Project is located in an area typified by a mix of flat and gently undulating land composed of fine soil and basalt rock with sparse desert trees and shrubs found in the ephemeral wadi bed in the east of the site. Views across the site are therefore unobstructed and as such vistas are far ranging from the communities on and near the site and roads which run close to the site. During the December 2017 scoping visit, conditions were hazy in the afternoons due to meteorological conditions. Construction and operation of the wind turbines will change the existing landscape character as well as views from nearby communities and public roads.

The ESIA will address stakeholder concerns and consider whether nearby communities experience a meaningful change in views. It will also consider the change in landscape character during the operation of the Project.

In summary the key issues are as follows.

- Temporary changes to views across the site during construction due to construction machinery and the erection of turbines.
- Permanent changes to the landscape character of the area once the turbines are operational which may lead to a visual impact on communities within close proximity to the Project site.

[1] Panagos P., Van Liedekerke M., Jones A., Montanarella L., "European Soil Data Centre: Response to European policy support and public data requirements"; (2012) Land Use Policy, 29 (2), pp. 329-338. doi:10.1016/j.landusepol.2011.07.003
[2] European Soil Data Centre (ESDAC), esdac.jrc.ec.europa.eu, European Commission, Joint Research Centre

6.2.3 *Surface and Groundwater*

Permanent surface water is not known to exist anywhere on the Project site. Additionally, there are no wells or any accessible groundwater that are known to exist in the Project area at time of writing likely due to the significant depth of the water table.

Water for communities living adjacent to the Project area is brought to Djibouti by truck from a source in Ethiopia and stored in containers. During construction, the Project will use water brought to site by trucks for all water requirements (e.g. cement, washing, drinking etc.). The source of water the Project will use is not yet determined at time of writing but will be established for consideration in the ESIA.

There is a network of wadi channels (ephemeral water bodies) that may contain surface water for a few days each year during heavy rain fall in the east of the Project site. If construction occurs within wadi channels (outside of the wadi system the ground consists of hard rock) this may lead to some localised soil erosion. However, this is considered to be minimal given that the channels only hold water for a few days each year.

Anecdotal evidence from adjacent communities will be gathered on the frequency and intensity of water flow in the wadi channels. Additionally, where available, meteorological data will be collected on rain fall.

Please also see *Section 6.2.5* and *Section 6.2.14* where further studies of the use of the wadi system by communities and its associated flora and fauna are outlined.

6.2.4 *Ambient Noise*

Construction activities have the potential to produce noise which may lead to an increase in background noise levels in the local vicinity. These impacts will be temporary in nature and will be confined to a localised area. Windfarm operation also has the potential to produce noise which will extend for the duration of the Project and will be widespread across the broader site where turbines are located.

There are two villages within 1 km of the Project site, therefore to understand the impacts associated with noise these communities may experience, a better understanding of the existing baseline noise is required and, as such, a baseline survey will be undertaken.

The baseline data will be used to model the potential noise levels that will be experienced at these locations to inform the turbine design layout and ensure that noise levels (day and night time) are reduced to an acceptable level.

In summary, the key issue identified is that communities inhabiting the area close to the Project site may experience an increase in background noise during the construction (temporary) and operation of the Project.

6.2.5 *Biodiversity*

Habitats, Flora, Terrestrial Fauna, Birds and Bats

The Project site has minimal vegetation, with sparsely distributed desert trees and shrubs in the wadi channels being the only form of vegetation present. It is expected that the avoidance of these channels and removal of these low numbers of trees and shrubs can be avoided through micro-siting of turbines.

The terrestrial fauna present in the area likely comprises ungulates, reptiles and nocturnal small mammals typical of desert/semi-desert habitats. These may be affected by disturbance due to the presence of vehicles, machinery and the workforce during construction, and disturbance from noise of turbines during operation.

During operation there is the potential for impacts to occur on birds and bats from displacement, from collision with the turbine blades, and from barrier impacts.

The key issues identified are as follows.

- Avoidance of construction activities in areas of sensitive habitat;
- Disturbance of wildlife due to vehicles, machinery and workforce on-site during construction and operation; and
- Collision risk and barrier impacts from moving turbine blades and presence of overhead transmission lines for birds and bats during Project operation.

There are no protected areas identified in the Project site, however species of vulture and mammal are present that are listed as Vulnerable or Endangered by IUCN and, as such, further assessment is required to understand their extent and sensitivity to the Project.

6.2.6 *Tourism*

There is a small tourist camp site on Lake Ghoubet's western shore where people visit to kite surf on the lakes. It is not anticipated that access to the camp or the lake for kite surfing will be affected by the Project. The overall impact of the project is expected to be positive as new roads may improve access to the area and the windfarm itself has the potential to be an attraction.

6.2.7 *Local Economy*

The impact of the Project on employment and the economy is expected to be positive. It is anticipated that unskilled roles will be available during construction. These will be temporary posts and will be advertised in local communities. The number of opportunities during operation will be significantly less (between six and eight) and are likely to be filled by skilled workers.

Indirect opportunities will also arise through the procurement of goods and services, such as food supplies and construction materials, from the local market has the potential to result in positive impacts in the area by stimulating local small and medium sized business development and generation of profits.

Potential impacts on the local economy will be considered further through the ESIA and subsequent ESMMP.

6.2.8 *Landtake and Landuse*

There will be both temporary (short to medium term) and permanent land take as a result of the Project. Site preparation, excavation and construction of foundations and access roads will all result in disturbance, removal and occupation of land. Land within the permanent footprint of the turbines and roads will be unavailable for the duration of the Project, whereas land within the temporary footprint will be reinstated and can return to its previous land use during operation.

In summary, the key issue identified is land within the Project site made temporarily or permanently unavailable as a result of the Project. Temporary landtake may result in some economic displacement.

6.2.9 *Cultural Heritage*

At time of writing there are no known significant cultural heritage sites within the Project site. However, there are multiple circular stone structures (~3-5 m in diameter) within the Project site that are used by local herders to provide pens and shelter for their livestock (goats).

Additionally, there is one graveyard ~50m south of the Project site's south-western boundary, north of the N9 road. The extent and significance of this graveyard will also be determined through community engagement studies.

The significance and sensitivity of these features will be determined by gathering primary baseline data through community engagement studies.

6.2.10 *Road Infrastructure*

The Project will require the transportation of oversized or heavy wind turbine components (blades, turbine tower sections, nacelle, and transformers) and cranes to site, currently planned to be from Doraleh Multipurpose Port.

A study will be undertaken to identify the route from Doraleh Port (or alternate Port) to the site and to determine whether any road upgrades are required. The study will also review whether any roundabouts will need to be temporarily bridged to allow the oversized vehicles to pass. To reduce delays to other road users and to maximise safety for local communities along the transport route, the delivery of oversized loads are likely to take place outside of peak hours (i.e. at night).

The potential safety implications of all delivery and site traffic will be investigated as part of a transport study (separate to the ESIA report) which will be submitted to and discussed with the relevant authorities. An engagement programme will also be developed so that communities close to any transport routes are aware of health and safety issues associated with the movement of heavy loads to and from the site.

Any new access roads constructed to the Project site will be available for public use following construction completion which is anticipated to have a positive impact on overall road infrastructure capacity.

6.2.11 *Community Health, Safety and Wellbeing*

Noise Disturbance

Due to the presence of settlements and sparsely populated areas within close proximity to the Project site, noise impacts are likely to occur during both construction and operation that could impact on community health and wellbeing.

The main sources of noise will include the construction of roads and turbine foundations, and the erection of the turbines themselves. Given the nature of windfarm construction (i.e. only one turbine is constructed at a time and the construction teams move from one turbine to another) means that any noise impacts will be for a short duration only. The ESIA will include noise modelling to identify the noise levels likely to be experience during construction against baseline levels.

During operation noise will relate to mechanical and aerodynamic sources as the wind turbines turn. The major mechanical components include the gearbox, generator, and yaw motors, each of which produce their own characteristic sounds. Mechanical noise is radiated by the surface of the turbine and by openings in the nacelle housing. The interaction of air and the turbine blades produces aerodynamic noise through a variety of processes as air passes over and past the blades. Numeric modelling of the operational turbine noise will be undertaken and compared against monitored baseline noise to inform the ESIA.

Communicable and Non-Communicable Diseases

Uncontrolled access to the site during construction may compromise community health and safety. These issues may include the spread of bacterial disease and infection, as well as the spread of Sexually Transmitted Infections (STIs) and HIV. Children and young women are most vulnerable to such impacts as well as safety resulting from the presence of the workforce and potential influx from job seekers. Additionally, due to poverty levels in neighbouring communities, women may see an opportunity to engage in sexual interactions for income generation purposes. During operation, the risk of these impacts is likely to reduce as the workforce size significantly decreases.

Amenity

During operation, shadow flicker may impact nearby dwellings. Shadow flicker occurs when the sun passes behind a wind turbine and casts a shadow. As the blades rotate, shadows pass over the same point causing an effect termed shadow flicker. Shadow flicker may become a problem if individuals are exposed for extended periods. However, shadow flicker is not generally considered a significant issue and is experienced most at high latitudes, where the sun casts longer shadows. This is not expected to be the case for Djibouti. A minimum of 500 m between the turbines and nearby dwellings will mitigate shadow flicker to within the levels recommended by the IFC. However shadow flicker modelling will be undertaken in the ESIA to confirm this conclusion.

Public Access

Although it is the intention of the Project to maintain access to the footpath network and grazing for livestock as much as possible, some areas will be temporarily fenced off with security measures in place to manage public health and safety risks. However, in areas where access is reduced, restrictions may trigger trespassers to enter hazardous areas and may hinder access to grazing areas.

Restrictions will be reduced during operation whereby only the substation will be fenced off with access restricted. An engagement programme with affected communities and land users, as well as appropriate signage/information boards (with consideration for illiteracy levels) will be required to minimize risks associated with restricted access. This will be considered further through the ESIA and subsequent ESMMP.

Safety

During construction, there will be an increase in vehicles travelling through or adjacent to communities, including potentially very large vehicles transporting turbine components and HGVs. Safety issues may arise from this increased traffic. An engagement programme with affected communities and land users, as well as appropriate signage/information boards (with consideration for illiteracy levels) will be required to minimize risks associated with increased traffic.

Community Cohesion

Due to impacts related to land take, presence of the workforce and potential influx of job seekers, there is the potential for impacts to community cohesion. This includes grievances and tension within communities and between communities (traditional leaders, landowners and users) and the government, the consortium and third parties.

Expectations regarding job opportunities and Project benefits, such as community investment, are considered low and attitudes towards development are not overly positive due to previous third party developments in the area not engaging with the local communities, providing job opportunities or community investment.

Any opportunities of employment or community investment offered by this Project will be carefully managed and, where offered, will be done so as not to create tension in areas where benefits are perceived to be higher than in others.

Measures to manage community engagement and reduce the likelihood of tension between communities will be explored as part of the ESIA.

6.2.12 *Access to Services*

Grazing areas, Footpath Network, Health Facilities, Water etc.

Temporary and permanent land take may impact communities' access to services both within the project site and along the transmission line. Severance of the footpath network may affect social connectivity between the two Lac Assal villages, particularly during construction. The extent of the impact will depend on the final

placement of the turbines, the siting of access roads, the location of worker accommodation, laydown areas and other project facilities.

Supplementary primary baseline data on current access to services and community connectivity will be gathered for the ESIA to understand the extent of potential impacts. At this stage significant impacts on access to community services and facilities such as mosques, water deliveries and mobile healthcare units are not anticipated to be significant. However, further primary data on community's current access to services will be investigated through community engagement studies to confirm.

Therefore the key issues identified are as follows.

- Access to services could be disrupted due to construction of foundations, access roads, turbines and presence of vehicles, machinery and workforce during construction and operation.
- Severance of footpath networks could disrupt the connectivity between local villages and lengthen walking routes.

6.2.13 *Waste Management and Facilities*

Waste management is already an issue for local communities and areas of dumped rubbish are commonplace across the area. The Project will generate various wastes during construction, including black and grey water and sewage from the staff compound, which will need to be collected, segregated and disposed of in a controlled manner. Waste management services in the Project area capable of dealing with the types of waste generated by the Project are not known at this stage.

Good practice waste management (according to international guidelines) will be followed for all phases of the Project. A framework of these management measures will be included in the ESMMP. These will be included in the EPC contractor commitments and detailed in full in the management plans to be developed/ implemented for the Project. If correctly managed, it is not expected that waste will have any significant impact on the local natural or social environment and no detailed assessment is required in the ESIA.

Nonetheless, a high-level assessment will be undertaken to establish a baseline of any existing waste management facilities (local or regional) that would be identified to receive Project waste.

6.2.14 *Cumulative Impacts*

Impacts associated with the Project can potentially have a cumulative impact with other planned/proposed windfarms and other developments in the broader area. Impacts associated with multiple windfarm sites include cumulative impacts to birds and bats, changes to landscape character and landtake.

There is one other known permitted development in the area which is the substation, transformer and 38 km transmission line being built by EDD to evacuate power from the windfarm to Djibouti city. The potential for cumulative impacts with this development will be assessed in further detail in the ESIA.

There are plans to develop a site to the north of the windfarm for a geothermal plant

that may eventually be connected to the Project's substation to evacuate power generated. No detailed plans are available and the project is in very early stages of conception at time of writing.

There is also the potential for cumulative impacts associated with other developments in the general area. There are no known additional plans for other planning developments within the general AoI. However, this will be reviewed again as part of the ESIA.

7 STAKEHOLDER ENGAGEMENT

The key objective of stakeholder engagement for this Project are:

- Inform and raise awareness about the Project, ensuring that meaningful environmental and social information is disclosed to the Project's stakeholders;
- Gather local knowledge to improve the understanding of the environmental and social context;
- Better understand locally-important issues;
- Enable stakeholders to input into the project planning process;
- Take into account the views of stakeholders in the development of mitigation measures and management plans;
- Ensure that any grievances from stakeholders are responded to and managed appropriately; and
- Help the Consortium build and maintain a constructive relationship with key stakeholders, laying the foundation for future stakeholder engagement.

A Stakeholder Engagement Plan (SEP) will be developed to guide the engagement process throughout the Project lifecycle. It is a 'live' document and will be updated as the project progresses.

7.1 INTERNATIONAL REQUIREMENTS

This section sets out the engagement requirements for the Project based on the requirements of the IFC.

Relevant Equator Principles that are reflected in the IFC requirements include:

- Principle 5: Stakeholder engagement
- Principle 6: Grievance mechanism; and
- Principle 10: Reporting and transparency.

The IFC requirements for stakeholder engagement are summarised in Box 7.1.

Box 7.1 Performance Standard Requirements for Stakeholder Engagement

IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts: Stakeholder engagement is an on-going 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 on-going reporting to Affected Stakeholders.

Disclosure of relevant project information: Provide affected stakeholders with access to relevant information on: (i) the purpose, nature, and scale of the project; (ii) the duration of proposed project activities; (iii) any risks to and potential impacts on such stakeholders and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism.

Informed Consultation and Participation: For projects with potentially significant adverse impacts on affected stakeholders, conduct an informed consultation and participation process. It should involve deep exchange of views and information, and an organized and iterative consultation, leading to the project incorporating into their decision-making process the views of the affected stakeholders on matters that affect them directly, such as the proposed mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

The process should be documented, in particular the measures taken to avoid or minimize risks to and adverse impacts on the affected stakeholders. The stakeholders should be informed about how their concerns have been considered.

External Communications: Implement and maintain a procedure for external communications that includes methods to (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them; (iii) provide, track, and document responses, if any; and (iv) adjust the management program, as appropriate. In addition, clients are encouraged to make publicly available periodic reports on their environmental and social sustainability.

7.2 PROJECT STAKEHOLDERS

A complete list of stakeholders will be identified through engagements and a desktop review will be included in the project Stakeholder Engagement Plan (SEP). They will be mapped based on their level of impact and interest in the project. Stakeholder identification is an on-going process through the ESIA process and life of the Project.

Table 7.1 includes a summary of key stakeholders and stakeholder groups that have been identified at time of writing this report. As part of the ESIA process additional stakeholders will be identified and a more compressive list will be included in the project Stakeholder Engagement Plan (SEP).

Table 7.1 Key Project Stakeholders

Stakeholder groups	Connection to the Project
National Government	
• Ministry in charge of Investments under the Presidence • Ministry of Labour and Administrative Reform • Ministry of Housing, Town Planning and Environment Planning • Spatial Planning, Town Planning and Housing Directorate • Environment and Sustainable Development Directorate • Ministry of Energy and Natural Resources • Ministry of Equipment and Transport • Ministry in charge of Investments under the Presidence	• Responsible for approvals and providing official government data, requirements and development plans.
District Authorities	
• Regional Prefectures (Arta and Tadjoura) • Sub-prefectures (Lac Assal and Carta)	• Responsible of Regional development plans • Facilitation in information disclosure
Traditional Leaders	
• Okal général (General Okal)	• Mobilization of communities • Conciliation • Facilitation of communications and information disclosure
• Makabans (Elders, representatives of tribes at local level – Cité Mimouna village)	• Mobilization of local communities; interfacing with project (identification of informants and guides in ESIA process)
• Village chief (Lac Assal Village)	• Mobilization of local community • Interfacing with district administration
Project Affected Communities	
• Lake Assal Communities	• Will be impacted by the project and will require regular engagement throughout the ESIA process.
• Local civil society associations (women's association; "Difu" association in Lac Assal; Associatkion for the development of Lac Assal Region)	• Mobilisation, information disclosure, local development planning
• Natives living in the capital city ("ressortissants")	• Mobilization, political influence, and mediation

7.3 ESIA STAGES OF ENGAGEMENT

Based on the above requirements, the stakeholder engagement process for this ESIA will be carried out as presented in *Table 7.2*. Full details of the engagement process will be provided in a Stakeholder Engagement Plan (SEP).

Table 7.2 ESIA Stages of Engagement

Stage	Purpose	Status / Timing
ESIA Engagement Process		
Stage 1: Scoping	National, regional and local level engagement meetings to provide the following information. • High level project information about the proposed development and gain feedback regarding the nature, scale and purpose of the project • ESIA & stakeholder engagement process • Disclosure of scoping preliminary impacts • ESIA contact details	Completed December 2017 onsite. Additional ministerial meetings to be held February 2018.
Stage 2: Baseline Data Collection	A series of data collection activities will be undertaken to gather information for the ESIA baseline, to inform the impact assessment. • Community consultations • Focus group discussions • Key informant interviews • Settlement profiling	Planned February 2018
Stage 3: Draft ESIA Engagement	Following baseline data analysis and drafting of the impact assessment and mitigation measures, a series of national, district and local level engagement meetings will be held to update stakeholders on the following information: • Updates regarding the nature and of the project • Disclosure of Draft ESIA findings, including identification of impacts and proposed mitigation measures • Grievance mechanism and company contact details	Planned March 2018

7.4 GRIEVANCE MECHANISM

Identifying and responding to any grievances supports the development of positive relationships between the Project and its stakeholders. A grievance mechanism will therefore be developed by the Project. A grievance mechanism provides a platform for stakeholders to engage with the Project, and provide ongoing feedback, was well as dispute resolution to minimise social risks that may cause project delays and increase costs.

8 NEXT STEPS TO COMPLETE ESIA PROCESS

8.1 THE IMPACT ASSESSMENT PROCESS: COMPLETED, ONGOING, AND PLANNED STEPS

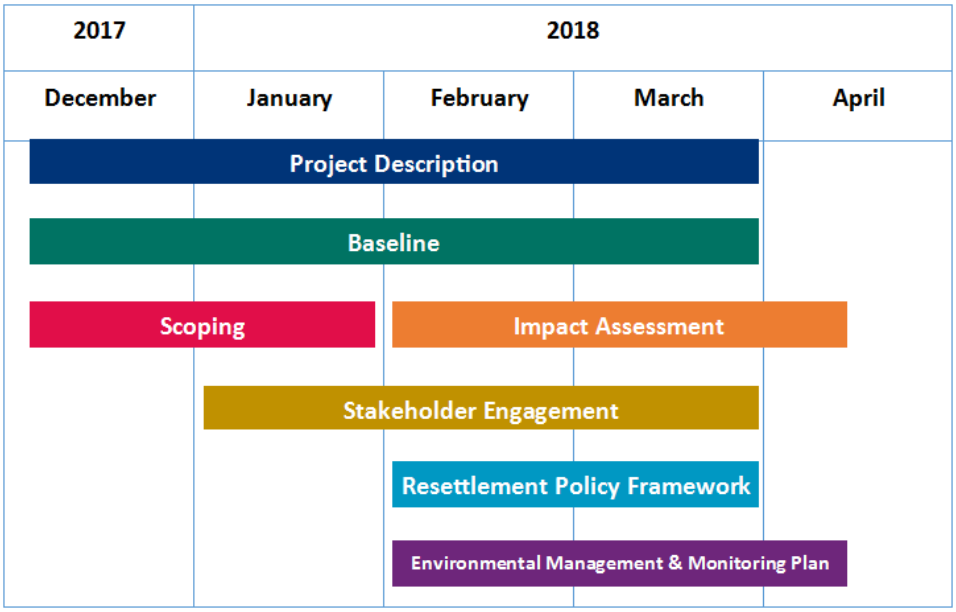
As presented in *Table 8.1* the ESIA process is comprised of several steps. The current status of each of these is provided in *Table 8.1*. An indicative schedule of the ESIA steps is presented in *Figure 8.1.*

Table 8.1 Completed, Ongoing, and Planned Steps in the ESIA Process

Scoping	
Status:	Complete. This Scoping Report defines the technical, spatial, and temporal scope of the impact assessment based on the current project design. If there are any significant project design changes, the scoping determinations will be reviewed as part of the impact assessment process to confirm the appropriate scope of the ESIA.
Project Description	
Status:	In progress. The Project Description included in this Scoping Report represents the current basis of design. However, it is important to note that the project design is not yet fixed. As the design becomes more fixed, the Project Description will be revised and used as the basis for the impact assessment. A revised version will be included in the ESIA Report.
Baseline	
Status:	In progress. The following existing data have been evaluated: • Feasibility Studies 2017 Report by Tractebel • Rapid scoping assessment of site • Birdlife International Soaring Bird Sensitivity Map • Protected area and internationally recognised areas datasets • Threatened and protected species data sets (i.e. IUCN) Based on this information, preliminary baseline sensitivities for the Project area have been identified. To supplement this information, additional primary baseline data collection will also be carried out. This includes: • Biodiversity surveys (including resident and vantage point bird surveys, reptile and mammal surveys and habitat/flora surveys. All surveys will be undertaken between January and March. Noise baseline monitoring • Community engagement (household surveys) • Landscape and visual photography • Basic traffic volume assessment • Cultural heritage (non-intrusive)

Impact Assessment	
Status:	Planned (February - March 2018) Detailed assessments will be conducted for each of the following topic areas: • Noise • Biodiversity (habitats, terrestrial and avifauna) • Landscape and visual • Community, socio-economics, public health and safety • Access to community facilities and services • Unplanned events Limited assessments will be conducted for each of the following topic areas: • Surface and Groundwater • Land and Soils • Cultural heritage • Tourism • Road infrastructure • Waste management and facilities • Cumulative impacts The impact assessments will follow the methodology included in *Section 3*. The purpose of these assessments is to identify any potentially significant environmental or social impacts and advise suitable mitigation measures to manage these potential impacts. These assessments will be the primary focus of the ESIA Report.
Management Plans	
Status:	Planned (February – March 2018) An Environmental and Social Management and Monitoring Plan (ESMMP) will be developed in parallel with the ESIA that summarises how the mitigation measures identified in the ESIA will be managed. In addition to this document, several management plans/procedures will need to be developed that will be used to manage specific environmental and social risks/impacts identified. Such plans include, but are not limited to: a Stakeholder Engagement Plan (SEP) and (if required) a Resettlement Plan Framework (RPF). The ESIA Report will summarise these additional management tools.
Stakeholder Engagement	
Status:	Planned (ongoing) Stakeholder engagement is a required element to meet IFC Performance Standards. For this reason, the project is in the process of drafting a stakeholder engagement plan. Further details are outlined in *Section 7.*

Figure 8.1 Indicative Schedule of ESIA Steps



8.2 THE ESIA REPORT

The draft ESIA report will be prepared during March 2018. The proposed contents of the main volume of the ESIA report are as follows.

Section 1. Introduction
Section 2. Legal, Regulatory and Administrative Framework
Section 3. Project Description
Section 4. Assessment of Alternatives
Section 5. Stakeholder Engagement
Section 6. Baseline Conditions
Section 7. Impact Assessment
Section 8. Environmental and Social Management and Monitoring
Section 9. Summary and Conclusion

For further information on this Scoping Report or the ESIA process, please contact a member of the ESIA Team as identified in *Section 1.5*.

Appendix A1

Applicability of International Guidelines and Standards

Table 1 World Bank Group: Safeguard Policies Applicable to the Project

WB Safeguard Policy	Applicability to Project
Environmental Assessment *Operational Policy 4.01 - Environmental Assessment (EA)*	Evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimising, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The EA Policy takes into account the natural environment (air, water, and land), human health and safety, social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources), as well as transboundary and global environmental aspects.
Natural Habitats *Operational Policy 4.04 - Natural Habitats*	Promotes the conservation of natural habitats. The World Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats. The Bank encourages borrowers to incorporate into their development and environmental strategies analyses of any major natural habitat issues, including identification of important natural habitat sites, the ecological functions they perform, the degree of threat to the sites, and priorities for conservation. The World Bank expects the views, roles, and rights of groups, including local non-governmental organizations and local communities, affected by any project involving natural habitats to be taken into account, and to involve such people in planning, designing, implementing, monitoring, and evaluating such projects. Involvement may include identifying appropriate conservation measures, managing protected areas and other natural habitats, and monitoring and evaluating specific projects.
Physical Cultural Resources *Operational Policy 4.11 – Physical Cultural Resources*	Addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community. Any project involving significant excavations, demolition, movement of earth, flooding, or other environmental changes are to take cognisance of this policy in the EA.

Table 2 International Finance Corporation (IFC) Performance Standards Applicable to the Project

Performance Standards	Applicability to Project
Assessment and Management of Environmental and Social Risks and Impacts **Performance Standard 1** underscores the importance of managing environmental and social performance throughout the life of a project (any business activity that is subject to assessment and management).	• To identify and assess environmental and social risks and impacts of the Project. • To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. • To promote improved environmental and social performance of clients through the effective use of management systems. • To ensure that grievances from Affected Communities (both directly and indirectly affected) and external communications from other stakeholders are responded to and managed appropriately. • To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.
Labour and Working Conditions **Performance Standard 2** recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by the protection of the fundamental rights of workers.	• To promote the fair treatment, non-discrimination and equal opportunity of workers. • To establish, maintain and improve the worker management relationship. • To promote compliance with national labor and employment laws. • To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the clients supply chain. • To promote safe and healthy working conditions, and health of workers. • To avoid the use of forced labour.
Resource Efficiency and Pollution Prevention **Performance Standard 3** recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water, and land and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels.	• To avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from Project activities. • To promote more sustainable use of resources, including energy and water. • To reduce project-related greenhouse gas emissions.
Community Health, Safety and Security **Performance Standard 4** recognises that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.	• To anticipate and avoid adverse impacts on health and safety of the Affected Community during the Project life from both routine and non-routine circumstances • To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the Affected Communities.
Land Acquisition and Involuntary Resettlement **Performance Standard 5** recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land.	• To avoid, and when avoidance is not possible, minimise displacement by exploring alternative Project designs. • To avoid forced eviction. • To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. • To improve, or restore, the livelihoods and standards of living of displaced persons. • To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

Performance Standards	Applicability to Project
Biodiversity Conservation and Sustainable Management of Living Natural Resources **Performance Standard 6** recognises that protecting and conserving biodiversity, maintaining ecosystems services, and sustainably managing living and natural resources are fundamental to sustainable development	• To protect and conserve biodiversity. • To maintain the benefits from ecosystem services. • To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.
Indigenous Peoples **Performance Standard 7** recognises that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalised and vulnerable segments of the population.	• To ensure that the Project process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples • To anticipate and avoid adverse impacts of the Project on communities of Indigenous Peoples, or when avoidance is not possible, to minimise and/or compensate for such impacts. • To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. • To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project through the projects life-cycle. • To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. • To respect and preserve the culture, knowledge and practices of Indigenous Peoples
Cultural Heritage **Performance Standard 8** recognises the importance of cultural heritage for current and future generations	• Protect cultural heritage by ensuring that internationally recognised practices for the protection, field-based study, and documentation of cultural heritage are implemented. Where relevant this includes the retention of a competent professional to assist in the identification and protection of cultural heritage. • Develop provisions for managing chance finds, requiring any chance find to be undisturbed until an assessment by competent professional is complete and management actions are identified. • Consult with affected communities to identify cultural heritage of importance and to incorporate their views into the decision making process. This should involve national and local regulatory agencies. • Allow continued access to cultural heritage sites for communities that have used the sites within living memory for long-standing cultural purposes. • Avoid or minimize impacts to, or restore *in situ,* the functionality of replicable cultural heritage. • Not remove any non-replicable cultural heritage unless the following criteria are met: there are no technically or financially feasible alternatives, the overall benefit of the Project outweigh the anticipated cultural heritage loss from removal and the removal of cultural heritage is conducted using the best available techniques. • Should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances where impacts are unavoidable, the Project will use a process of Informed Consultation and Participation (ICP).

Appendix A2

Issues Scoped Out of ESIA

Project Activity	Scoped Out - Justifications
Air Quality	
Construction of Turbines & Associated Infrastructure	Impacts on air quality caused by emissions from construction and operation site traffic and from dust generation have the potential to impact human health but are not expected to be significant. There are no air quality data for the area, however, due to the dry climate and soil type, there is dust already present in the area. However, there is limited traffic and few industrial processes in the area therefore air quality is expected to be good. Any increases in greenhouse gases (CO2, CO), pollutants (NOx, SOx) and dust (particulates, PM10) will be short term and local to the activity. There will be no operational emissions from the turbines. As part of construction site management, community members will be temporarily excluded from areas near construction works where increased pollutant or dust concentrations may be experienced. In addition, the site management will be consistent with good international practices and include measures such as the avoidance of running engines unnecessarily and using tarpaulins for open-topped trucks and stockpiled materials. Site speed limits will also be in force to limit the amount of dust generated by vehicles. Therefore impacts on air quality are not considered significant and will not be assessed further in the ESIA and no baseline air quality data collection is proposed.
Delivery of Project Components/Supplies	
Cultural Heritage (Intangible)	
Construction of Turbines & Associated Infrastructure	An initial review of publically available data suggests there are no known/recorded areas of tangible cultural heritage in the Project AoI. However, during the scoping visit, a graveyard was identified adjacent to the western Project site boundary, as well as numerous man-made rock structures on the Project site which are understood to be used by herders to protect livestock. The significance and sensitivity of these features will be determined by gathering primary baseline data through community engagement studies. The layout of the Project components and on-site access roads layout will be designed so as not to affect or impede access to these features. Although the possibility of incidental archaeological finds is low, a management plan / chance finds procedure will be included in the EMMP. It is important to note that the relevant authority will be consulted through the stakeholder engagement process, plus anecdotal evidence gathered during the community surveys, to determine if any intangible cultural heritage exists in the Project AoI. Intangible cultural heritage will not be assessed further in the ESIA unless the results of the stakeholder engagement activities indicate otherwise.
Delivery of Project Components/Supplies	
Operation	
Noise	
Operation - Project Substation and Transmission Line	The potential for aeolian (wind) noise impacts from the transmission line is considered unlikely therefore it will not be assessed further in the ESIA. The potential for corona noise impacts from the substation or transmission line is considered unlikely therefore it will not be assessed further in the ESIA. A corona discharge is an electrical discharge brought on by the ionization of a fluid such as air surrounding a conductor that is electrically charged.

Project Activity	Scoped Out - Justifications
Protected Areas	
Construction of Turbines & Associated Infrastructure	Lake Assal has been a protected area since 2004 (Djibouti Law No. 45 / AN / 04 / 5th L) it was also put forward by the Ministry of Muslim Affairs, Culture and Property Waqfs for UNESCO World Heritage Site status in 2015; at time of writing its application for inclusion is still outstanding. The Project site is located ~10km south east of Lake Assal, the Project is not expected to have any direct or indirect significant impacts to the Lake so will not be assessed further in the ESIA. All other protected areas are over 10km from the Project site and are not expected to experience any significant impacts from the Project. The Zone of Theoretical Visibility (ZTV) developed indicates that the Project (i.e. operational turbines) will not be visible from Lake Assal.
Delivery of Project Components/Supplies	
Operation	
Tourism	
Construction of Turbines & Associated Infrastructure	Lake Assal is a tourist attraction ~10km from the Project site. There is also a small beach camp used by a low number of tourists for kite surfing on the western bank of Lake Ghoubet (~5km north of the Project site). Any disruption to the low numbers of vehicles that use the public roads in the area will be localised and of short duration. No Project activities are expected to significantly impact tourism in the area and therefore a detailed assessment will not be undertaken as part of the ESIA.
Delivery of Project Components/Supplies	
Operation	
Road Infrastructure	
Operation	There will be minimal vehicle movements during operation and maintenance of the Project and it is expected that they will not constitute a change in the order of magnitude of road movements and therefore will not significantly affect other road users.
Groundwater	
Construction of Turbines & Associated Infrastructure	The Project footprint (notably the area required for turbine foundations where excavation is required) is relatively small (~10-15% of the Project site), the water table in the region is also expected to be relatively deep, therefore no significant impacts are expected to local groundwater regime. Further technical studies will be undertaken during latter stages of the Project to assess the groundwater and geotechnical conditions.
Delivery of Project Components/Supplies	
Operation	
Community Health, Safety and Wellbeing	
Operation - Blade Throw	The likelihood of blade throw is extremely low and the risk to communities is further reduced by the establishment of setback distances between the turbines and nearby dwellings. The turbine layout stipulates a distance of at least 500 m for this purpose, which is more than 1.5 times the turbine height (tower plus rotor radius) of the three models of turbine likely to be used at time of writing. Therefore this is not a potentially significant impact and will not be considered further in the ESIA.

Project Activity	Scoped Out - Justifications
Telecommunications and Electromagnetic Interference (EMI)	
Operation - Wind Turbines & Transmission Lines	The operation of wind turbines and transmission lines can interfere with broadcasting and other telecommunication services by causing electromagnetic interference (EMI). The design of the Project will consider and where necessary incorporate the prevention and control measures set out in the IFC EHS Guidelines for Wind Energy. This will include consultation with telecommunication operators in the area. Measures that will be implemented by the Project will be incorporated in the ESMMP. A detailed assessment will not be undertaken as part of the ESIA.
Aviation	
Operation - Wind Turbines & Transmission Lines	The operation of wind turbines can interfere with aircraft safety (height of the turbines) and aviation radar (signal distortion - see EMI above). It is understood that the military conduct low-flying aviation manoeuvres in the area and notably over the Project site. A standalone Aviation and Visual Impact Assessment (AVIA) will be completed for the Project in consultation with the relevant authorities. Impacts on aviation will not be considered further in the ESIA, although if available, a discussion of the AVIA will be incorporated into the ESIA. The prevention and control measures recommended by the AVIA will be incorporated in the ESMMP.
Indigenous Peoples	
Construction of Turbines & Associated Infrastructure	The Afar people, who inhabit the region that the Project site is located within, are an ethinic majority in Djibouti (~30% of total population) and are not considered to be subject to particular discrimination. They have not been the object of conquest and domination therefore they are holders of the power on their territory. They are not enslaved, stigmatised or marginalised by another ethno-linguistic group. The Afar people are therefore not considered to be an indigenous people (according to IFC PS7 or United Nations definitions) and no futher assessment will be conducted under IFC PS7 in the ESIA.
Delivery of Project Components/Supplies	
Operation	
Climate Change	
Construction of Turbines & Associated Infrastructure	The *IFI Approach to GHG Accounting for Renewable Energy Projects (World Bank, 2015)* states: energy generated from renewable sources will avoid emissions that would otherwise be generated wholly or partly from more carbon-intensive sources. Since the Project is a renewable energy generation project, its operation phase emissions are considered to displace emissions that would otherwise be sourced from other electricity generation technologies. A suitable, quantified statement will be included in the ESIA however a detailed climate change assessment of net GHG emissions will not be undertaken.
Turbine Delivery	
Operation	

Annex B

Biodiversity Baseline Study

1 BIODIVERSITY DESK STUDY

An initial review of published data was undertaken to identify the dominant habitat types, species groups and key biodiversity receptors present within the Project area.

The following information sources were consulted during the desk study of terrestrial biodiversity in the Project area.

- National legislation.
- International regulations and conventions ratified in Djibouti.
- Published sources of information and databases on the distribution of protected areas and species in Djibouti.
- Birdlife International information on Important Bird Biodiversity Areas http://datazone.birdlife.org/home
- World database of Key Biodiversity Areas http://www.keybiodiversityareas.org/home
- Ramsar Site Information Service data on Wetland of International Importance https://rsis.ramsar.org/.
- Consulting local (Djibouti-East Africa) biodiversity specialists.
- National and international scientific papers.

The results of the desk based study were used to provide information on the distribution of species and habitats, and to inform the scope of the specialist field surveys required to inform a robust baseline against which Project impacts can be assessed.

1.1 DESK STUDY REVIEW PRESENCE CATEGORIES

Table B1.1 Definition of the categories used to describe the likelihood of occurrence

Presence	Definition
Present	Normally observed on the site and / or in the surrounding 10km area; in principle in the 10km zone permanently or regularly.
Likely to occur	Presence not proven, but usually present, even marginally, in habitats comparable to those in the surrounding 10km area and/or potentially present as a function of the variation in food resources and anthropogenic pressures. Based on expert opinion, the actual presence of the species will be dependent on the quality of the habitat, which itself will be dependent on anthropogenic factors (e.g. disturbance) and climate.
Temporarily present	These species are generally mobile, often quite scarce or rare, discreet and/or solitary and opportunistic. In Djibouti, except in a few specific and documented cases, mammalian species are generally mobile and capable of large displacements according to the food resources and the search for favourable habitats. This category is based on expert opinion.

Presence	Definition
Unlikely	This category covers species that are rare throughout Djibouti or whose habitat preferences are mostly incompatible with that present in the surrounding 10km area. In principle, this includes species that are absent from the zone. However, given the experience accumulated since the 1980s, it is impossible to completely exclude the exceptional presence of one of these species in the sector considered.
Absent, or very unlikely to occur	This category includes species that are rare, very rare or on the verge of extinction and those whose habitat preferences are completely incompatible with the natural and anthropogenic habitats of the area.

1.2 DESK STUDY RESULTS

1.2.1 *Mammals*

The desk study included all terrestrial and marine mammal species recorded in Djibouti and ranked them according to how likely they were to be present. In the first two categories (present and likely to be present), there are no additional species to the Dorcas Gazelle (Vulnerable). Within the third tier (nomadic species, temporarily present) the only threatened terrestrial species was the Somali Leopard. Leopards travel large distances and do occupy a very wide range of habitats and sometimes come into conflict with man. There was no documented evidence of Leopards being in the area.

Table B1.2 Species very likely to be present on, or within 10km of the site

Species	Common Name	IUCN Status	Comments
Xerus rutilus	Unstriped Ground Squirrel	Least Concern	Widespread species frequenting many types of habitats and common. Regularly and easily observed.
Pectinator spekei	Speke's Pectinator	Least Concern	Common species in rocky environments at all altitudes
Canis aureus	Golden Jackal	Least Concern	Opportunist species, quasi-commensal with man and common in Djibouti
Canis (lupus) familiaris	Domestic Dog	Not assessed	Commensal with man
Papio hamadryas	Hamadryas Baboon	Least Concern	A highly adaptable, opportunistic, quasi-commensal species of man. Its presence in the area depends on daily food prospecting circuits, which are themselves

Species	Common Name	IUCN Status	Comments
			conditioned by the opportunities (water, grain, landfills) linked to road transport and to the human habitation in the area
Camelus dromediarus	Dromedary	Not Assessed	Species commensal with man and present throughout Djibouti
Gazella dorcas	Dorcas Gazelle	Vulnerable	Habitual species, rather territorial
Capra hircus	Domestic Goat	Not Assessed	Certain to be present. Highly competitive species of wild herbivores
Equus asinus	Donkey	Not Assessed	Species commensal with man

Table B1.3 Species likely to occur on, or within 10km of the site

Species	Common Name	IUCN Status	Comments
Lepus (capensis) habessenicus	Cape Hare	Least Concern	Dependent on the state of the habitat and amount of vegetation
Caracal caracal	Caracal	Least Concern	Discreet, adaptable, opportunistic, under-recorded species
Ichneumia albicauda	White-tailed Mongoose	Least Concern	Quasi-commensal, opportunistic species
Hyaena hyaena	Striped Hyaena	Near Threatened	Usual species, nocturnal. Its maintenance in the zone will depend on the presence of domestic waste
Madoqua saltiana swainei	Salt's Dik-dik	Least Concern	Widespread species, locally common, territorial, whose presence is dependent on the state of the vegetation and the abundance of predators and domestic competitors (goats). This species was observed in the area while travelling to and from the site from Djibouti city but

Species	Common Name	IUCN Status	Comments
			was not actually observed in the site
Ovis aries	Domestic Sheep	Not Assessed	Almost certain present. Competitive species of wild herbivores
Procavia capensis	Rock Hyrax	Least Concern	Common and widespread species of rocky escarpments

Table B1.4 Species temporarily present (e.g. nomadic, itinerant species)

Species	Common Name	IUCN Status	Comments
Hystrix cristata	Crested Porcupine	Least Concern	Nocturnal species, rather rare but distributed, depending on the food resources linked to human implantation.
Acomys cahirinus	Cairo Spiny Mouse	Least Concern	Species commensal with man
Rattus rattus	House Rat	Least Concern	Species commensal with man
Rattus norvegicus	Brown Rat	Least Concern	Species commensal with man
Mus musculus	House Mouse	Least Concern	Species commensal with man
Vulpes rueppelli	Ruppell's Fox	Least Concern	Discreet and adaptable species, probably under-recorded
Ictonyx striatus	Zorilla	Least Concern	Discreet and adaptable species, probably under-recorded
Mellivora capensis	Honey Badger	Least Concern	Very mobile species, possible in present while moving through the area. The probability of occurrence is however low.
Felis sylvestris	African Wild Cat	Least Concern	Discreet, adaptable, opportunistic, under-recorded species.
Panthera pardus nanopardus	Somali Leopard	Vulnerable	Nomadic, observed potentially everywhere. Adaptable, discreet, opportunistic species. Under-recorded.

Species	Common Name	IUCN Status	Comments
Herpestes (Galerella) sanguinea (sanguineus)	Slender Mongoose	Least Concern	Possible species. Quite rare and discreet but frequenting all biotopes.
Genetta genetta	Common Genet	Least Concern	Low probability of occurrence
Nanger soemmerringii	Soemmerring's Gazelle	Vulnerable	Mobile species in decline, becoming rather rare in Djibouti.

Table B1.5 Species unlikely to occur

Species	Common Name	IUCN Status	Comments
Lophiomys imhausi	Crested Rat	Least Concern	Nocturnal species, rather rare but distributed, depending on the food resources linked to human implantation.
Crocuta crocuta	Spotted Hyaena	Least Concern	Its presence in the zone will depend on the availability of domestic waste
Atelerix albiventris	Four-toed Hedgehog	Least Concern	Rare, nocturnal, perhaps undervalued. Its presence on the site is not excluded.
Paraechinus aethiopicus	Desert Hedgehog	Least Concern	Rare, nocturnal, perhaps undervalued. Its presence on the site is not excluded.
Phacochoerus africanus	Common Warthog	Least Concern	Species located in Djibouti. Its presence on the site is very unlikely but cannot be excluded formally.
Phacochoerus africanus aeliani	Eritrean Warthog	Least Concern	Species located in Djibouti. Its presence on the site is very unlikely but cannot be excluded formally.
Litocranius walleri	Gerenuk	Near Threatened	Mobile species, unlikely in the area due the lack of suitable habitat
Orycteropus afer	Aardvark	Least Concern	Nocturnal species, rare. Its presence is very unlikely in the area but cannot be totally excluded.

Table B1.6 Species absent

Species	Common Name	IUCN Status
Heterocephalus glaber	Naked Mole Rat	Least Concern
Canis mesomelas	Black-backed Jackal	Least Concern
Acinonyx jubatus hecki	Cheetah	Least Concern
Mungos mungo	Banded Mongoose	Least Concern
Genetta abyssinica	Ethiopian Genet	Data Deficient
Cercopithecus (Chlorocebus) aethiops matschei	Vervet Monkey	Least Concern
Dorcatragus megalotis	Beira	Vulnerable
Heterohyrax brucei	Bush Hyrax	Least Concern
Dugong dugon	Dugong	Vulnerable
Equus africanus somalinesis	Somali Wild Ass	Critical

Table B1.7 Species Unknown status

Species	Common Name	IUCN Status
Acomys mullah	Mullah Spiny Mouse	Least Concern
Acomys louisae louisae	Louise's Spiny Mouse	Least Concern
Gerbillus gerbillus	Lesser Egyptian Gerbil	Least Concern
Gerbillus henleyi	Pygmy Gerbil	Least Concern
Gerbillus pulvinatus (bilensis)	Cushioned Gerbil	Least Concern
Gerbillus dunni	Dunn's Gerbil	Least Concern
Gerbillus somalicus	Somalian Gerbil	Data Deficient
Gerbillus watersi	Waters's Gerbil	Least Concern
Arvicanthis neumanni somalicus	Somali Grass Rat	Least Concern
Elephantulus rufescens	Rufous Elephant Shrew	Least Concern
Civettictis civetta pauli	Djibouti Civet Cat	Least Concern
Suncus murinus	House Shrew	Least Concern
Oreotragus oreotragus	Klipspringer	Least Concern
Oryx beisa	Beisa Oryx	Near Threatened

1.2.2 ***Bats***

The desk-based review of available data highlighted the lack of information about the occurrence of bats in Djibouti. Many species are known from one or two records only, and so the distribution of bats in the country is poorly known. Based on habitat preferences, it was possible to determine that a portion of the bat fauna would be absent from the site. For the remaining species, presence would be possible during the year, or at certain times only (e.g. nomadic or migratory movements).

Table B1.8 Species Absent

Species	Common Name	IUCN Status
Cardioderma cor	Heart-nosed Bat	Least Concern
Lavia frons	Yellow-winged Bat	Least Concern

Otomops martiensseni	Large-eared Free-tailed Bat	Near Threatened
Otomops harrisoni	Harrison's Large-eared Giant Mastiff Bat	Vulnerable
Eidolon helvum	Straw-colored Fruit Bat	Near Threatened
Epomophorus labiatus	Ethiopian Epauletted Fruit Bat	Least Concern

Table B1.9 Species Unknown presence or absence

Species	Common Name	IUCN Status
Coleura afra afra	African Sheath-tailed Bat	Least Concern
Taphozous perforatus	Egyptian Tomb Bat	Least Concern
Taphozous nudiventris	Naked-rumped Tomb Bat	Least Concern
Hipposideros megalotis	Ethiopian Large-eared Roundleaf Bat	Least Concern
Asellia tridens	Geoffroy's Trident Leaf-nosed Bat	Least Concern
Triaenops persicus	Persian Trident Bat	Least Concern
Nycteris thebaica	Cape Long-eared Bat	Least Concern
Rhinopoma hardwickii	Lesser Mouse-tailed Bat	Least Concern
Rhinopoma microphyllum	Greater Mouse-tailled Bat	Least Concern
Nycticeinops schlieffeni	Schlieffen's Bat	Least Concern
Neoromicia nana	Banana Bat	Least Concern
Neoromicia helios	Samburu Pipistrelle Bat	Data Deficient
Scotophilus dinganii	African Yellow Bat	Least Concern

1.2.3 *Reptiles*

The desk study highlighted the lack of knowledge about reptiles in Djibouti. The habitats used by most species are poorly known and the threat status of many have not been assessed by IUCN. Of the terrestrial species identified in Djibouti, none have been assessed to be threatened, although this is partly a reflection of the lack of knowledge around this group of species.

Table B1.10 Reptile Species known to occur in Djibouti

Species	Common Name	IUCN Status	Comments
Trapelus pallidus	Desert Agama	Not Assessed	
Agama spinosa	Spiny Agama	Least Concern	
Acanthocercus annectens	Eritrean Rock Agama	Least Concern	
Uromastyx ocellata	Ocellated Spinytail	Least Concern	Temporarily present

Species	Common Name	IUCN Status	Comments
Chamaeleo calcaricarens	Spurless Basilisk Chameleon	Least Concern	Absent
Pristurus flavipunctatus	Middle Eastern Rock Gecko	Not Assessed	
Pristurus rupestris	Blanford's Semaphore Gecko	Least Concern	
Hemidactylus turcicus	Turkish Gecko	Least Concern	
Hemidactylus flaviviridis	Yellow-bellied House Gecko	Not Assessed	
Hemidactylus frenatus	Common House Gecko	Least Concern	
Stenodactylus sthenodactylus	Elegant Gecko	Not Assessed	
Tropiocolotes tripolitanus	Northern Sand Gecko	Least Concern	
Hemydactylus awashensis	Awash Gecko	Not Assessed	Potentially occurring
Ptyodactylus hasselquistii	Fan-footed Gecko	Not Assessed	
Ptyodactylus ragazzi	Ragazzi's Fan-footed Gecko	Not Assessed	
Tarentola annularis	Common Wall Gecko	Not Assessed	
Gerrhosaurus (Broadleysaurus) major	Desert Plated Lizard	Not Assessed	
Latastia boscai	Long-tailed Lizard	Not Assessed	Present
Latastia doriai	Doria's Long-tailed Lizard	Not Assessed	
Mesalina martini	Martin's Desert Racer	Not Assessed	
Philochortus hardeggeri	Hardegger's Orangetail Lizard	Not Assessed	
Pseuderemias brenneri	Brenner's Racerunner	Not Assessed	
Pseuderemias mucronata	Blanford's Sand Racer	Not Assessed	
Pseuderemias striatus	Peters' Sand Lizard	Data Deficient	
Philochortus spinalis	Peters' Shield-backed Lizard	Not Assessed	
Chalcides ragazzii	Ragazzi's Cylindrical Skink	Not Assessed	

Species	Common Name	IUCN Status	Comments
Trachylepis (Mabuya) quinquetaeniata	African Five-lined Skink	Least Concern	
Trachylepis (Mabuya) striata	African Striped Skink	Not Assessed	
Chalcides ocellatus	Ocellated Skink	Not Assessed	
Echis pyramidum	North-East African Carpet Viper	Least Concern	Likely to occur
Eirenis africana (africanus)	African Dwarf Snake	Not Assessed	Present
Platyceps afarensis	Djibouti Whip Snake	Not Assessed	Likely to occur
Platyceps (Coluber) rhodorachis	Common Cliff Racer	Not Assessed	
Platyceps (Coluvber) taylori	Taylor's Racer	Not Assessed	
Telescopus dhara	Arabian Cat Snake	Not Assessed	
Naja haje	Egyptian Cobra	Least Concern	Likely to occur
Naja pallida	African Cobra	Not Assessed	
Psammophis punctulatus	Speckled Sand Racer	Not Assessed	
Prosymna somalica	Northern Somali Shovelsnout Snake	Not Assessed	
Psammophis biseriatus	Two-striped Sand Racer	Not Assessed	
Psammophis tanganicus	Tanganyika Sand Snake	Not Assessed	
Varanus albigularis	White-throated Monitor	Not Assessed	Likely to occur
Eryx colubrinus	Sand Boa	Not Assessed	
Stigmochelys (Geochelone) pardalis	Leopard Tortoise	Not Assessed	Absent

Annex C

Noise Modelling Report

1 INTRODUCTION

As part of the ESIA of the Ghoubet Windfarm Project, a noise modelling study was carried out to predict the noise emission levels generated by the Project during the operation of the wind turbines.

The predicted noise levels were the basis for the assessment of the potential noise impacts from wind turbines operation on the surrounding community.

This annex reports the methodology and findings of the performed modelling activity, and discusses the potential noise emissions associated with the Project operation, taking into account the wind farm technical specifications and the operational mode.

The noise modelling study was completed with due regard to and in accordance with relevant aspects of the following noise guidelines and standards:

- IFC (2015). Environmental, Health and Safety Guidelines for Wind Energy;
- IFC (2012). General Environmental EHS Guidelines: Noise Management;
- UK Institute of Acoustics (2013). Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.

2 PROJECT BACKGROUND

2.1 PROJECT LAYOUT SELECTION

A primary screening exercise was undertaken to determine the required set-back distance between turbines and sensitive receptors, to avoid or minimise significant noise impacts. This screening exercise led to a preliminary minimum distance of 600 m-700m between turbine locations and residential buildings. This information, together with site investigation aiming at verifying the actual position of residential buildings, was used for the definition of the final Project layout.

In the selected final layout, object of the present modelling study, the turbines will be sited at least 400 m from one another and at least 500 m from any community receptors (i.e. residential dwellings). The turbine layout is shown in *Figure C3*.

2.2 PROJECT AREA OF INFLUENCE AND SENSITIVE RECEPTORS

The noise area of influence is defined as the area over which an increase in environmental noise levels due to the Project can be detected by the local population. For the Project, the area of influence is typically 1 to 2 km from the wind turbines during operation (this includes a distance of 10 times the size of the rotor diameter of the wind turbines).

Two main settlements were identified in the surroundings of the Project site that could be potentially affected by the noise generated during wind turbines operation (see *Figure C3*): Lac Assal, located 500m from the Project site boundary, and Cité Moumina, 600m from the site. Another village, Layta, is located farer, at an approximate distance of 1.5km.

2.3 EXISTING ACOUSTIC CLIMATE

To determine the likely effect that a project may have on the noise environment an understanding of the existing noise within the project area is understood.

A survey was undertaken in March 2018 to monitor for 48 hours the background noise levels at two locations in the proximity of the proposed windfarm:

- Cité Moumina village (NML1), located approximately 600m south from the project boundary;
- Lac Assal village (NML2), located less than 500m north from the project boundary;

Additional measurements (for a period of 2h during day and night time) were performed at Salt investment Compound (NML3), located 400m east from the project boundary. Additional information on baseline survey methodology is in Appendix C1.

Measurements were performed in line with IFC requirements.

The noise field survey indicated that the acoustic climate of the Project site is already affected by existing noise sources (e.g., village activity, animals and wind), that generate very high background noise levels.

An average monitored background noise level of 56 dB(A) and 58 dB(A) was recorded at Cité Moumina village and Lac Assal village respectively over a 48h period. The noise levels were mainly steady throughout day and night-time. The main noise source was represented by the wind blowing from north-east.

At the Salt investment compound site, monitored background noise levels ranged between 35 dB(A) and 63 dB(A) during the daytime, and between 45 and 75 dB(A) during the night.

At the time of the monitoring, wind direction was recorded to be from north-east. It should be noted that background noise is expected to increase as wind speed increases.

2.4 APPLICABLE NOISE STANDARDS FOR OPERATION PHASE

The noise standards considered in the present ESIA are based on international (International Finance Corporation, IFC) guidelines for noise emissions and noise pollution during the operational phase.

The IFC General Environmental EHS Guidelines (IFC, 2012), which implement the "Guidelines for Community Noise" established by the World Health Organization (WHO) in 1999, prescribe the absolute noise levels reported in *Table C2.1* for daytime and night-time to be achieved. In environments where the ambient noise levels already exceed a level of 55 dB(A) daytime and/or 45 dB(A) night-time the IFC includes a guideline stating that noise emissions should not cause the ambient noise level in a residential area to rise by 3 dB(A) or more, determined during the noisiest hour of a 24-hour period.

Table C2.1 IFC Guidelines for Ambient Noise Levels

Receptor	**Noise Limit [$Leq_{(1\text{-hour})}$, dB(A)]**	
	Daytime [07-22]	**Night time [22-07]**
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

Source: IFC General EHSs Guidelines: Noise (IFC, 2012)

For the purpose of this study, the night-time limit of 45 dB(A) set by IFC guidelines was used as compliance limit reference for the assessment of Project exceedances.

3 NOISE MODELLING METHODOLOGY

Predicted noise levels at receptors were assessed through first identifying significant sources and their emission in order to develop applicable assessment scenarios.

Project noise levels were then predicted (using SoundPLAN modelling) for the scenario developed and resultant values compared to the Project-specific criteria, limits or management levels at each receptor location.

The predicted noise levels were the basis for the assessment of the potential noise impacts on community receptors reported in the ESIA Chapter 7.11. Based on these predicted values, noise control mitigation, management measures and/or monitoring options are presented.

3.1 SOUNDPLAN MODELLING SYSTEM

For the noise modelling study, SoundPLAN (version 7.4) modelling software package was utilised to calculate operational noise levels, using the ISO9613:2 noise propagation algorithms.

The SoundPLAN software package allows topographic details to be combined with ground regions, water, grass, significant building structures and Project-specific assessment locations, to create a detailed and accurate representation of the Project layout and surrounding area. The noise model allowed for the quantification of noise levels from multiple sources (i.e., the wind turbines), based on sound pressures or sound pressure levels emitted from each. The model computed the noise propagation in the assessment area of influence to specifically quantify A-weighted decibels, dB(A).

Box C3.1 reports the key technical specifications of the SoundPLAN noise modelling software package.

Box C3.1 SoundPLAN Technical Specifications

SoundPLAN is one of the most recognised noise prediction tools, used extensively in road, railway and industry noise modelling.

The industrial model is comprehensive and allows:

- modelling of sound power sources in third of octave;
- modelling of noise sources as point, line or area sources;
- 2D and 3D directivity of sources;
- 3D topography;
- noise sources ranking;
- use of various noise model standards (ISO, Concawe, Nordic, etc.); and
- screening and meteorological effects.

This software applies the “ray tracing” method. Sources are simulated as surfaces, lines or points: each source propagates sound waves. The resulting acoustic field depends on the absorption and reflection characteristics of all existent obstacles between the source and the receptor.

Every ray carries a part of the acoustic energy of the sound source. The energy decreases along the way, as a result of the absorption of surfaces, geometrical divergence and atmospheric absorption. The absorption of sound energy by air is related to the dispersion of energy caused by the collisions of air molecules among them. Every collision scatters one small part of the energy and causes more impacts. In the area of interest, the acoustic field will be the result of the acoustic energies sum of "n" rays which reach the receiver. The levels in the whole area are indicated by iso-phones with equivalent steps, at a conventional height (e.g., 1.5 meters above ground level).

The mathematical model uses international standards for sound attenuation in the environment. In this study *ISO 9613 Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation* has been applied. This standard has many equations regulating the propagation and it allows to calculate noise levels in the study area with a defined accuracy.
The aim of such methodology is to determine the equivalent continuous A- weighted sound pressure level, as described in ISO 1996/1-2-3, under meteorological conditions favourable to sound propagation from sources of known power emission.

As all the receivers are considered to be downwind from the source, the propagation takes place under the worst wind conditions, as specified in ISO 1996/2 (part 5, 4, 3).

The medium level of sound pressure to the receiver in the propagation direction (downwind conditions) is calculated for every source with:
$L_P = L_W - A$

where:
- L_p = Sound Pressure Level at receptor [dB(A)];
- L_W = Sound Power Level of source [dB(A)].

The factor A is the attenuation that the sound energy endures during the propagation and it is composed of the following contributors:
$A = A_{div} + A_{atm} + A_{ground} + A_{refl} + A_{screen} + A_{misc}$
where:
- A_{div} = attenuation due to geometrical divergence;
- A_{atm} = attenuation due to atmospheric absorption;
- A_{ground} = attenuation due to the ground effect;
- A_{refl} = attenuation due to reflections from obstacles;
- A_{screen} = attenuation due to screen effects;
- A_{misc} = attenuation due to other effects.

As specified in ISO 9613, it's necessary to underline that the use of the noise propagation algorithms is subject to limitations due to model accuracy. The following ***Error! Reference source not found.*** reports the estimated accuracy for noise pressure levels calculated using the noise attenuations described in *Table C3.1*.

Table C3.1 Estimated accuracy for broadband noise of LAT (DW) (a) calculated using previous equations. From ISO 9613-2, Table 5

Height, h (b)	Distance, d (c)	
	0 < d < 100 m	100 m < d < 1000 m
0 < h < 5 m	± 3 dB	± 3 dB
5 m < h < 30 m	± 1 dB	± 1 dB

(a) L_{AT} (DW) is the average A-weighted sound pressure level for downwind propagation
(b) h is the mean height of the source and receiver
(c) d is the distance between the source and receiver

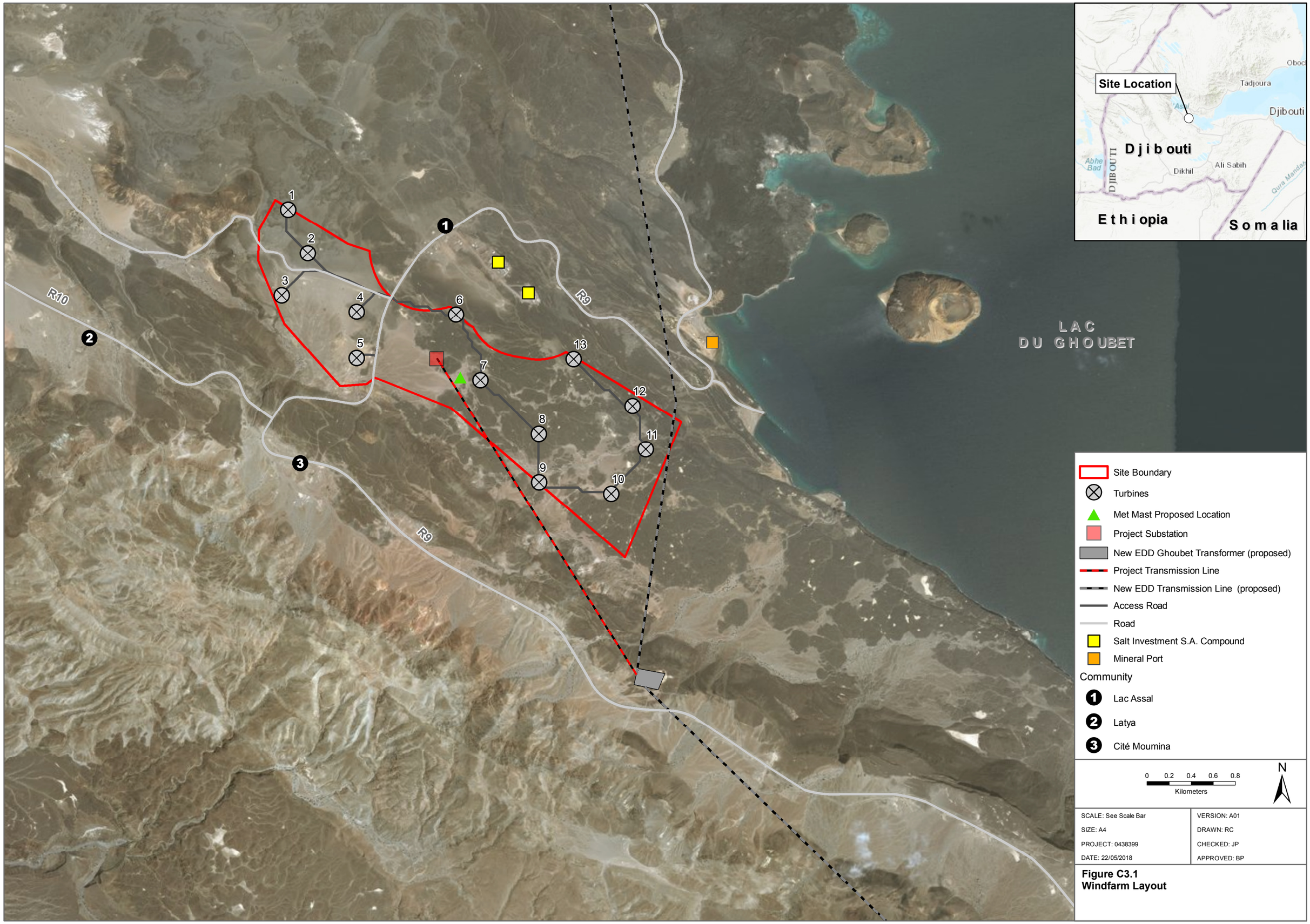
These estimates have been made from situations where there are no effects due to reflection or attenuation due to screening

3.2 NOISE SOURCES AND EMISSION SCENARIO

Operational-wind turbines produce noise from mechanical and aerodynamic sources:

- Aerodynamic noise emanates from the movement of air around the turbine blades and tower. The types of aerodynamic noise may include low frequency, impulsive low frequency, tonal, and continuous broadband. In addition, the amount of noise may rise with increasing rotation speed of the turbine blades, therefore turbine designs which allow lower rotational speeds in higher winds will limit the amount of noise generated;
- Mechanical noise may be generated by machinery in the nacelle of the wind turbines.

The Project will consist of 13 wind turbines of 4.8 MW each; the turbine model selected is the Nordex N133, characterised by a hub's height of 83m and a maximum sound power level of 106 dB(A).



SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

Path: P:\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\ESIA Report\0438399_ProjectComponents_A02.mxd

For the assessment of noise emissions from windfarm operation a digital model of the Project was developed, which included proposed wind turbines locations, elevation data, turbine noise data and dimensions based on the Project layout.

Noise emission levels were predicted for all 13 wind turbines and compared to noise criteria at all receptors. A maximum hub height of 83 m was assumed for all wind turbines in the Project. For the purposes of this study, wind turbine's noise emission profiles based on manufacturer supplied data were used to assess the noise emissions from each wind turbine. For a conservative approach, this study assumes the wind turbines operating at the maximum wind turbine's sound power level (Lw) data defined by manufacturers' datasheet for Nordex N133 and corresponding to 106 dB(A).

Table C3.2 summarises the main settings of the noise emission scenario for the assessment of noise emissions from Nordex N133-4.8MW turbines.

Table C3.2 Summary of Noise Emission Scenario

Parameter	Description
Turbine candidate	N133 4.8 MW
Turbine Hub Height (m)	83
Number of turbine	13
Sound Power Level, LW (dBA) (1) (2)	106 (maximum value)
Topography	ASTER GDEM
Ground absorption	0.5
Meteorological conditions	ISO 9613 – low atm absorption
Receptor's height (m)	4

(1) Turbine maximum sound power level provided by Tractebel.

(2) Noise spectrum for the turbine was based on manufacturer's data for similar wind turbines.

The Nordex N133 was the preferred selected wind turbine model for the project, because of the higher MW production per turbine meaning fewer turbines are required to complete the 60 MW capacity. However, it was investigated also the possibility to install the Siemens SWT-DD-4.3MW turbine. For the purpose of this study, and in order to provide all the information for a better evaluation of alternatives for wind turbines selection, a preliminary assessment of the predicted noise emissions installing Siemens wind turbine was developed.

3.3 ASSUMPTIONS

The following assumptions were applied to the modelling study, based on the *Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* developed by the UK Institute of Acoustics.

- Turbine Sound Emissions. All wind turbines will be assumed to be operating simultaneously at the maximum sound power levels, as specified by the turbine manufacturer. Turbines will be modelled as a point source located at the turbine hub, which is consistent with the method used to define the sound power level for the turbine through testing done in accordance with IEC 61400-11.

- Noise receptors. Noise levels at sensitive receptors, which are likely to be single storey buildings, were predicted at a height of 4 m. This height has the effect of

reducing the potential over-sensitivity of the calculation to ground absorption effects in the receiver region.

- Meteorological conditions. UK Good Practice Guide recommends that atmospheric conditions in the prediction method are set to 10° Celsius and 70% humidity, to represent a reasonably low level of air absorption. These values were included in the study to account for a conservative noise emission scenario, in accordance with applicable international methodology for windfarm noise assessment.

- Wind speed and direction. The model considered the maximum sound power level for the wind turbine, corresponding to the maximum wind speed at which the turbine operates. The ISO standard conservatively assumes all receptors are downwind of the wind turbines.

- Ground topography. The topography of the area was included in the model, to take into account the differences in altitude between the community areas and the project site.

- Average ground absorption. The ability of the ground to reflect or absorb sound will affect the level of wind turbine noise that may be heard at receptors. A soft ground condition, such as grass, has a high ground absorption that tends to attenuate wind turbine sound and make it less noticeable. A harder ground condition, such as asphalt, has a lower ground absorption that tends to reflect sound and would make wind turbine sound more noticeable. This study assumed a ground absorption value, G, of 0.5, which accounts for a mix of soft (sound absorptive) and hard (sound reflective) ground conditions. This factor value is recommended by UK Good Practice Guide.

4 NOISE MODELLING RESULTS

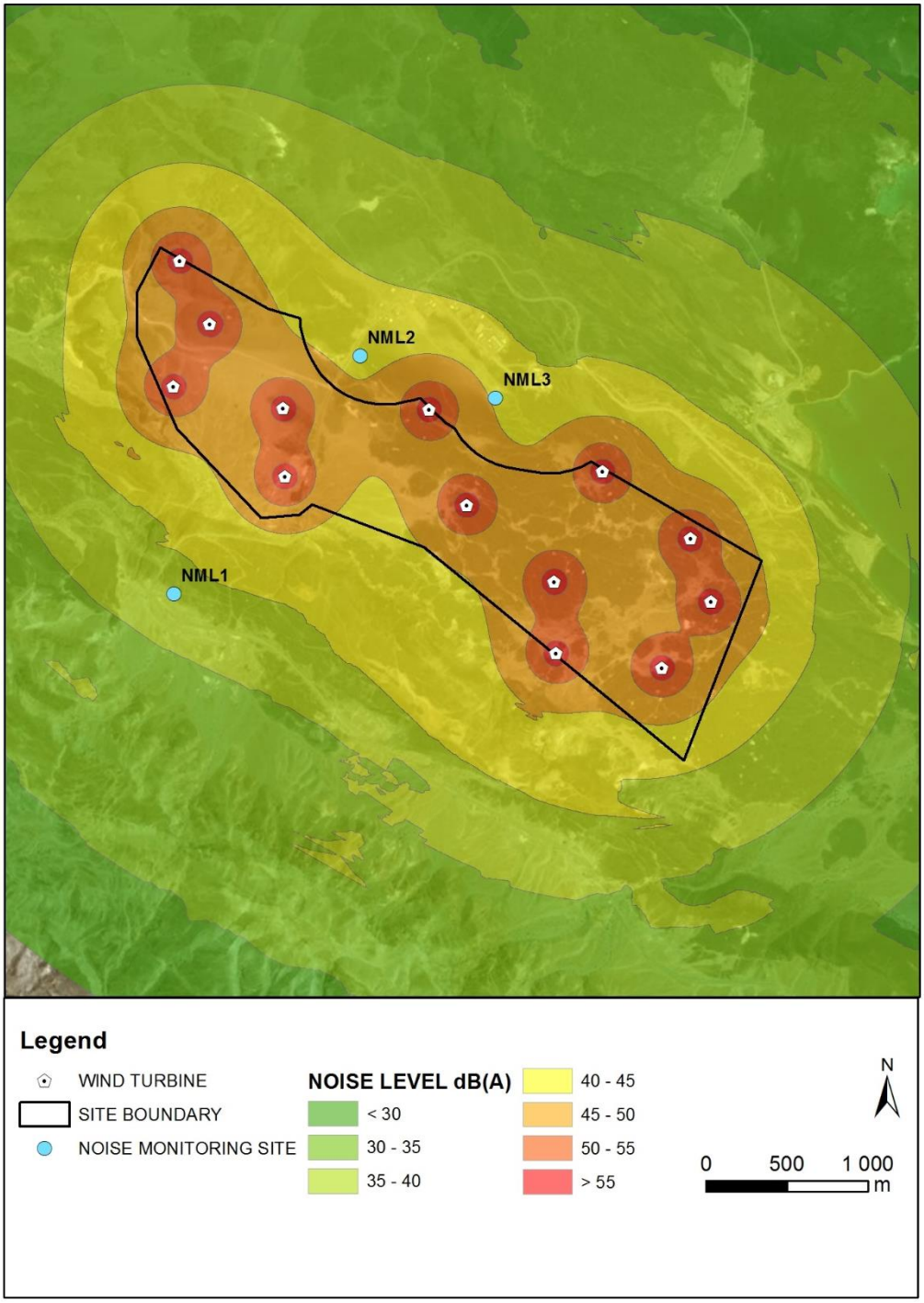
Windfarm noise predictions were undertaken at the three monitoring locations in the vicinity of the Project site. *Table C4.1* reports the predicted noise levels at a height of 4m at each monitoring location. The predicted noise levels were compared to the applicable night-time criteria of 45 dB(A) set for residential receptors.

Table C4.1 Predicted Noise Levels at Receptors for the Assessed Emission Scenario (N133-4.8MW turbine)

Receiver	**24hour Noise Level, dB(A)**
NML1 - Moumina village	37.5
NML2 – Lac Assal village	43.9
NML3 – Salt Investment Compound	44.4

Figure C4.1 presents predicted noise contour map for the assessed scenario. The noise contour maps were generated based on a grid of calculations which were interpolated to generate the iso-contours from the windfarm layout at the surrounding Project area.

Figure C4.1 Noise Contour Map for the Assessed Emission Scenario (N133-4.8MW turbine)



Windfarm noise contribution at receptors ranged between 37.5 dB(A) and 44.4 dB(A). The project operations resulted in a fully compliance to 45 dB(A) night-time criteria at all assessed receptors.

Installation of Siemens Wind Turbines

As previously stated, the Nordex N133 is the preferred selected wind turbine model. However, the installation of the Siemens SWT-DD-4.3MW turbine is also under evaluation. The latter turbine model is characterised by a higher maximum sound

power level of 109.5 dB(A) (based on available manufacturer's data). It is understood that the selection of Siemens turbine, in replacement of Nordex turbine, will result in a change of project layout compared to the one assessed in this study. In particular, the number of turbines is expected to increase to 15. Although, for the purpose of this study, for a preliminary assessment of the potential noise emissions generated by the use of Siemens turbines the same layout assessed for Nordex N133 has been considered. *Table C4.2* below shows the predicted noise levels at the three monitoring sites I case of selection of Siemens wind turbines.

Table C4.2 Predicted Noise Levels at Receptors for the Alternative Emission Scenario (Siemens 4.3MW turbine)

Receiver	**24hour Noise Level, dB(A)**
NML1 - Moumina village	42.2
NML2 – Lac Assal village	48.6
NML3 – Salt Investment Compound	49.2

Windfarm noise contribution at receptors ranged between 42.2 dB(A) and 49.2 dB(A). Windfarm noise contribution exceeded the 45 dB(A) compliance limit at Lac Assal village (NML2) and at Salt Investment Compound (NML3). The installation of Siemens wind turbines, characterised by a higher sound power level than Nordex N133 turbine, will result in an increase of about 5dB of the project noise levels at the receptors surrounding the Project site.

Based on the comparison between predicted noise levels for Nordex and Siemens turbine, Nordex model is confirmed to be the preferred selected wind turbine model for a minimization in project noise contribution at receptors.

5 CONCLUSIONS

A noise modelling study was performed to support the noise impact assessment of wind turbine operational noise. Nordex N133-4.8MW is the preferred selected wind turbine model for the project; a worst case scenario was assessed, considering 13 wind turbines operating at the maximum sound power level (106 dB(A)).

Based on the outcomes of the noise modelling study, it was identified that the Project was in compliance with the night-time limit of 45 dB(A) at all assessed receptors.

Noise levels associated with a conservative worst-case scenario (18 m/s, Scenario 2 and 4) has the potential to exceed the applicable noise limits specified by IFC for night-time (45 dB(A)) at some of the receptors.

Moreover, the noise monitoring survey carried out in the Project area of influence recorded high background noise levels also during the night-time (average values higher than 50 dB(A)). The monitored levels are well above the Project noise contribution, at least of 5 dB. Thus it is unlikely that Project operations will result in a perceivable noise disturbance to local population, as noise emissions will not cause the ambient noise level to rise by more than 3 dB(A) (IFC criteria).

The selection of Siemens turbines, characterised by a higher maximum sound power level was also investigated. The installation of the Siemens wind turbine will result in an increase of about 5dB of the project noise levels, compared to the Nordex turbine, at the receptors surrounding the Project site. Thus, Nordex model is confirmed to be the preferred selected wind turbine model for a minimization in project noise contribution at receptors.

Appendix C1

Noise Baseline Monitoring Field Notes

6 NOISE BASELINE MONITORING FIELD NOTES

Background

As part of the windfarm project, Environmental Resources Management (ERM) conducted a baseline noise assessment in the Lac Assal area. The local consultancy, Technology and Innovation Center for Development (CTID) was commissioned to undertake the noise survey. CTID organized a 6-day mission (9^{th}-13^{th} March 2018). These field notes describe the progress of the noise survey and noise data is presented.

Planning and itinerary of the survey

In preparation for the noise survey, a consultation meeting was organized with the project partners Electricity of Djibouti (EDD). At this meeting the itinerary and schedule of the mission were confirmed and shared with all partners. The Djibouti EDD office is committed to supporting the CTID team for the duration of the noise survey.

Date	Activity
8 March 07:30 – 09:00 9:30 – 10:30 10:30 – 12:00 13:00 – 15:00 16 : 07	 Departure from Djibouti City at 7:30; arrival at project site at 09:00 (±10 min) Briefing with Mohamed Guelleh (representative of the local community) Site 1 identification Install noise monitoring equipments and launching sound level datalogger for test Launch sound level datalogger Salt Investment company
9 March 08:00 – 13:00 13:00 – 15:00 16:10	 Datalogger monitoring Environmental data surveying Datalogger monitoring
10 March 12:00 13:00 – 15:00 16:04 16:23	 Datalogger monitoring Environmental data surveying Stop datalogger at location 1 Launch data logging at location 2
11 March 08:00 – 13:00 13:00 – 15:00 16:00 – 18:00	 Datalogger monitoring Environmental data surveying Datalogger monitoring
12 March 08:00 – 13:00 13:00 – 14:00 16:41 20:20 – 22:22	 Datalogger monitoring Environmental data surveying Stop datalogger Spot recording at location 3
13 March 08:04 – 10:04	 Spot recording at location 3

Itinerary & schedule table 8 – 13 March

Materials and methods

Materials

Item	Specifications
Sound level datalogger	Measure sound from 30 to 135 dB and store data internally. The storage capacity is up to 129920 sets of data (perfect device to perform long term measurements in different area) Accuracy : ±1.4 dB
Tripod	1.5 m high
Solar charger	High capacity charger
Thermometers	Digital and high precision Accuracy 0.5°C
Hygrometer	Digital
GPS	High precision localisation
Laptop	

Location identification

The three locations were identified approximately, as indicated on Figure 1 below.

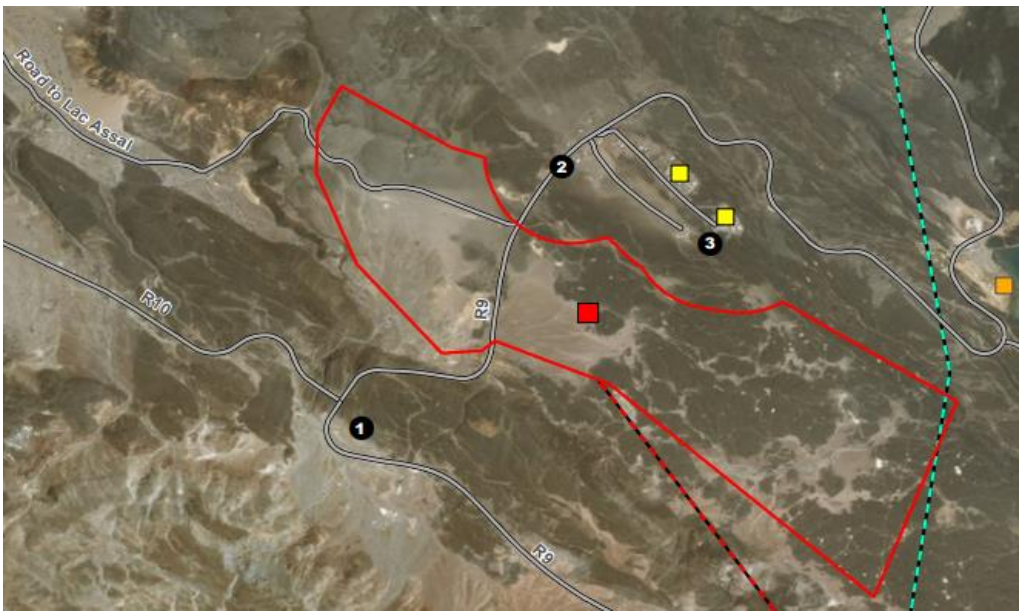


Figure 1: map showing noise monitoring locations

	Location 1	Location 2	Location 3
GPS coordinates	11°31'31"N 42°29'04"E Level : 300 m	11°32'17"N 42°29'41"E Level : 196 m	11°32'09"N 42°30'09"E Level : 183 m

Description	Nearest site of the south residential area (Momina village, 300)	Nearest of the north residential area (Assal village).	Nearest of the East residential area (Salt investment compound)

Noise level recording

Noise levels were recorded continuously at two selected locations (Location 1 and 2) using a sound level datalogger for 48 hours. The rate of sampling was set at 5 s. The third location was monitored for 2 hours during day and night time. At each location, environmental conditions data (temperature and humidity) were collected every 30 min in the morning and the evening.

Data

After recording, the sound level datalogger was stopped and data was downloaded directly onto a computer. Data for each noise level monitored location is presented below.

Location 1: 11°31'31"N ; 42°29'04"E

Environmental conditions:

	Day	Evening	Night
Temperature	32°C	27 - 28°C	25 °C
Humidity	53% - 55 %	59% – 65%	76% - 78%
Wind direction	North-east	North-east	North-east

Noise data

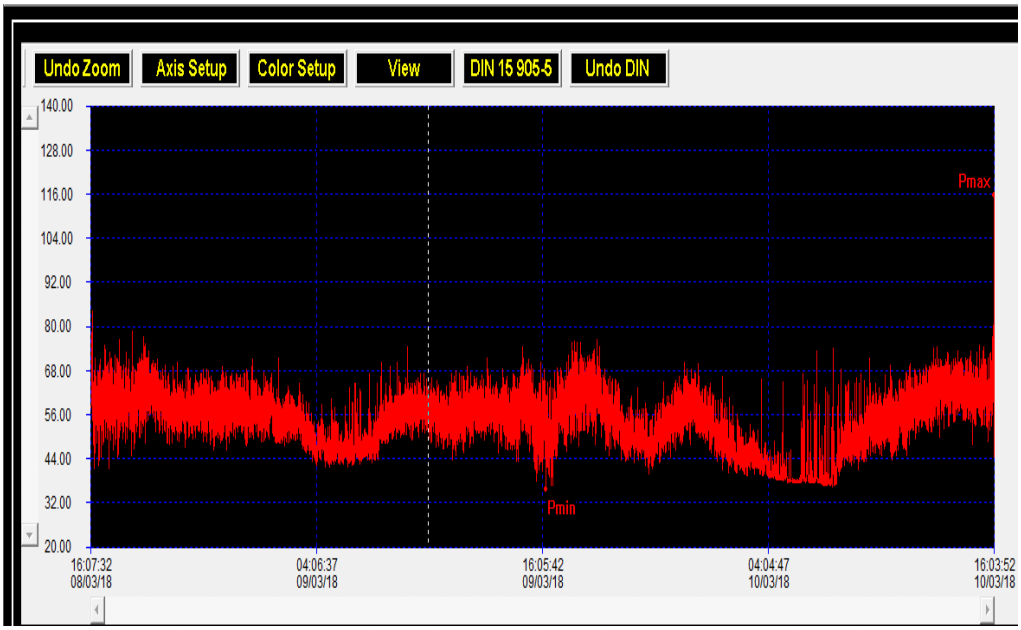


Figure 2: recorded sound level data at location 1

Sound max: 99.9 dB (16h01)

Sound Min: 36 dB
Average value: 56 dB

Location 2: 11°32'17"N ; 42°29'41"E

	Day	Evening
Temperature	29 - 30°C	28 °C
Humidity	44% - 57 %	76% – 82%
Wind direction	North-east	North-east

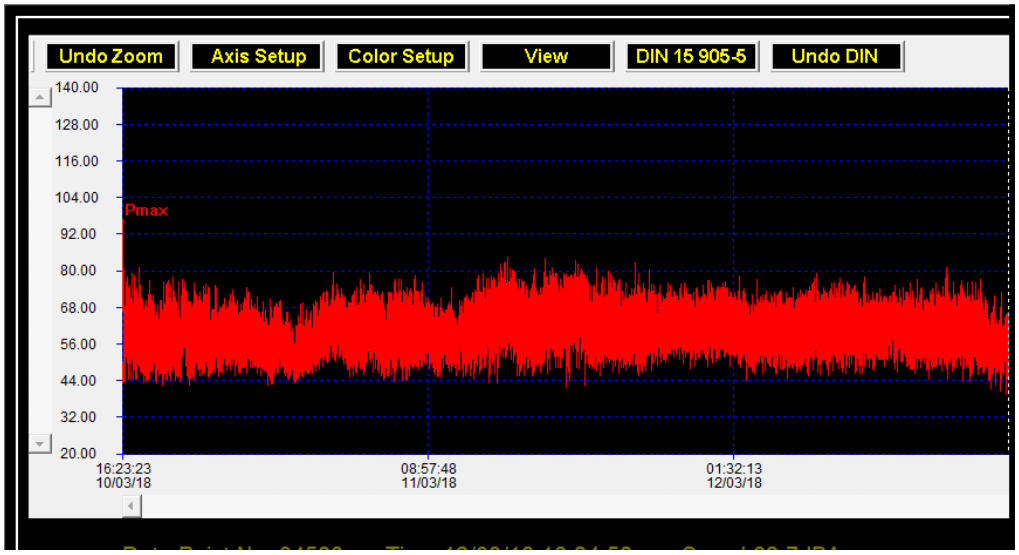


Figure 2: recorded sound level data at location 2
Sound max : 84.4 dB (16h01)
Sound Min : 35.3 dB
Average value : 57.90 dB

Conclusion

Noise levels were recorded at 3 locations as part of the noise survey. The results show that noise level varied between 45 and 75 dB. These background noises were influenced mainly by the north-easterly winds.

Photo 1 : Environmental data surveying

Photo 2 : Salt investment compound

Photo 3 : Environmental data surveying

Annex D

Landscape and Visual Assessment

- Methodology
- Wirelines
- Photomontages

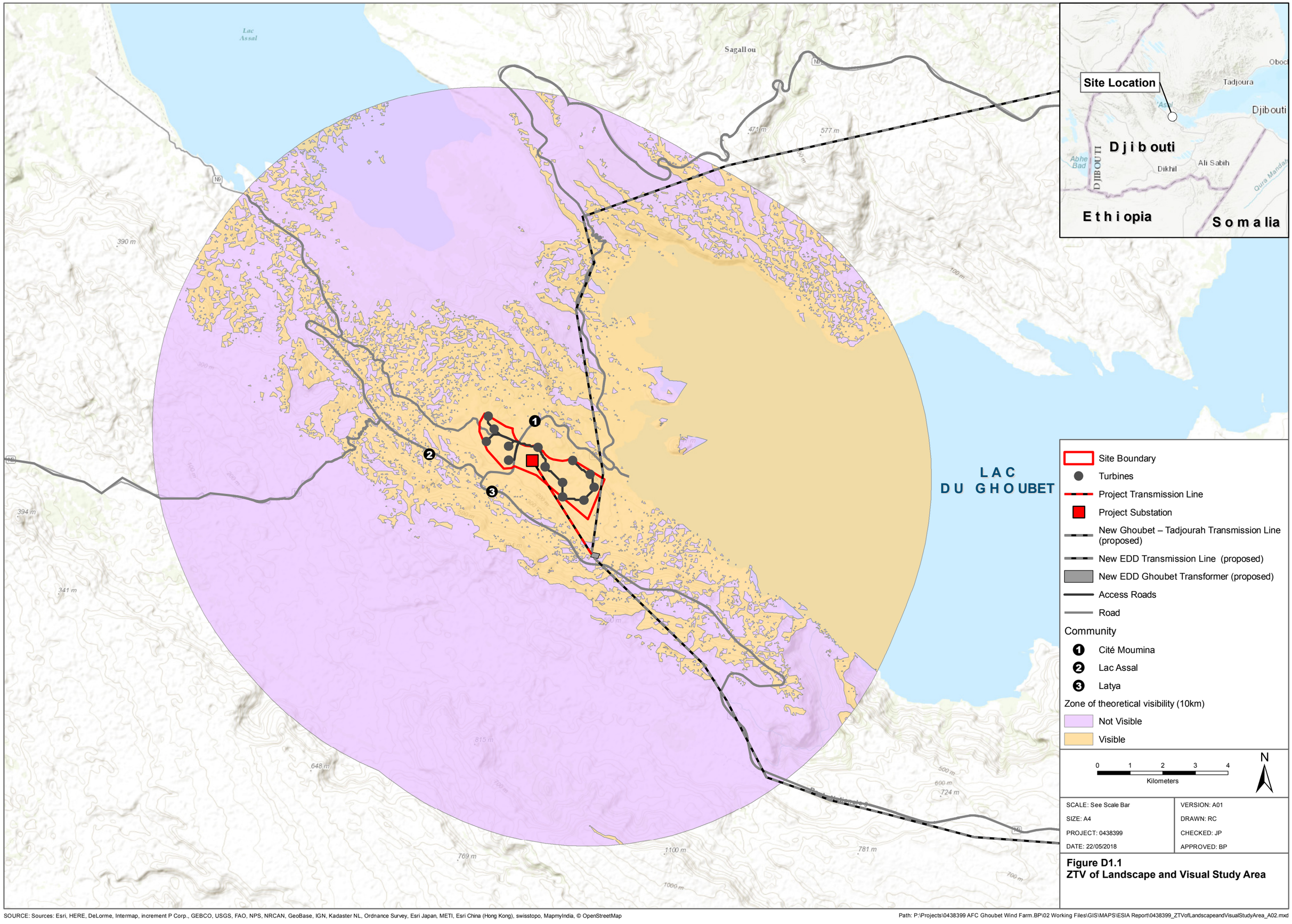
1.1 STUDY AREA

The landscape and visual assessment is based on landscape and visual receptors within a 10 km study area of the following Project components:

- 60 MW windfarm consisting of 13 x 150 m high turbines;
- up to 5 km of high voltage overhead transmission line; and
- substation

ERM has used its previous experience of assessing impacts arising from similar projects and professional judgement to recommend a study area of 10 km from the Project components. A Zone of Theoretical Visibility (ZTV) has been prepared (see Figure D1.1) which also assisted in determining the extent of the study area. A ZTV provides an indication of where taller components might be visible in the landscape. The software uses terrain data, the height of a structure and the height of an average person to determine the visibility and plots this on a map. It does not take into account any screening by vegetation which is why it is called theoretical.

Due to the extremely limited ZTV of the Project the assessment focuses on visual receptors within 3 km. This also considers the limitation of visibility during the day caused by heat haze.



SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RC
PROJECT: 0438399	CHECKED: JP
DATE: 22/05/2018	APPROVED: BP

Figure D1.1
ZTV of Landscape and Visual Study Area

PROJECTION: WGS 1984 UTM Zone 38N

SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

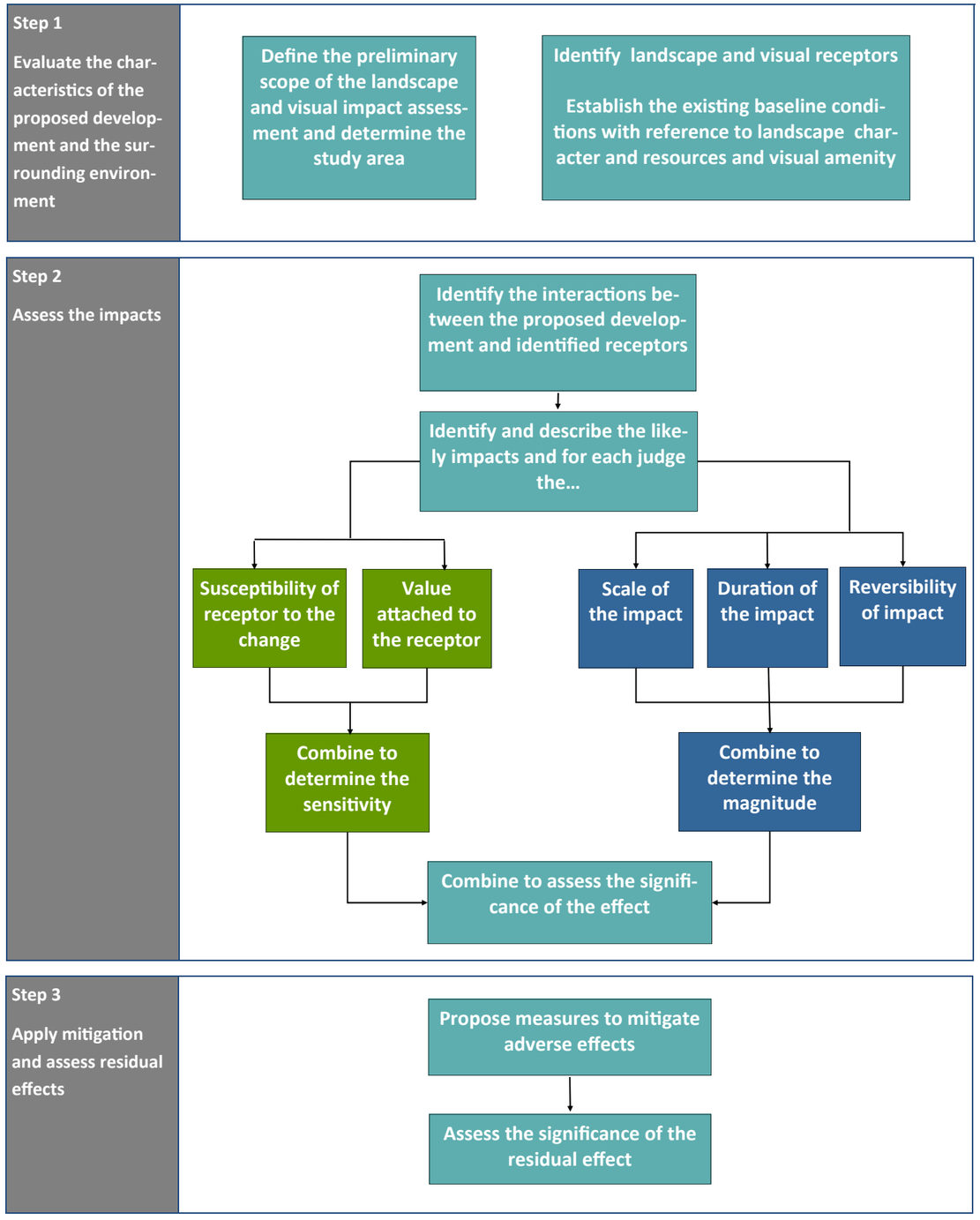
Path: P:\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\ESIA Report\0438399_ZTVofLandscapeandVisualStudyArea_A02.mxd

1.2 METHODOLOGY

The assessment methodology for the LVIA is presented below. The assessment was undertaken using the following guidance:

- Guidelines for Landscape and Visual Impact Assessment, Landscape Institute and Institute of Environmental Management and Assessment (IEMA), third edition; and
- Landscape Character Assessment Guidance for England and Scotland. The Countryside Agency and Scottish Natural Heritage.

The methodology for the LVIA process is illustrated in Figure D1.2.



Receptor Sensitivity

Judgement based on the extent to which the receptor can accept change of a particular type and scale without adverse effects on its character, and the value attached to it. Viewpoint sensitivity depends on a number of factors including: context of the viewpoint, viewer occupation, viewing opportunities, number of people affected, and extent to which the viewers are affected by changes in their view together with the quality of the existing view.

Sensitivity	Landscape	Visual
Low	A moderately valued landscape, perhaps a locally important landscape, or where its character, land use, pattern and scale may have the capacity to accommodate a degree of the type of change envisaged.	Small numbers of visitors with interest in their surroundings. Viewers with a passing interest not specifically focussed on the landscape e.g. workers, commuters. The quality of the existing view, as likely to be perceived by the viewer, is assessed as being low.
Medium	A landscape protected by a structure plan or national policy designation and/ or widely acknowledged for its quality and value; a landscape with distinctive character and low capacity to accommodate the type of change envisaged.	Small numbers of residents and moderate numbers of visitors with an interest in their environment. Larger numbers of recreational road users. The quality of the existing view, as likely to be perceived by the viewer, is assessed as being medium.
High	A landscape protected by a regional (structure plan) or national designation and/ or widely acknowledged for its quality and value; a landscape with distinctive character and low capacity to accommodate the type of change envisaged.	Larger numbers of viewers and/or those with proprietary interest and prolonged viewing opportunities such as residents and users of attractive and well-used recreational facilities. The quality of the existing view, as likely to be perceived by the viewer, is assessed as being high.

Magnitude of Change

Judgement based on the nature, scale and duration of the change that is envisaged in the landscape and the overall impact on a particular view.

Magnitude of change	Landscape	Visual
Negligible	An imperceptible, barely or rarely perceptible change in landscape characteristics.	A change which is barely visible, at very long distances, or visible for a very short duration, perhaps at an oblique angle, or which blends with the existing view.
Small	A small change in landscape characteristics over a wide area or a moderate change either over a restricted area or infrequently perceived.	Minor changes in views, at long distances, or visible for a short duration, perhaps at an oblique angle, or which blends to an extent with the existing view.
Medium	A moderate change in landscape characteristics, frequent or continuous, and over a wide area, or a clearly evident change either over a restricted area or infrequently perceived.	Clearly perceptible changes in views at intermediate distances, resulting in either a distinct new element in a significant part of the view, or a more wide ranging, less concentrated change across a wider area.
Large	A clearly evident and frequent /continuous change in landscape characteristics affecting an extensive area.	Major changes in view at close distances, affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of the view.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Figure D1.2 Landscape and Visual Impact Assessment Methodology

1.3 DESK-BASED RESEARCH

Relevant information on landscape and visual receptors was gathered from a review of other relevant topics such as cultural heritage, ecology and socio economics. These topics assist in determining the value of the landscape and the sensitivity of relevant landscape and visual receptors. For example, the cultural heritage topic may include reference to important heritage assets which may be visited by the public. Similarly, the importance or rarity of certain floras may provide an indication of landscape value as will ecological designation.

In addition, reference was made to aerial imagery in Google Earth as well as relevant GIS data.

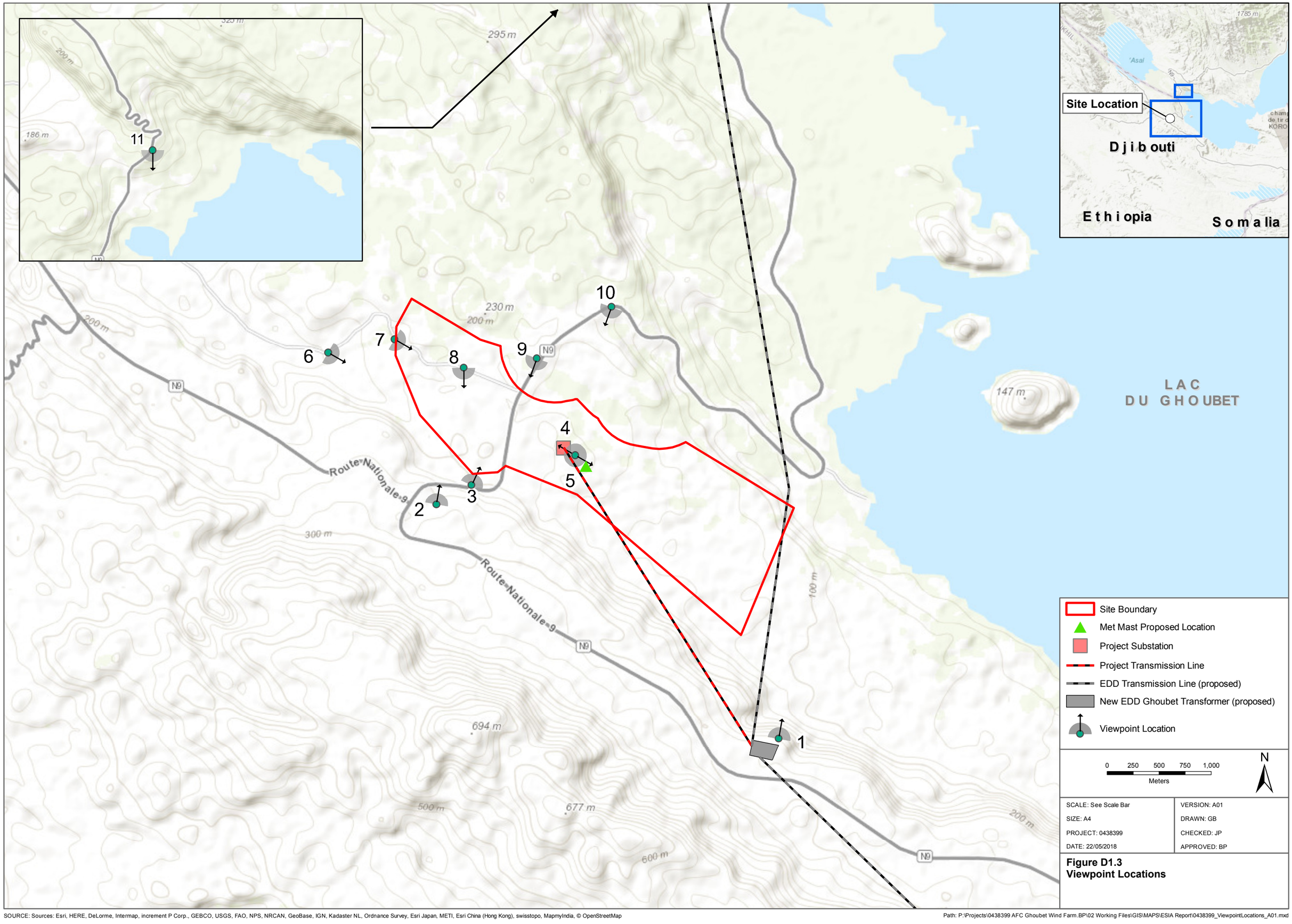
As national wide landscape characterisation is unavailable, ERM has sub divided the study area into landscape character types. This exercise has been carried out by analysing aerial maps, geology, topography and land use data collected from various sources as per the noted guidelines for landscape characterisation.

1.4 FIELDWORK

Walkovers of the site and viewpoint photography were carried out in December 2017.

The fieldwork was based on the desk-based work carried out initially, visiting sensitive visual receptors and establishing the extent of visibility of project components within the 10km study area. High quality photographs were obtained which have been used in the production of photomontages where project components were likely to be visible.

Viewpoints established from desk-based research and fieldwork are shown in Figure D1.3.



SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: GB
PROJECT: 0438399	CHECKED: JP
DATE: 22/05/2018	APPROVED: BP

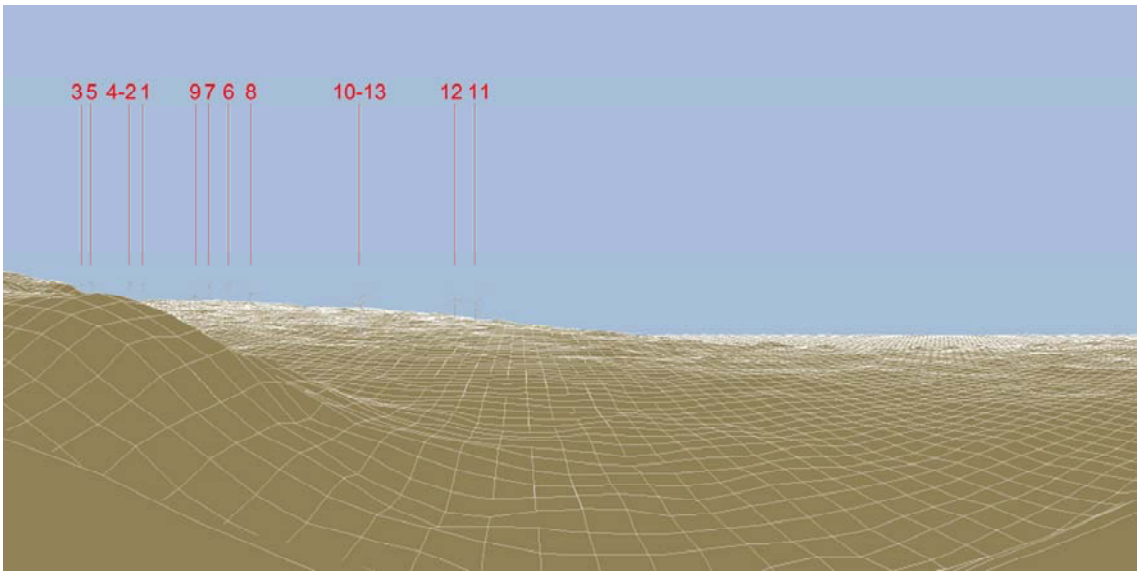
Figure D1.3
Viewpoint Locations

PROJECTION: WGS 1984 UTM Zone 38N

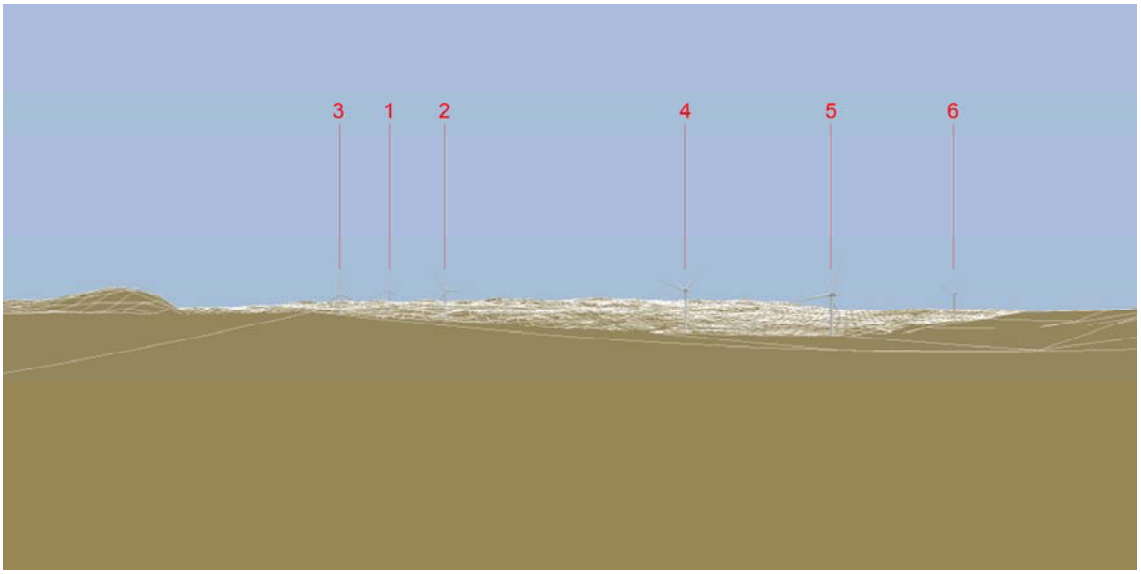
SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

Path: P:\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\ESIA Report\0438399_ViewpointLocations_A01.mxd

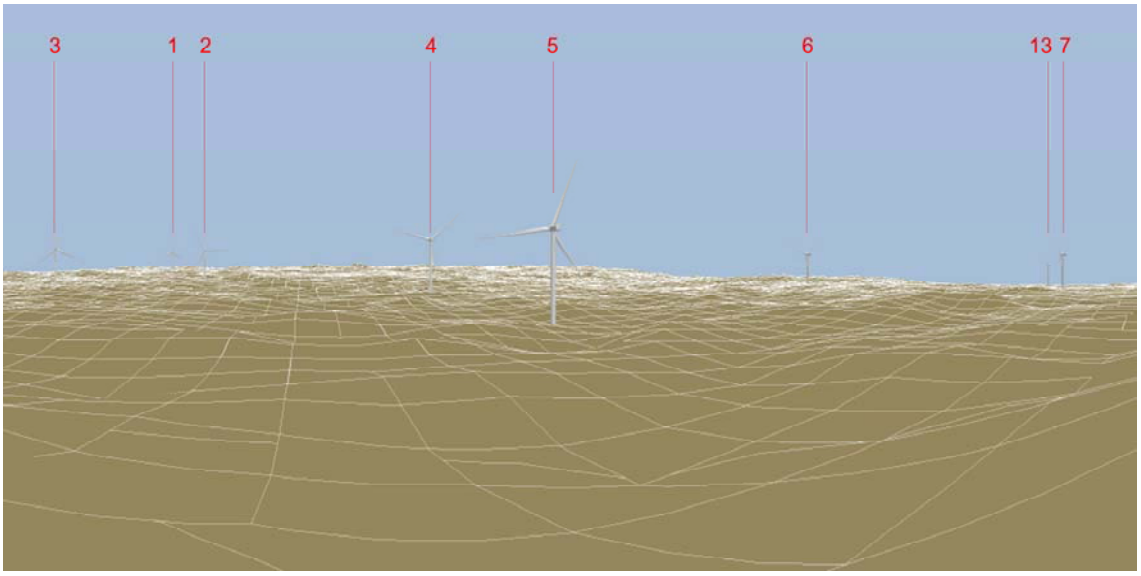
Wirelines of all viewpoints were created, but photomontages were only made of viewpoints 1, 2, 5, 6, 9 and 11 which can be seen in the following pages.



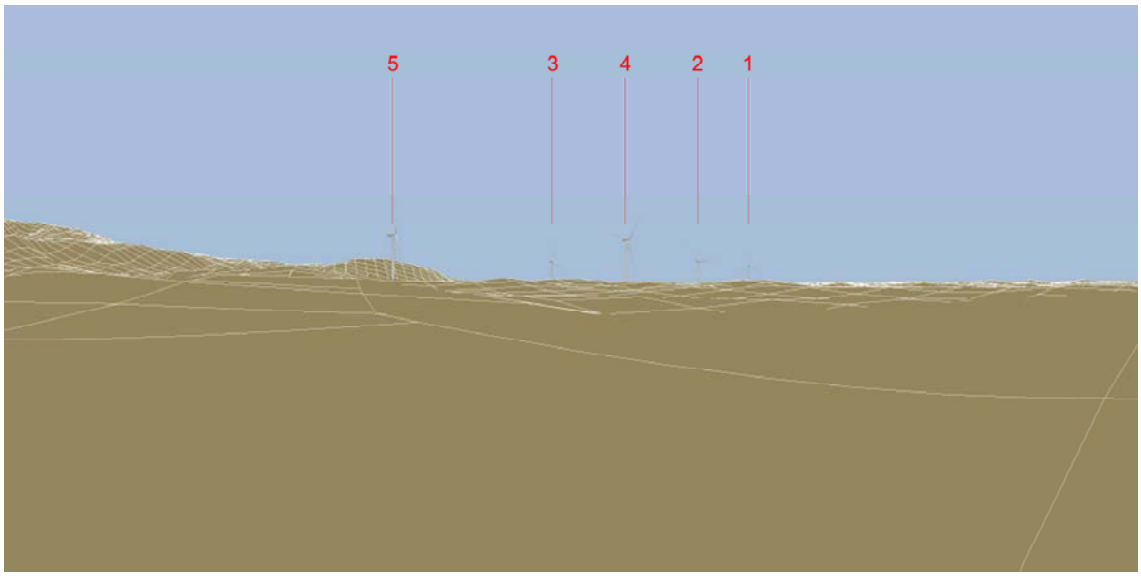
Viewpoint 1



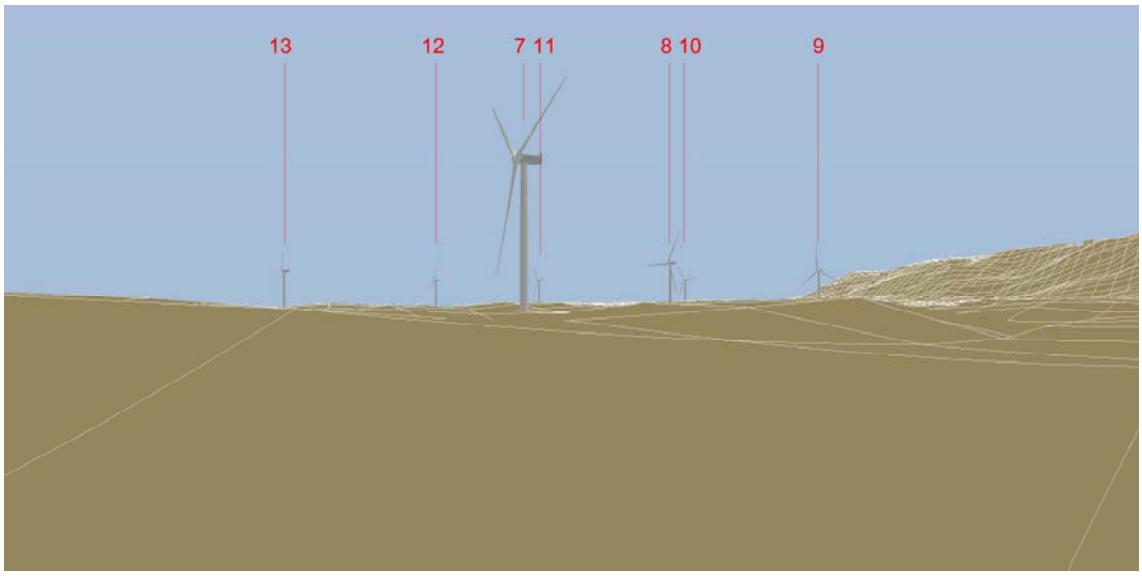
Viewpoint 2



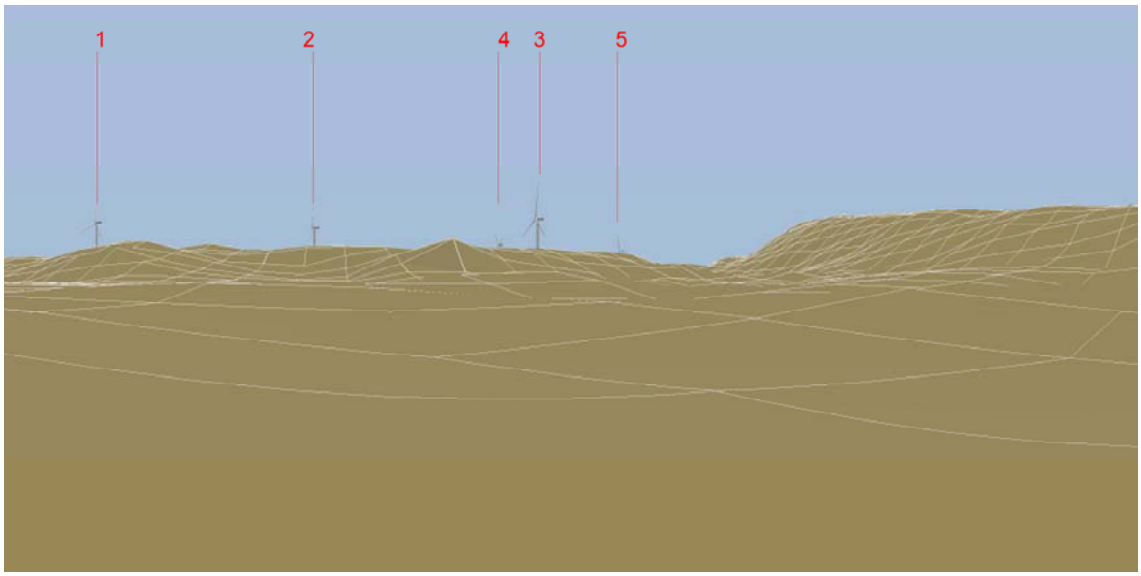
Viewpoint 3



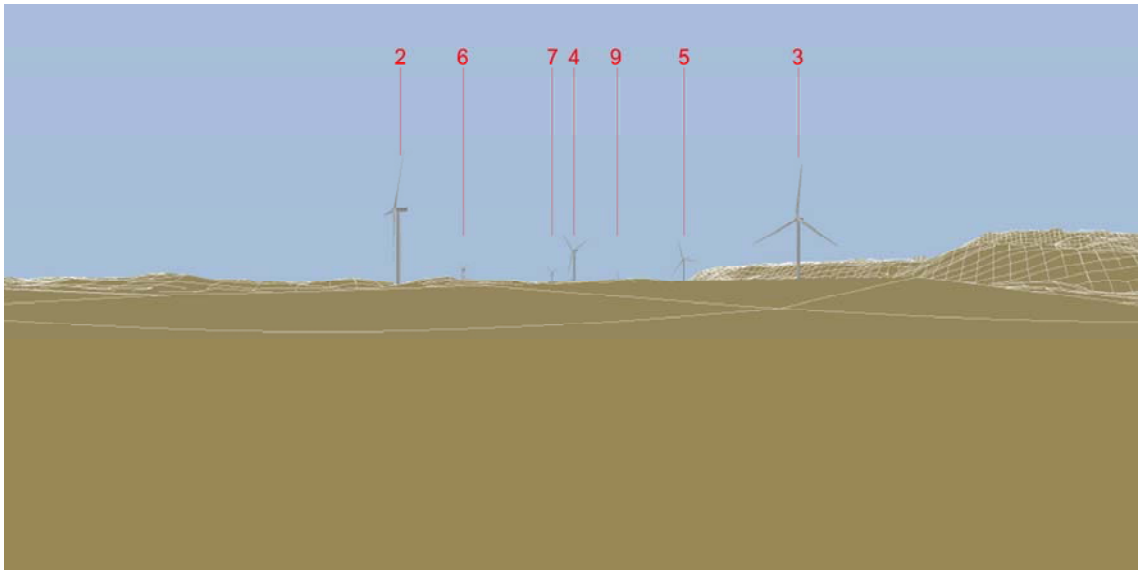
Viewpoint 4



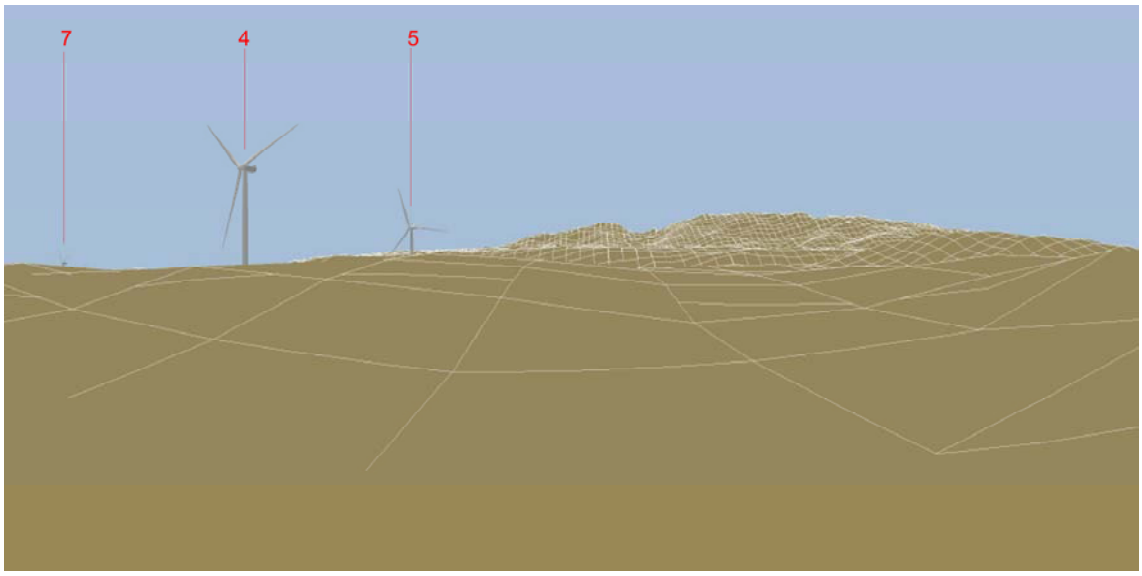
Viewpoint 5



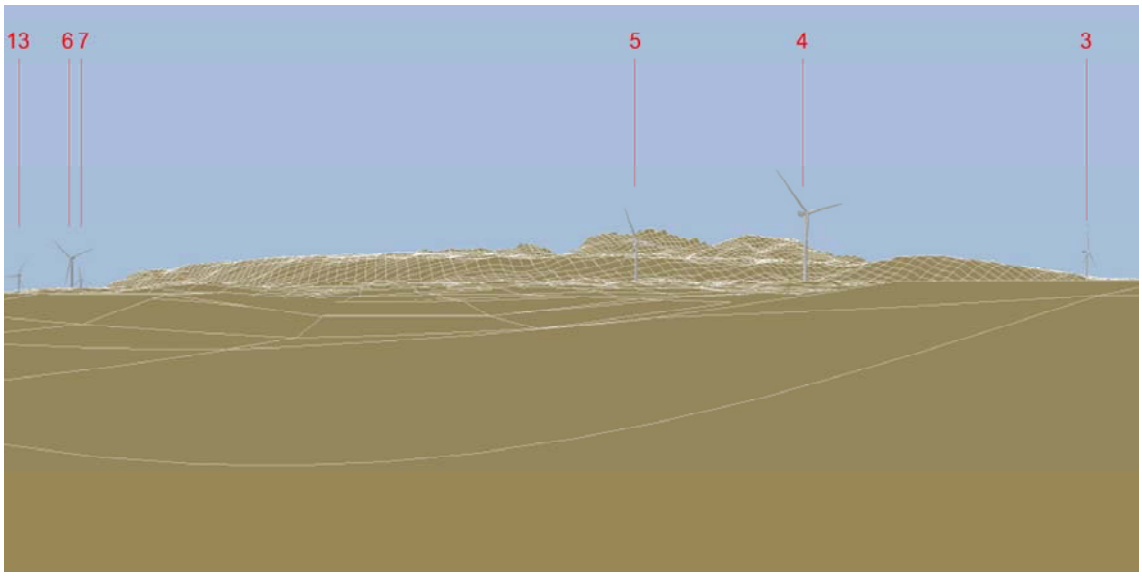
Viewpoint 6



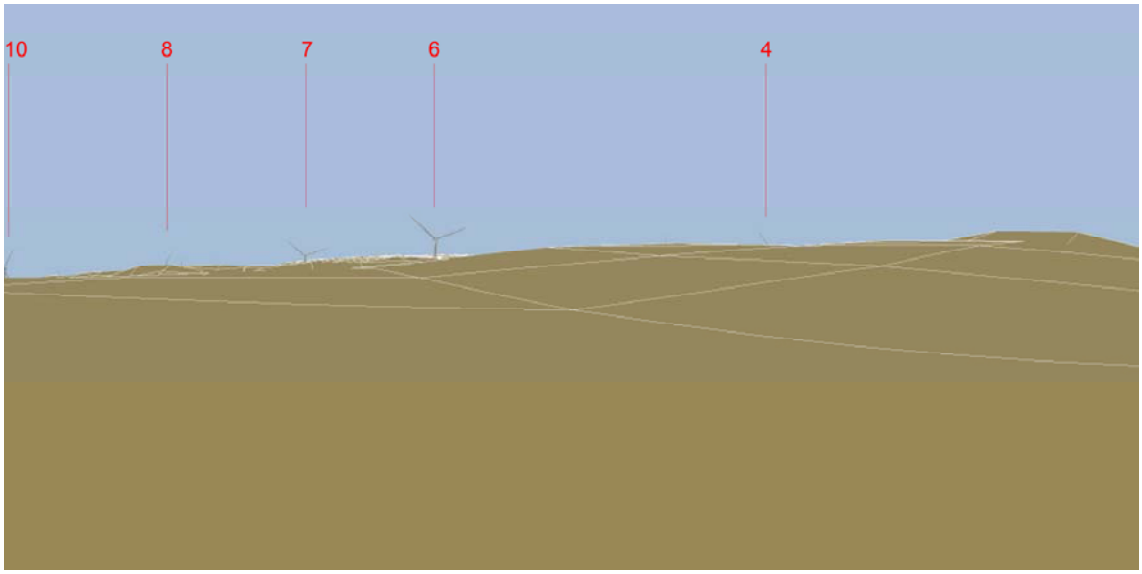
Viewpoint 7



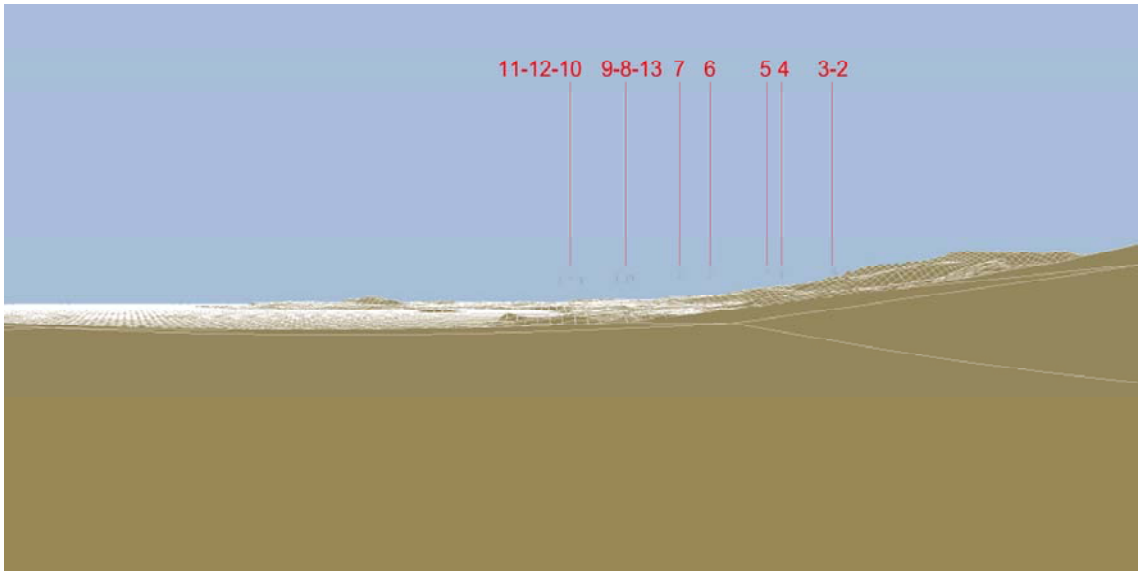
Viewpoint 8



Viewpoint 9



Viewpoint 10



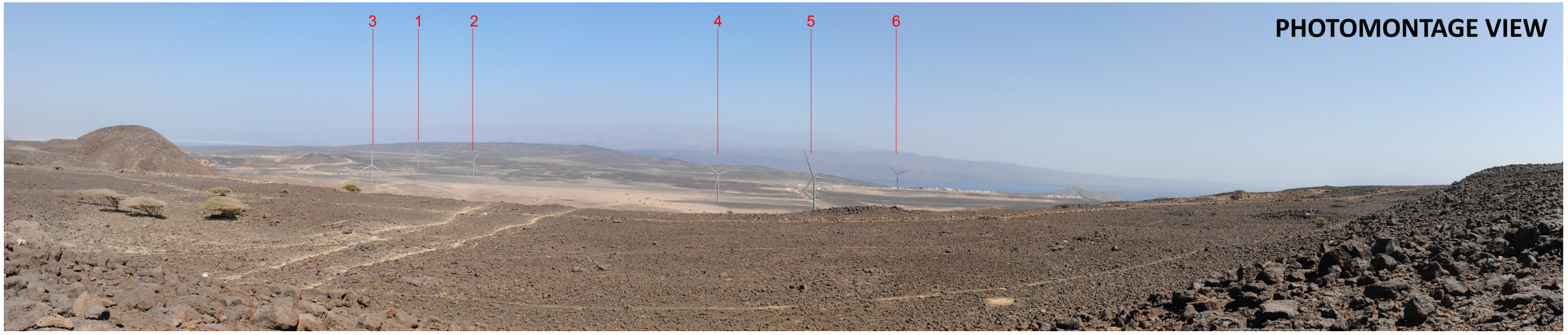
Viewpoint 11

Viewpoint 1

Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.506574	42.51633	250	N/A	North west	180	13	13	1,638	5,361

Visual Sensitivity	Magnitude of Change
View from main road looking northwest over project site. The view extends north across Lake Ghoubet and includes the opposite shoreline and mountains on the horizon. The island of Guinni Koma is a notable feature in the middle distance. The difference in land cover is discernible between the exposed basalt and the covering of sand and silt. Wadis are also notable due to the presence of sporadic vegetation along their courses as they head towards the lake. Ghoubet Port is visible due north as well as Lac Assal Village and the Salt Investment compound near the horizon. The visual sensitivity is considered low.	Although the windfarm will be a new component in the view it will not hugely detract from the quality of the existing view. Most of the turbines sit below the horizon which will assist in reducing their visibility. Although not shown in the photomontage, the project transmission line will be a new feature in the view. However, it will be situated to the west and will not affect views towards the Lake nor the islands. The magnitude of change is considered to be medium.

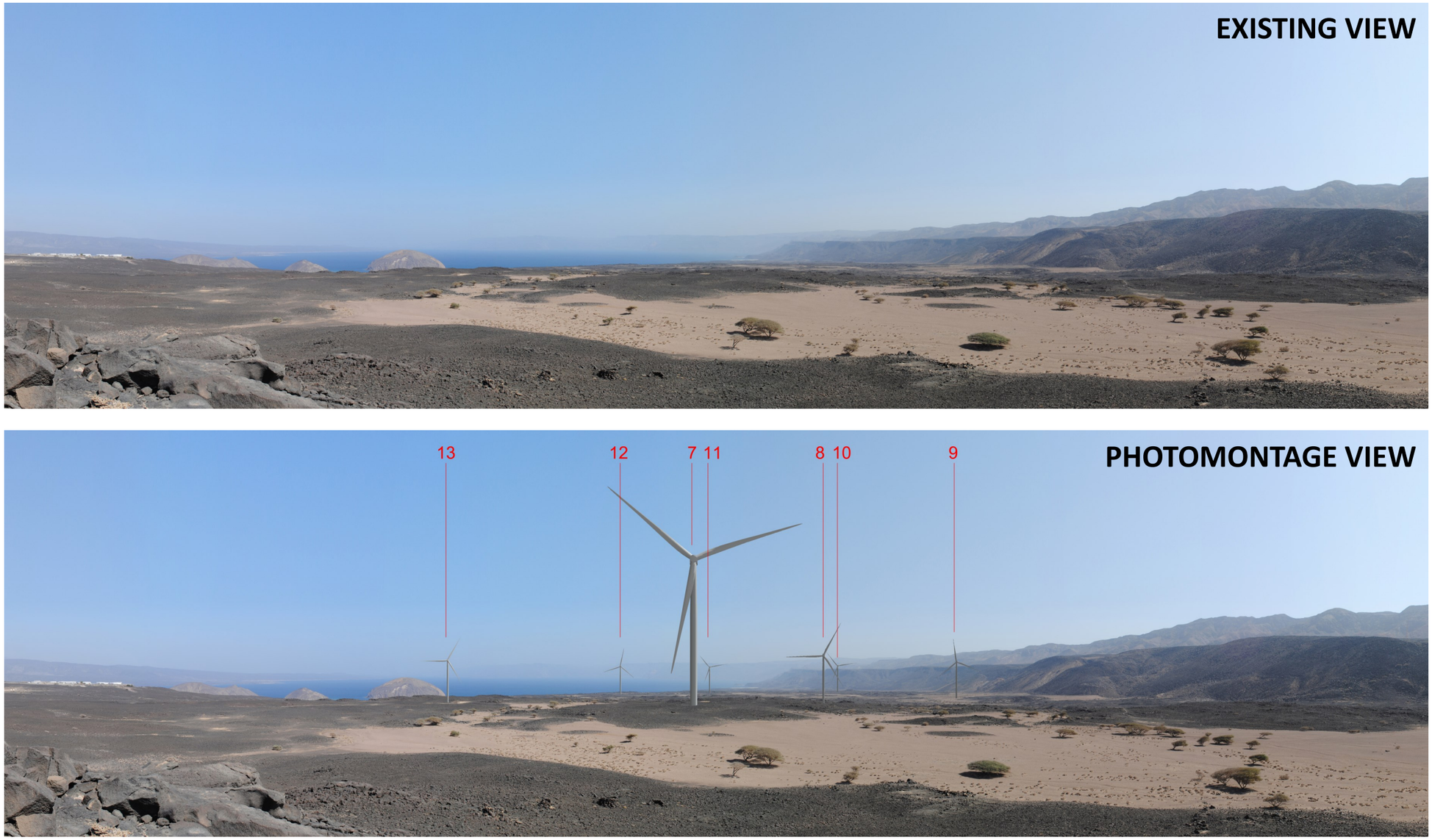
Viewpoint 2



Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.526618	42.486	287	N/A	North north-east	180	6	6	744	1,899

Visual Sensitivity	Magnitude of Change
This viewpoint is located at the top of the escarpment close to Cité Moumina. It is an expansive view towards the north across the coastal plain and includes part of Lake Ghoubet to the east. To the west, the escarpment can be seen extending towards Lake Assal. Lac Assal village is visible adjacent to the RN9 route as it heads north. More local sealed roads are also visible heading west towards Lake Assal. The escarpment takes the form of very distinctive hill in the foreground of the view. As such, the visual sensitivity of this view-point is considered high.	All the components of the project will be seen against a backdrop of land and distant hills which will help reduce the visibility of the smaller components and the prominence of the turbines. There are detracting features in the view such as the infrastructure associated with the salt works and the perimeter of the village. Existing uninterrupted views towards the lake and the hills in the distance will be slightly affected by the location of the turbines. The magnitude of effect is considered to be medium.

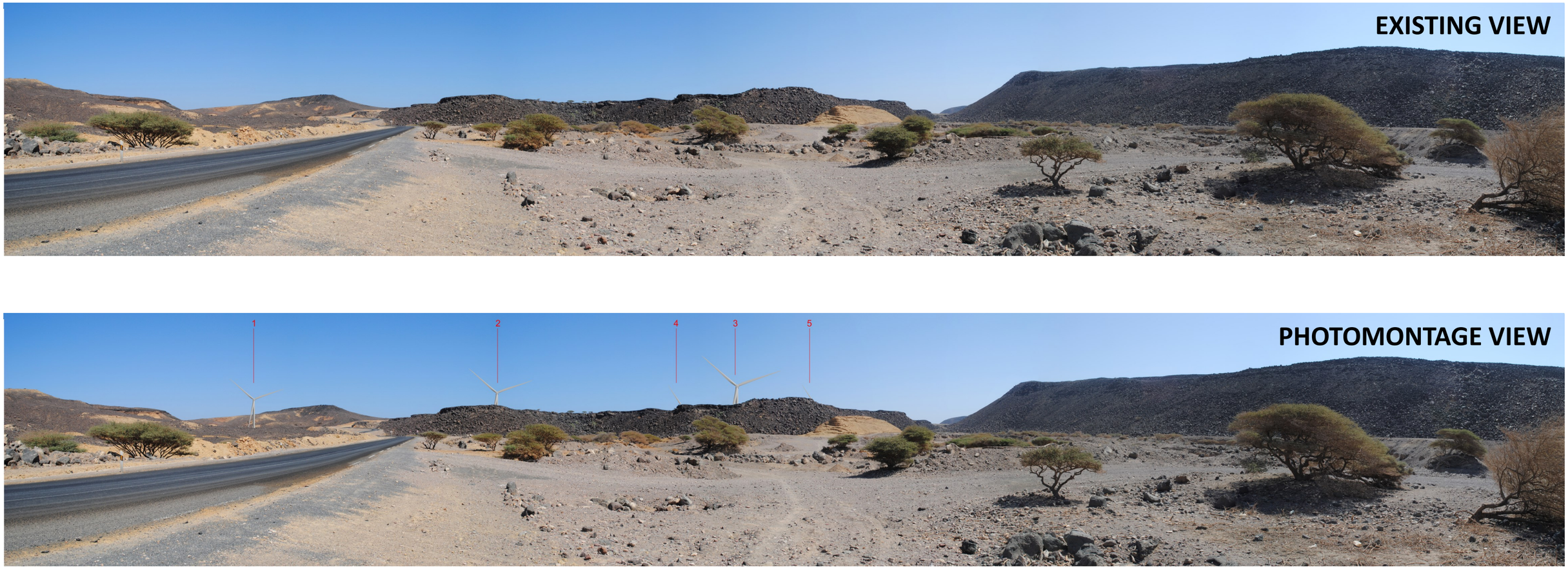
Viewpoint 5



Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.531006	42.4982	196	N/A	South east	180	7	7	313	1,930

Visual Sensitivity	Magnitude of Change
Taken from the same location as viewpoint 4 but looking southeast, this view also includes the escarpment as the main landscape feature. However, the higher ridge further south is a distinctive feature. The land cover in the middle-gound is distinctive, particularly the difference in colour and texture of the sand/silt material and the darker and courser basalt material. Lake Ghoubet is a scenic component of this view particularly due to the contrast with the arid land cover in the foreground. The island Guinni Koma is a focal point of the view . The visual sensitivity is considered to be low.	Turbine 7 will be a prominent feature in the view due to its proximity to the viewer (313 m). Turbine 13 will appear close to the island and will be a detraction. Although not shown on the photomontage, the project transmission line will be a notable feature crossing the escarpment as it climbs in elevation towards the EDD Ghoubet Transformer. It is considered that the magnitude of change is large.

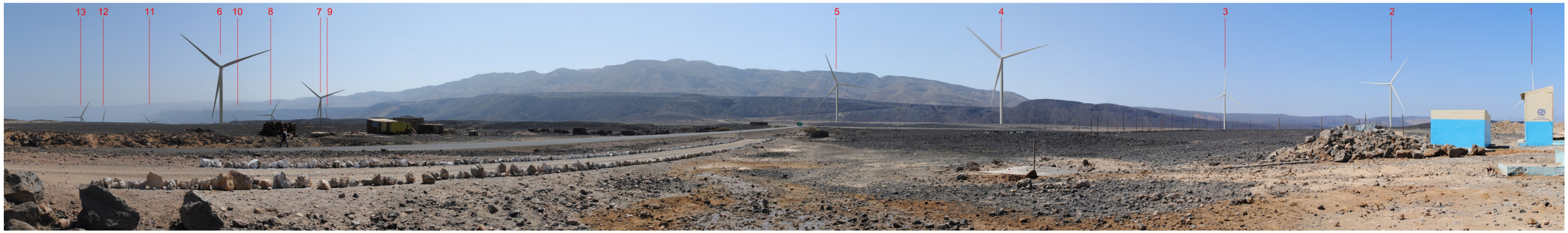
Viewpoint 6



Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.539732	42.47636	157	N/A	East, south-east	180	5	5	928	1,789

Visual Sensitivity	Magnitude of Change
This view is seen by tourists and drivers heading away from the Lake Assal area. It is also the location where pedestrians access the footpath between Lake Assal and the southern site boundary close to the wadi channel. The foreground, covered with scattered vegetation, rises before descending in the middle-ground towards the project site. The escarpment and higher ridges are clearly visible in the background. The visual sensitivity is considered to be medium.	Five wind turbines will be visible from this viewpoint. The majority of the Project components will be partially screened behind topography and only the blades of turbines 4 & 5 will be intermittently visible. None of the turbines will interfere with views of the escarpment. Although not illustrated on the photomontage it is possible that the project transmission line will be visible climbing the escarpment, but this will be at distances of over 3km. It is considered that the magnitude of change is small.

Viewpoint 9



Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.53939	42.49474	197	N/A	South, south-west	180	13	13	636	2,776

Visual Sensitivity	Magnitude of Change
The view is quite expansive and includes the escarpment and ridge landscape features which limit views further south. The remainder of the landscape is fairly featureless except for sporadic evidence of habitation and human activity. Structures associated with the police check at the edge of the village are just visible at the edge of the view. The visual sensitivity is considered to be high.	All turbines will be visible from this view as well as the substation and the project transmission line. Turbines 1 to 7 will be fully visible in relative proximity to the viewer and often against a sky background. The remaining turbines will be partially visible at larger distances and against the background of the escarpment and ridges to the south. The existing views of the escarpment and ridges will be interrupted to a large degree. As a consequence of the above, the character of this view will be changed substantially. It is considered that the magnitude of change is large.

Viewpoint 11

Viewpoint Location Information									
Latitude	Longitude	Height above sea level (m)	Viewing Distance (m)	Centre of panorama View Direction	Field of View (°)	WTGs within field of view	Visible WTGs at tip height	Closest WTG (m)	Furthest WTG (m)
11.590356	42.5163	180	N/A	South	180	0	0	6,203	7,692

Visual Sensitivity	Magnitude of Change
This viewpoint is taken on the RN9 descending towards Lake Ghoubet. It is an elevated, expansive and high-quality view and includes a number of distinctive landscape features. Lake Ghoubet provides a serene setting and contrast to the ruggedness of the adjacent ridge-lines. The view is uninterrupted down to the shoreline and across to the skylines. There are a few detracting features such as the car-park adjacent to the road but the large scale of the landscape reduces the negative effects of these features. Visibility is affected by heat haze and it is difficult to discern the project area at this distance (6 km).	It is highly unlikely that the Project components (turbines, substation, access roads etc.) will be discernable, and the lattice nature of the transmission pylons will make them very difficult to see at this distance. The movement of the blades may make the turbines discerna-ble and the lightness of the colour may make them just about visible against the solid backdrop of the hills to the south. In the context of this expansive view and with key components unfaceted it is considered that the magnitude of change is negligible.

Annex E

Shadow Flicker Assessment

1 INTRODUCTION

This document presents the shadow flicker assessment undertaken for a proposed 60 MW (megawatt) windfarm located in Ghoubet, between Lake Assal and Lake Ghoubet in Djibouti (the Project).

Shadow flicker is "*the flickering effect caused when rotating wind turbine blades periodically cast shadows through constrained openings such as the windows of neighbouring properties*".[1] Its occurrence in a specific location can be modelled and assessed[2] taking into account the relative positions of the sun throughout the year (dependent on the latitude of the Project site), the wind turbine layout and their orientation, and the presence of sensitive receptors (e.g. inhabitants of residential buildings).

[1] https://www.gov.uk/government/news/wind-turbine-shadow-flicker-study-published

[2] It should be noted that modelling methods tend to be conservative and typically result in an over-estimation of the number of hours of shadow flicker likely to be experienced at the identified receptors.

2 PROJECT OVERVIEW

2.1 PROJECT SITE

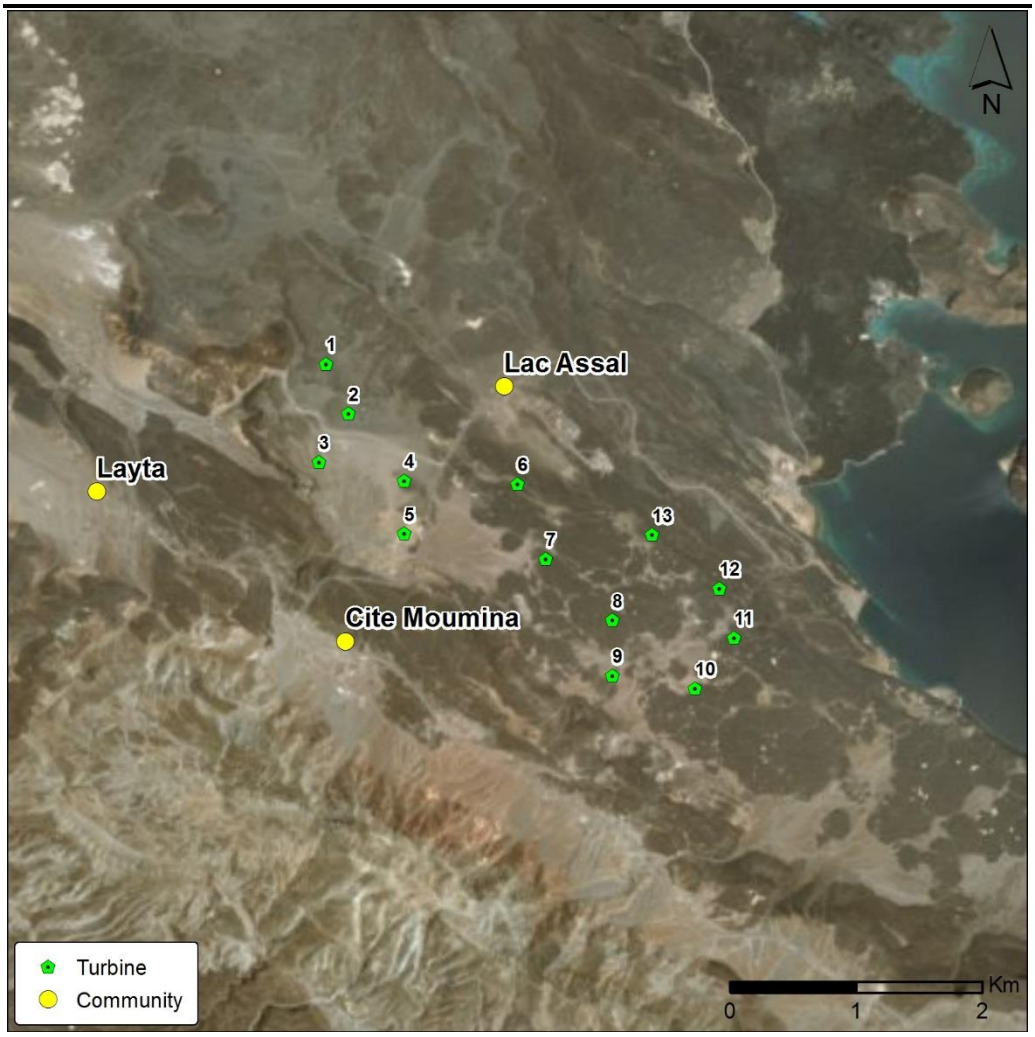
The Project is located in Ghoubet, between Lake Assal and Lake Ghoubet in Djibouti. The Project site covers an area of approximately 395 hectares (not including area for associated facilities such as the batching plant or borrow pits/quarry). The site is typified by a mix of flat and undulating land composed of fine material and basalt rock with sparse desert trees and shrubs found in the wadi channels across the site. Photos of the typical vegetation cover and land use of the site and surrounding area are presented in *Figure E2.1*.

Figure E2.1 Typical topography and land use

Source: Scoping visit, ERM (2017)

The nearest settlements to the Project site are Citè Moumina, about 1 km southwest from the centre of the site, Lac Assal Village, immediately north, and Layta Community Village, about 3 km west - shown in *Figure E2.2*. All wind turbines are sited a minimum of 500 m from inhabited residential buildings.

Figure E2.2 Nearest Settlements to Project Site



Source: ERM (2017)

2.2 PROJECT COMPONENTS

The Project will comprise 13 wind turbines, each with a 4.8 MW generating capacity. The turbines will have an 83 m hub height and a 133 m blade diameter, therefore a tip height of 149.5 m.

The wind turbines are made up of three parts: a tower, a nacelle and the rotary blades. The turbines will be sited a minimum of 250 m from one another. The land between the turbines will continue to be available for farming, cattle grazing and other agreed community developments.

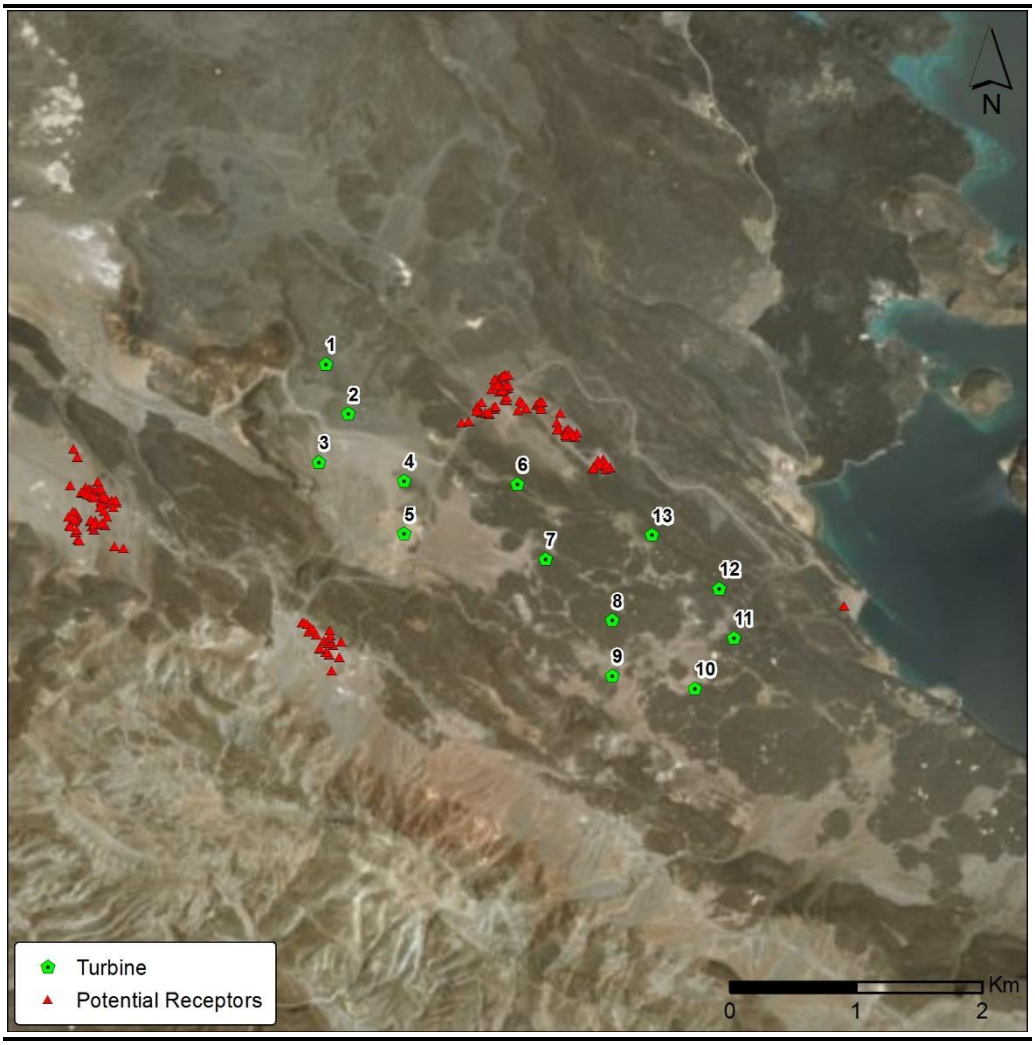
Table E2.1 lists the coordinates of the proposed turbine locations and *Figure E2.3* presents the windfarm layout.

Table E2.1 Wind Turbine Locations

Turbine	Latitude (38N coordinate system)	Longitude (38N coordinate system)	Approx. distance to nearest building (m)*
1	11.54372	42.48476	950
2	11.54018	42.48641	620
3	11.53671	42.48429	180
4	11.53543	42.49051	610
5	11.53164	42.49055	350
6	11.53525	42.49876	480
7	11.5299	42.50082	670
8	11.52557	42.50571	1,190
9	11.52159	42.50577	1,640
10	11.52072	42.51174	1,360
11	11.52437	42.51457	910
12	11.52791	42.51345	1,000
13	11.5317	42.50853	630

** All turbines are sited >500 m from residential properties*

Figure E2.3 Windfarm Layout and Potentially Sensitive Receptors



3 STANDARDS AND GUIDELINES

This section presents applicable standards and guidelines relevant to assessing shadow flicker on wind energy projects.

3.1 INTERNATIONAL STANDARDS AND RECOGNISED STANDARDS

In August 2015, the World Bank Group published the Environmental, Health and Safety (EHS) Guidelines for Wind Energy. These are technical reference documents containing examples of good industry practice.

As per the definition adopted in the EHS guidelines, shadow flicker occurs when the sun passes behind the wind turbine and casts a shadow. As the rotor blades rotate, shadows pass over the same point causing an effect termed shadow flicker. Shadow flicker may become a problem when potentially sensitive receptors (e.g., residential properties, workplaces, learning and/or health care spaces/facilities) are located nearby, or have a specific orientation to the wind energy facility.

The following are key points are identified in the guidelines:

- It should be noted that potential shadow flicker issues are more likely at higher latitudes, here the sun is lower in the sky and therefore casts longer shadows that will extend the radius within which potential significant shadow flicker impact will be experienced.

- If it is not possible to locate the wind turbines such that neighboring receptors experience no shadow flicker effects, it is recommended that the predicted duration of shadow flicker effects experienced at a sensitive receptor should not exceed 30 hours per year and 30 minutes per day on the worst affected day, based on a worst-case scenario.

- Recommended prevention and control measures to avoid significant shadow flicker impacts include siting wind turbines appropriately to avoid shadow flicker being experienced or to meet limits placed on the duration of shadow flicker occurrence, as set out in the paragraph above, or programming turbines to shut down at times when shadow flicker limits are exceeded.

The abovementioned thresholds have been derived from some of the widely recognized national guidelines, as presented in *Table E3.1*.

Table E3.1 Project Standards[1]

Country	Reference	Relevant Notes
England	Planning for Renewable Energy - A companion guide to PPS22 – Office of the Deputy Prime Minister 2004 Onshore Wind Energy Planning Conditions Guidance notes – Renewables Advisory Board and BERR 2007	• Shadow flicker has been proven to occur only within a distance of 10 rotor diameters from the turbines. • Shadow flicker only occurs inside buildings where the flicker appears through a narrow window opening
Northern Ireland	Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' – Northern Ireland Department of the Environment 2009	• Shadow flicker only occurs inside buildings through narrow window openings • The potential for shadow flicker at distances greater than 10 rotor diameters is very low • It is recommended shadow flicker at neighboring residential buildings and offices should not exceed 30 hours per year
Ireland	Planning Guidelines – Department of Environment, Heritage and Local Government	• Shadow flicker only occurs inside buildings through narrow window openings • The potential for shadow flicker at distances greater than 10 rotor diameters is very low • It is recommended shadow flicker at neighboring residential buildings and offices should not exceed 30 hours per year
Germany	Notes on the identification and evaluation of the optical Emissions of Wind Turbines – States Committee for Pollution Control – Nordrhein Westfalen 2002	• Worst case scenario limited to a maximum of 30 hours per year

[1] There are no standards in Djibouti legislation or policy regarding shadow flicker.

4 SHADOW FLICKER ASSESSMENT

4.1 INTRODUCTION

The likelihood and duration of the flicker effect depends upon a number of factors, including:

- direction of the property relative to the turbine;
- turbine height and rotor diameter;
- time of the year and day;
- distance from the turbine (the further the observer is from the turbine, the less pronounced the effect will be)
- wind direction (that affect potential wind turbine orientation); and
- weather conditions (presence of cloud cover, fog, humidity reduces the occurrence of shadow flicker as the visibility itself of the turbine is reduced).

In general shadow flicker occurs during clear sky conditions, when the sun is low on the horizon. As the angle of the sun changes on the horizon throughout the year, locations experiencing the phenomenon can change, therefore a specific receptor would only be affected only during certain periods.

The theoretical number of hours of shadow flicker experienced annually at a given location can be calculated using modelling packages incorporating the sun path, topographic variation over the wind farm site, and wind turbine details such as rotor diameter and hub height.

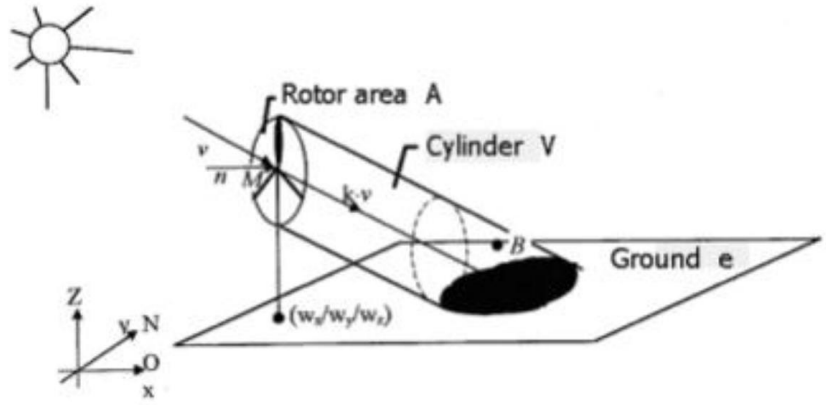
The following section briefly describes the modelling package used for this assessment, as well the input criteria for assessing the theoretical number of hours of shadow flicker.

4.2 WINDPRO MODEL AND INPUT CRITERIA

This assessment has been undertaken using WindPro©; a computer packages widely used in the wind industry. The software package includes a Shadow Flicker Module (SHADOW) that calculates how often and in which intervals a specific neighbour or area will be affected by one or more wind turbines.

The model calculates outputs according to the principles presented in *Figure E4.1*.

Figure E4.1 Shadow Flicker Principles



All potential receptor locations that could be affected by shadow flicker (i.e. residential buildings where people are likely to be for extended periods of time) are simulated as fixed points. A worst case scenario is modelled for these buildings, assuming people can view the turbines in all directions. In reality, views of the turbines will be limited and windows might only face in one direction.

The shadow flicker calculations for potential receptor locations have been carried out for 1 minute periods (i.e. if shadow flicker is predicted to occur in any 1-minute period, the model records this as 1 minute of shadow flicker).

The diameter of the rotor has been used to define the maximum distance shadow flicker can be experienced at receptors:

"….A minimum spacing from the nearest turbines to a residential building of 10 rotor diameters is recommended to reduce the duration of any nuisance due to light flicker" (Taylor and Rand, 1991).

Based on the above, a 1,500 m distance has been used in the model (rotor diameter of 133 m) as the maximum length of a shadow cast by a wind turbine likely to cause annoyance. However, it should be noted that as reported in the South Australian Planning Bulletin (2002), shadow flicker is insignificant once a separation of 500 m between the turbine and the sensitive receptor is exceeded. Also, based on the studies of Olsten *et al* (1998) the shadow flicker effects are most evident within the first 250 m of the turbine and fade with distance so that by 1,000 m the shadow contrasts are no longer evident.

The following have also been assumed in the model:

- turbines are always rotating;
- average daily sunshine hours (based on windPRO datasets):

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7.28	7.96	8.06	9.52	9.82	8.00	7.58	8.24	8.82	9.27	9.93	8.87

- topography based on SRTM Elevation Model; and

- no cloud cover or any other meteorological conditions potentially reducing visibility and the sunlight have been assumed.

It should be noted that an assessment performed with such assumptions is likely to over-estimate the duration of occurrences when shadow flicker might be experienced at a specific location for following reasons:

- the wind turbine will not always be yawed such that its rotor is in the worst-case orientation. Any other rotor orientation will reduce the area of the projected shadow and hence the shadow flicker duration;
- the occurrence of cloud cover has the potential to significantly reduce the number of hours during which the observer is experiencing the flicker;
- the presence of fog and high humidity can reduce the visibility and consequently reduce the effects of flicker on the observer;
- the presence of aerosols in the atmosphere have the ability to influence the flicker duration as the length of the shadow cast by a wind turbine is dependent on the degree that direct sunlight is diffused, which is strictly dependent on the amount of dispersant between the observer and the rotors;
- the analysis has not considered the presence of vegetation or other physical barriers around a receptor that are able to shield the view (at least partially) of the turbine; and
- periods where the wind turbine is not in operation due to high or low winds are not considered.

Figure E4.1 presents the inputs used in the model.

Table E4.1 WindPro Shadow Module Inputs

Inputs	Value
Wind Turbine location	See Table E2.1 and Figure E2.3
Rotor diameter and hub heights	133m / 83m
Wind Turbine Operation	The WTG is always operating
Wind Turbine Visibility	A WTG will be visible if it is visible from any part of the receiver window
Wind Turbine Orientation	Based on windrose prevalent direction
Location of potential sensitive receptors	See Figure E2.2
Cloud Cover	Not considered
Physical Barriers (i.e. vegetation)	Not considered
Maximum distance for influence	1,500 m
Minimum sun height over horizon for influence	3°
Day step for calculation	1 day
Time step for calculation	1 minute
Shining period	The sun is shining as per table provided above
Height contour	SRTM DEM
Eye Height	1.5 m

The outputs of the WindPro Shadow Module include:

- a table with shadow flicker hours per year and minutes per day at single receptors; and
- a shadow flicker map showing the expected shadow flicker scenario.

4.3 POTENTIAL IMPACTS RELATED TO SHADOW FLICKER

The association between shadow flicker caused by wind turbines and the effects on human health is highly debated. Some argue that reported health effects are related to wind turbine operation. Others suggest that when turbines are sited correctly, effects are more likely attributable to a number of subjective variables that result in an annoyed/stressed state.

Some studies suggest that flicker from operational turbines pose a potential risk of inducing photosensitive seizures (Harding et al, 2008; Smedley et al., 2010). However, in 2011, the UK Department of Energy and Climate Change concluded in their *Update Shadow Flicker Evidence Base* report that "*On health effects and nuisance of the shadow flicker effect, it is considered that the frequency of the flickering caused by the wind turbine rotation is such that it should not cause a significant risk to health".*

Despite such conclusions, other reports state that although shadow flicker from wind turbines is unlikely to lead to a risk of photo-induced epilepsy, potential for annoyance and disturbance are still presence leading to stress situation (Cope et al., 2009; Minnesota Department of Health, 2009; National Research Council, 2007).

In any case, mitigation options are available to reduce potential impacts, including:

- careful site design;
- locating wind turbines at least 500 m from sensitive receptors;
- shutting down turbines which are known to cause problematic flicker during specific periods and weather conditions;
- planting vegetation or tree lines to "cut" the line of sight to turbines that are causing flicker; and
- installation of window blinds or awnings to avoid the flicker phenomenon inside the buildings.

4.4 RECEPTORS IDENTIFICATION

Potential receptor locations (i.e. residential buildings), as shown in *Figure E2.3*, were identified based on available satellite imagery and during the social survey work undertaken as part of the baseline data collection.

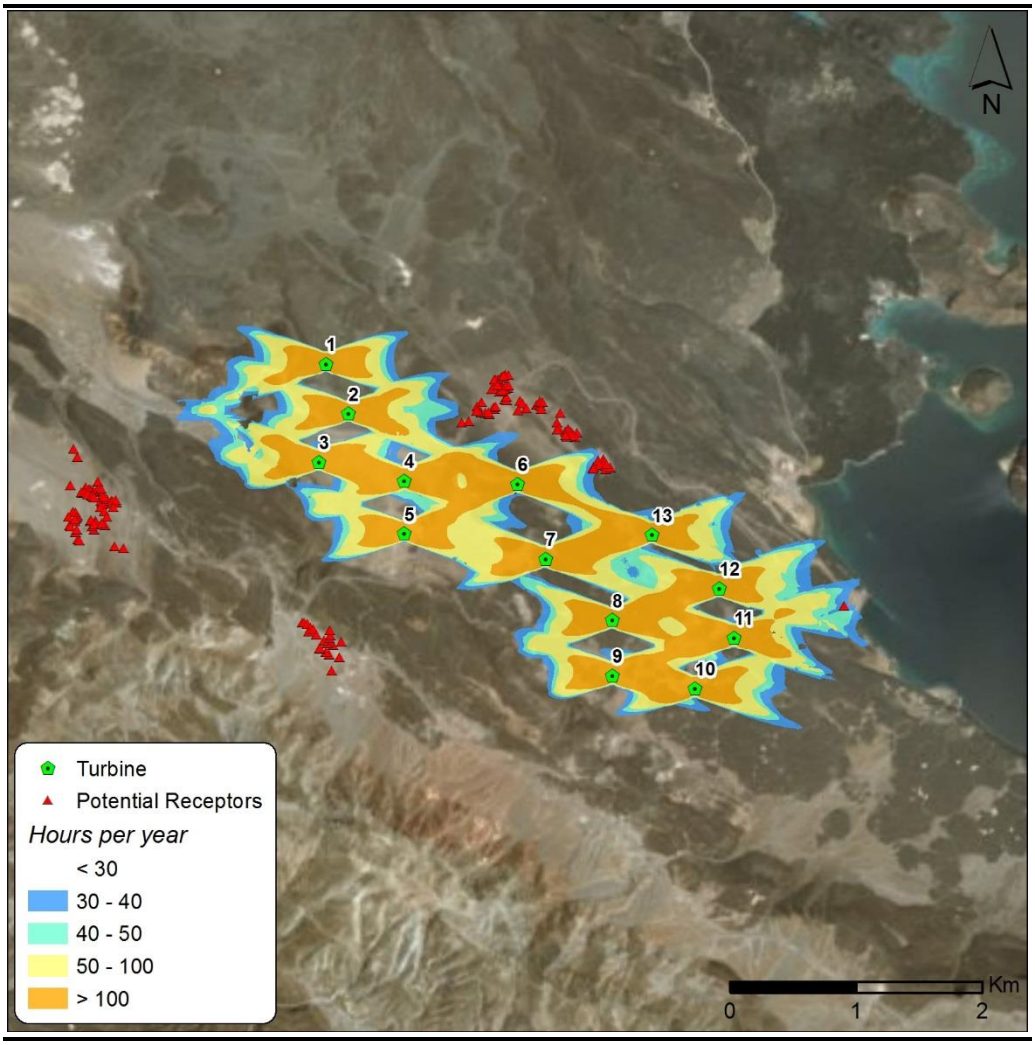
5 MODEL RESULTS

The predicted maximum periods of shadow flicker at potential receptors within the vicinity of the Project are presented in *Table E5.1* and *Figure E5.1*.

Table E5.1 Predicted Shadow Flicker Results (hours/year)

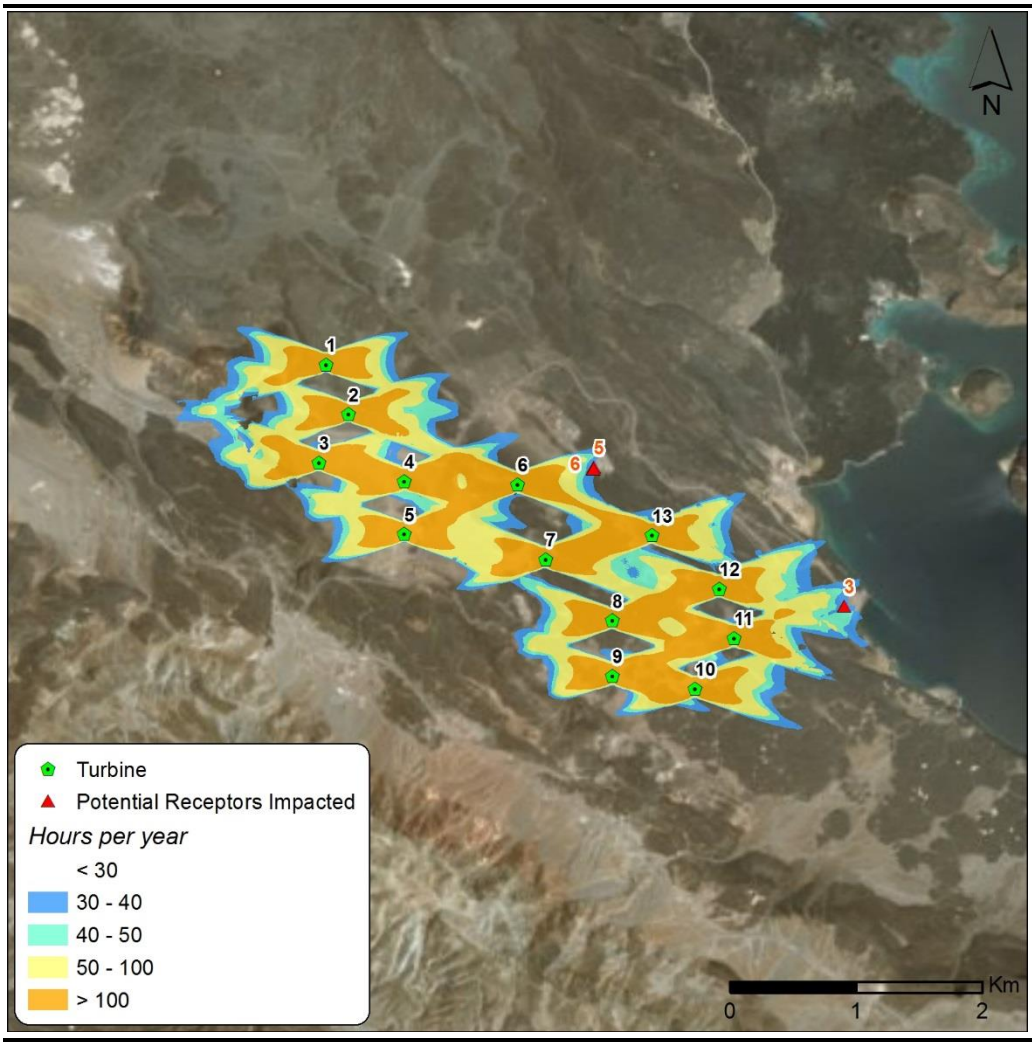
Residential building Code	Shadow Flicker Duration (hours per year)	Max Shadow Flicker Duration (hours per day)
3	33:47	0:33
5	34:04	0:43
6	34:04	0:44

Figure E5.1 Predicted Shadow Flicker Map (hours/year)



The modelling indicates that shadow flicker could be experienced by people in residential buildings in proximity (less than 1km) of wind turbines 6 and 11; there are three potential receptors, as shown in *Figure E5.2*.

Figure E5.2 Potentially Impacted Receptors Map (Shadow Flicker > 30 hours per year).



6 CONCLUSION AND RECOMMENDATIONS

The modelling predicted that people in three residential buildings will theoretically experience shadow flicker exceeding 30 hours per year under certain conditions. However, the model is based on specific conservative assumptions (as described in Section 4.2) and therefore likely to over-estimate the duration of occurrences when shadow flicker might be experienced at a specific location. Also, the model does not consider localised screening of residential properties and or the number/orientation of windows/openings in the residential buildings that might provide the conditions for shadow flicker to be experienced by the occupants.

In the unlikely event that on-site residents are affected by shadow-flicker once the turbines are operational, the Project proponent will assess the situation on a case-by-case basis and work with the residents to implement suitable mitigation, such as providing financial support for the residents to modify window locations or plant appropriate vegetation cover around the buildings to break the line of sight.

7 REFERENCES

American Wind Energy Association, 2010, Wind Turbines and Health

Burton (2001), Wind Energy Handbook

Clarke A.D. 1991: A case of shadow flicker / flashing: assessment and solution. Techno Policy Group, Open University. Milton Keynes, UK

Copes et al, Wind Turbines And Environmental Assessment, National Collaborating Centre for Environmental Health, June 23, 2009

Copes, R. and K. Rideout. Wind Turbines and Health: A Review of Evidence. Ontario Agency for Health Protection and Promotion 2009

Department of Environment, Heritage and Local Government [Ireland], Undated, Planning Guidelines

Government of South Australia, 2002, Planning Bulletin – Wind Farms

International Finance Corporation / World Bank Group, 2015, Environmental, Health, and Safety Guidelines for Wind Energy

Minnesota Department of Health (MDH) 2009 Public Health Impacts of Wind Turbines

National Research Council (NRC). Environmental Impacts of Wind-Energy Projects, 2007 NRC, Washington, DC

Northern Ireland Department of the Environment, 2009, Best Practice Guidance to Planning Policy Statement 18 „Renewable Energy"

Notes on the identification and evaluation of the optical Emissions of Wind Turbines – States Committee for Pollution Control – Nordrhein Westfalen 2002

Onshore Wind: Shadow Flicker, Department for Business Enterpise and Regulatory Reform (BERR), 2009

Osten, Tjado and Pahlke, Thomas. 1998. "Shadow Impact on the surrounding of Wind Turbines." DEWI Magazine. No. 13. August. pp. 6-12

Planning for Renewable Energy - A companion guide to PPS22 – Office of the Deputy Prime Minister 2004

Taylor D. & Rand M., 1991, Planning for Wind Energy in Dyfed

Update of UK Shadow Flicker evidence base, Department of Energy & Climate Change, 2011

World Health Organization, Large analysis and review of European housing and health status (LARES) Preliminary overview, 2007

Weatheronline.com for cloud coverage trend [accessed 02 October 2017]

Annex F

Social Field Survey Report

ERM

INSUCO
Local understanding for sustainable solutions

ERM

Mars 2018

Social Impact Assessment for a Wind Farm Project in Ghoubet

Table of contents

LIST OF FIGURES

LIST OF TABLES

LIST OF MAPS

1. Social Baseline Study

This social baseline study describes the socio-economic context of the affected area. The information given is based on primary and secondary data collected during both the initial project scoping phase in 2017 and the social study performed in February 2108. Primary data was collected through a sampling of project-affected communities. Within these communities the women were identified as a vulnerable group to give specific attention to. As illustrated in detail in the report, they can be considered as vulnerable because of their limited economic and political role. Specific attention was given to have debate and exchange with women representatives. The data collection methodology is summarized in the table below.

Table 1 : Methods used for the collection of primary data

Activity	Description	Object
Population census	**Household census in the two villages of the project-affected zone using a smart-phone based questionnaire.** The census was performed in each village in a single day on the 8th and 10th of February. Each interviewer was spread out in a defined sector of a village and then numbered the houses so as to avoid double counts or omissions. A unique code was attributed to each household recorded based on its geographic position. The census questionnaire may be found in Appendix 1 and the census data in the Excel Appendices.	All households in the two villages surveyed (129)
Household socio-economic survey	**Assessment of the income and living conditions of a sample of households in two villages of the project affected area using a smart-phone based questionnaire.** A representative sample of 40 households and 10 replacement households were selected through a random draw, without replacement, from the list of households of the two villages. The socio-economic surveys were performed between the 14th and the 19th of February. They lasted between 30mn to 1h30 and were performed in each household by a surveyor accompanied by a local guide. The poor availability of heads of households during the study period made it difficult to respect the methodology necessary to obtain a statistically representative sample: amongst the 50 households from the initial random selection, only 29 head of households were available for the survey. Due to scheduling constraints, it was not possible to re-visit these households during the social baseline survey mission when the head was available as this would have impacted other engagement/survey activities. The sample thus has an important bias linked to the under-representation of heads of households who are absent. This absence is usually linked to the specific functions they perform. They may be politicians, civil servants, or employees affected to other areas, as well as wage-earners and daily-workers employed at Salt Investment. The data were verified after each survey, and when necessary, additional information was collected straight away from the surveyed persons. The socio-economic questionnaire appears in Appendix 2 and the	40 households surveyed

Activity	Description	Object
	socio-economic database obtained during the survey is placed in the Excel appendices. Once all the surveys were finalised, the database was edited to fill in missing information that the persons surveyed could not or had not given such as prices, yields, salaries, etc. The estimations used were based on technical and economic data collected during other surveys as well as through focus group meetings and discussions with key informants. The calculations for estimating income were programmed on Excel. The edited socio-economic database and the income calculations appear in the Excel appendices.	
Thematic Focus Groups	**Assessment of income and living conditions of a sample of households in two villages of the project affected area using a smart-phone based questionnaire.** Group discussions with 2 to 5 key informants concerning a given topic, based on a checklist of information to be collected. The topics addressed were: pastoral practices, the history of human settlement and customary land rights in the area, local governance structures, the role of women in local governance.	4 focus groups done
Nomadic Peoples Investigation	**Interviews with individuals and Focus Group to investigate status of Nomadic Peoples in the Project area** During the data collection in Cité Moumina, the social field team were told that nomadic people settled in Koussour-Koussour area (a few kilometres from the project site). The team therefore went to see a camp close to Koussour-Koussour in order to collect data. Information collected there were then cross-checked with those data collected in Cité Moumina and Lac Assal. In Cité Moumina, the data about nomadic people were collected during a focus group with the pastoralists. The map of pastoral areas in the Debné area was created with pastoralists from Koussour-Koussour	3 interviews and 1 focus group
Individual interviews	**Semi-structured interview with a key informant on a specific topic, based on a checklist of information to be collected.** The individual interviews covered the following specific topics: - Pastoral practices, selection of pastures and access rights to pastoral areas; - Customary rights for access to other land based resources; - Fishing practices; - Territorial structure and local governance; - Cultural heritage sites. Not more than six key informants were identified and interviewed because members of the communities visited were reluctant to spend time with the field team. Considering the small population across the communities, this number of interviews is considered adequate. The key informants were interviewed at different times and different methods in the engagement process (focus group, consultation). All the key informants they interviewed were those identified as a valuable source of information and that accepted to be interviewed.	6 interviews

Activity	Description	Object
Public Consultations	**Public consultation meetings with impacted community members to exchange information and points of view about the project and its impacts.** *Women's representative were specifically invited.* Two meetings were organised, with representatives of the local communities, customary authorities, community associations, youth and women's representatives (Lac Assal only), and local administrators (Lac Assal). The meetings were facilitated so as to include: - Exchange of information about the project - Debates and exchanges of points of view on the potential impacts of the project, on the proposed solutions to minimise negative impacts and maximise positive benefits, on the overall expectations regarding the project. The themes brought up during these public debates were: - Economic issues and the management of expectations concerning local employment; - Constraints linked to the loss of the land needed for the installation of the infrastructure; - Issues linked to demography and potential in-migration; - Issues linked to the environment and the ecosystem; - Issues around health and safety; - Cultural heritage; - Recommended means to set up a good communication and information sharing system between the project and the local communities. The minutes of the two public consultation meetings may be found in Appendices 5 and 6.	Two meetings organised, one at Cité Moumina and one at Lac Assal. Effective participation of 18 representatives of local communities.
Individual Consultations	**Individual interviews with administrators so as to exchange information about the project and collect their points of view.** Meetings were organised with the authorities responsible for territorial administration: The Prefect of the Tadjoura region and the Prefect of the Arta Region.	Two institutional meetings
Direct Observation	**Survey of the volume and nature of road traffic in the project zone.** An evaluation of road traffic on the RN9 that crosses the project implementation perimeter, by a day time tally of traffic on a week day and another on a week-end day.	2 days of counting

The complete list of meetings that were held and the number of participants in each meeting is given in Appendix 7.

1.1. Social Influence Area

The project's area of social influence spreads throughout the zone situated between Lac Assal and the Golf of Ghoubet. It is situated at the borders of the administrative regions of Tadjoura and Arta.

The social influence area includes:

- The direct footprint of the project which includes the perimeter in which the wind farm will be installed (395 hectares);
- The zone reserved for the EDD transformer and the power line linking the two areas;
- The zone bordering the perimeter, where three villages are installed, one of which is currently uninhabited.
- The National Road 9 (RN9) and the mining road that links Lac Assal to the mining port of Ghoubet both cross the project perimeter.

No economic development activities of local resources were registered. The only existing infrastructure is a buried cistern for the collection of rainwater.

The villages bordering the project perimeter are the following:

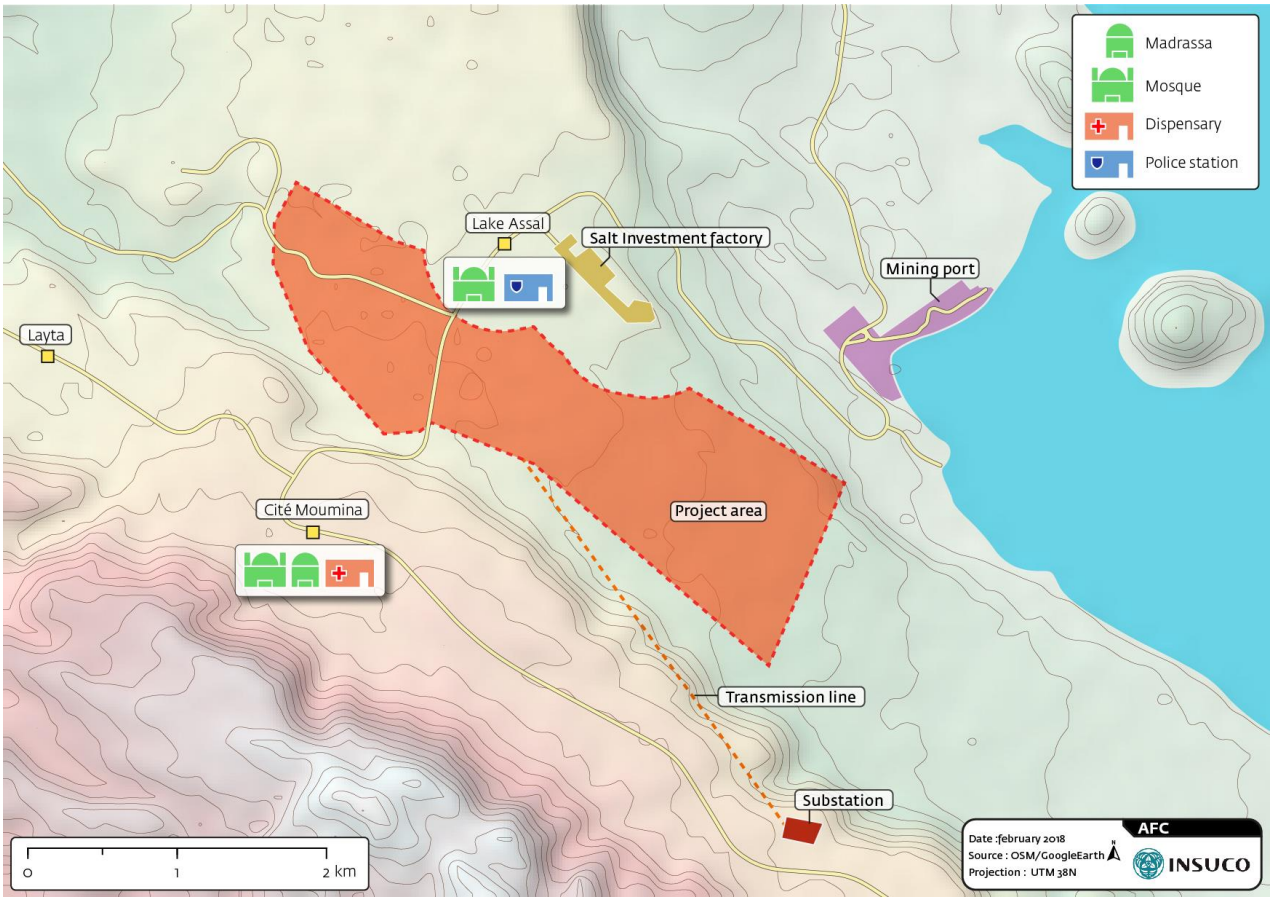
- Cité Moumina, situated just over 600 meters south of the project perimeter. The village counts 105 households and a total population of 641 inhabitants.
- Lac Assal village, situated approximately 500 meters north of the perimeter. The village is the seat of a sub-prefecture and counts 24 households for a total population of 139 inhabitants.
- Layta village, situated at 1 kilometre from the western limit of the perimeter. Since 2016 it is no longer inhabited as most of the inhabitants moved to the recently built Cité Moumina.

In the area close to the project perimeter, no nomadic herder camps were seen, nor any evidence of seasonal migration recorded. Traces of old settlements and burial sites close to the project perimeter, bear witness to the fact that in the past, the zone was an area of pastoral activity.

The deterioration of climatic and agro-ecological conditions since the 1980s probably drove herders towards other areas of pasture or other activities. Currently, the project's direct footprint and the adjacent areas are only sporadically crossed by seasonal migration of pastoralists with their herds.

The larger area harbours some important projects. Lac Assal is identified in the national strategy document « Djibouti Vision 2035 » as an industrial zone (p.80). It houses a mineral port and a treatment plant for the salt from Lac Assal. Future plans include the setting up of an « Assal Special Industrial Zone » which is to integrate energy production with geothermal resource exploitation.

Tourism is also a resource for the project area. On one side, it is a passing area for visitors going to Lac Assal, on the other side the Ghoubet beach is more or less equipped for welcoming weekend tourists. The beach is situated 650 meters, as the crow flies, from the eastern perimeter of the wind farm.



Map 1 : Project zone of influence

2. Overview of the social study

2.1. Development Context

The extraction and commercialisation of lac Assal salt reserves dominates the overall history of the area.

The exploitation of this resource goes back to the Aksum Kingdom (which peaked in the 1st century). Throughout the centuries, caravan routes supplied salt to the great political structures of the Horn of Africa and in particular to the actual area covered by Ethiopia. From the second half of the XIXth century onwards, the salt reserves started attracting the attention of French traders and entrepreneurs who made the first attempts at industrial salt extraction from Lac Assal[1].

During the 1980s, Colonial powers competed for the control of Lac Assal. The French colonial administration started managing a concession for the exploitation of Lac Assal[2] salt, from 1982 onwards, without however, coming into competition with the caravan exchanges that continued to furnish the land-locked regions. At the beginning of the 1960s, there was a significant decrease in the demand for salt which caused a drastic fall in production.

Until this period, salt collection for the caravan trade was performed mainly by Afar caravaneers (Hocquet, 2006). The absence of water and the overall aridity of the zone explains the fact that, despite the attraction of the resources of Lac Assal, the zone was never systematically settled in a permanent manner. It remained essentially an area of passage, rather than an area of residence.

The much more recent history of the current occupation of the zone is once again linked to the salt economy. In the second part of the 1980s, the construction of the national road linking Djibouti to Tadjourah created an opportunity for surrounding inhabitants to come settle close to the tarmac road in order to carry out small businesses. This initially involved only a handful of families holding small shops at the site where the Lac Assal village eventually emerged.

In 1998, the war between Ethiopia and Eritrea caused the cessation of imports of Eritrean salt by Ethiopia. The demand thus turned back to Lac Assal causing an extraordinary peak of activity in the project area. According to the Djibouti Ministry of Finances[3], by 1999, the exploitation of salt had gone from artisanal extraction to semi-industrial production, with twenty-four companies holding temporary licences compared to only four the previous year. Only thirteen of these companies regularly exploited the lac Assal and four of them accounted for 90% of the production. According to a study by the University of Djibouti[4], two thousand people were employed in the business of salt production.

Between 1998 and 1999, the village of Layta became a major centre of production and attracted more and more people. Salt was stored and dried there before being loaded onto trucks transporting it towards Ethiopia.

---

1 The projects undertaken by Paul Soleillet (in the 1870s) and by Léon Chefneux (1880s) are well described in the literature. Refer to C. Dubois (2003)

2 A detailed account of the complex events surrounding the management of Lac Assal salt from 1892 until the 1930s would require much more space. We refer you to available literature (Dubois, 2003 ; Imbert-Vier, 2011 ; Said Chiré, 2012 ; Hocquet, 2006)

3 « *L'exploitation du sel du Lac Assal* » (Salt extraction in Lac Assal), http://www.ministere-finances.dj/EF/Economie_Finances/exploiSel03_1.htm, consulted on line March 1st 2018

4 *Pôle Universitaire de Djibouti, « Le Sel », Collection Etudes de Metiers. Institut Supérieur des Affaires de Djibouti.* (Djibouti University, « Salt » Studies of Trades Collection)

According to key informants, at least eight hundred people lived in the village which rapidly grew. Business promotors where essentially people from the region.

A few months later, probably around the end of 1999, one of the local entrepreneurs associated with Layta – Ali Guellé – opened his own business which he set up in the site of the current village of Lac Assal, which at the time, was only inhabited by a handful of small traders settled there since the construction of the road. The "*Société d'Exploitation du Lac Assal*" (Lac Assal Exploitation Company) grew rapidly and the population of Lac Assal increased as well.

Thus, around 1999, two relatively thriving centres were created, Lac Assal and Layta, towards which people converged, attracted by opportunities for employment in the salt extraction companies. The explosion of the demand for salt ceased in 2002. The company operating in Layta did not stand up to the crisis and stopped operating, whereas the Lac Assal Exploitation Company, founded by Ali Guellé remained in place. It was later bought up by American and then Chinese investors and further expanded under the name "Salt Investment". Lac Assal became an important node for territorial administration and is the seat of a sub-prefecture, it also hosts a police station. Layta did not resist the crisis as well, and lost part of its population who had come to seek employment in the salt business.

In 2014, a major event further reshaped the population dynamics of the area: The construction of the Cité Moumina. It was an initiative proposed by Kuwaiti benefactors, and carried out thanks to the financial support of the African Kuwaiti Islamic Relief Committee and other NGOs from Qatar, Saudi Arabia and Bahrein.

Built 2 kilometres away from the village of Layta and finished in 2016, Cité Moumina is now a building complex of six units serving as living quarters, a mosque, a twelve classroom Koranic school, a health clinic and a water tank. In all, there are one hundred single-family quarters, each with two bedrooms, a kitchen area and a latrine organised around a patio.

The accommodation was allocated mainly to the ex-residents of Layta, but also to a number of residents from Lac Assal. Since the inauguration of Maimouna Cité, the houses of Layta have been abandoned. The village of Lac Assal, which had already lost part of its population when the intensive exploitation of salt ceased in 2002, now displays a modest population (twenty-four households) and many empty houses. The accommodation of Cité Moumina has attracted and contributed to settling a population which has almost completely ceased its pastoral activities and now counts on employment opportunities (generally unskilled labour) arising from the development of services and projects on their territory.

The zone houses some important national scale projects resulting from a clear political will, previously mentioned and detailed in the « Vision Djibouti 2035 » document, to transform the Lac Assal zone into an industrial zone:

- The construction of two industrial production units by December 2017: one for the production of sodium bromide and the other for the production of caustic soda. The project is carried by Salt Investment and supported by private Chinese investors.
- The mineral port of Ghoubet, inaugurated in June 2017. The port was built by China Harbour Engineering Company with the view of exporting 5 million tons of salt per year.
- The geothermal plant launched in October 2016 and financed by the Kuwaiti Fund for Development (KFD).

This constitutes a considerable volume of projects and economic opportunities in an area with a low population. These big infrastructure projects have sparked reactions and demands at the regional level, highlighting important issues around the sociological and territorial set up of the zone.

In 2016, in reaction to the geothermal drilling project and the Ghoubet port construction project, there were peaceful demonstrations in the town of Tadjoura. According to the local press[5], the people were demonstrating because the planned infrastructure was considered to belong to the administrative district of Arta. They were speaking up on behalf of the customary authorities of Tadjoura who had already started negotiations in Djibouti town. The arguments brought up by the delegation of Tadjoura authorities and the demonstrators was that, even though, according to the legal texts defining the regional limits (Decree n°2003-0278/PR/MID covering the creation of a new "arrondissement" (district) and defining the administrative limits) the infrastructures belong to the Arta region, it would only be fair to recognise, that historically, the populations of Lac Assal are an integral part of the Tadjourah Sultanate. They were thus demanding a revision of the regional administrative limits.

The problem of lack of precision in administrative areas, as shown by the historian Simon Imbert-Vier (2011; 2016), goes back to colonial times and was not resolved after independence. Without going into the details, let us note that since the late 1920s, various administrative limits in the area between lac Assal and the Ghoubet (the circles of Tadjoura and Dikhil) have a history of unclear, changing and even contradictory cartographic limits[6].

To further complicate the territorial administrative issues of the area, in 2002, a political initiative resulted in the creation of the Arta region. The Tadjoura authorities regard this creation with much scepticism and they base their protests on the argument that the territory covered by this new region does not correspond to any historical sociological or territorial criteria, as is the case for the other administrative regions. They fear that the resources on which the old Sultanates built their history, will be managed directly from the capital without the involvement of local authorities. With such high stakes, as the establishment of the Lac Assal Industrial and Energy Sectors, these fears have become grounds for claims and protests at the local political and civil society levels.

2.2. Institutional and Administrative Context

The Political and Constitutional Context of the Republic of Djibouti

The Republic of Djibouti achieved independence from France in 1977. The 1992 constitution was revised in 2011. It establishes the country as a democratic republic, sovereign, united and indivisible (article 1).

The President is the head of the State and of the Government (article 22) and is elected for 6 years by direct universal suffrage (article 23). The legislative power (National Assembly) is also elected by direct universal suffrage (article 4). The multi-party system is established in article 6.

Since 1999, the President-in-Office is Ismaïl Omar Guelleh (IOG). He was re-elected in April 2016 in the first round of the elections, for a fourth consecutive mandate, with 86.68% of the votes.

5 Cf. Human Village, November 2016. « *Les raisins de la colère des Debenek-Weima* ! » (The grapes of Debenek-Weima Wrath!) », https://human-village.org/spip.php?article252, consulted on line March 1st 2018

6 For more detail, see Imbert-Vier, « *Du Ghoubbet au lac Assal, histoire d'une limite* » (from Ghoubet to Lac Assal, History of a Boundary). Human Village 28, November 2016. https://human-village.org/spip.php?article253, consulted on line March 1st 2018

Governance and Administrative Structure

- Deconcentrated Powers

The representatives of the State amongst the territorial authorities are the Prefects and the Sub-Prefects of the different regions and of Djibouti City. Prefects are appointed by presidential decree and sub-prefects are appointed by decree based on a proposition by the Minister of the Interior (Decree N° 2007-0100/PR/MID concerning the powers of the prefects). The prefects are vested with the State's authority. They represent the government as a whole in their respective administrative units and ensure the implementation of governmental rules and decisions.

- Decentralised Powers

Apart from Djibouti City, there are five decentralised Regions. Law n°174/AN/02/4ème L on the status and decentralisation of the regions, states that each regional authority must consist of a regional assembly and a regional executive body, elected by the assembly (headed by a regional president).

The Republic of Djibouti is thus divided into 6 administrative regions: the capital Djibouti City which has special status, Ali Sabieh region, Dikhil region, Tadjoura region, Obock region and Arta region.

The number of members of each assembly is defined on the basis of one elected member per 1000 registered voters. The regional councillors are elected for 5 years by direct universal suffrage. A quota of 10% of women was introduced by Law n°192/AN/02/4ème L on November 14th, 2002.

Decree n°2007-0099/PR/MID on the division of powers between the State and the regional authority states which powers are transferred to the local authorities (regions and districts).

The main powers transferred to regional authorities are those concerning:

- economic development (promotion of arts and crafts, of agricultural activities and tourism as well as the management of local markets, bus stations and abattoirs);
- the environment and the management of natural resources (forests, wells and artificial water reservoirs);
- land use planning, land and town planning, urbanisation, (housing, regional development plans, regional land use planning);
- health and social affairs, (planning health centre distribution in the region, community pharmacies);
- youth, sports and leisure activities;
- culture and promotion of regional languages;
- education, literacy training, professional training, (planning school distribution in the region, school canteens and dormitories, regional integration into the workplace);
- sanitation, garbage collection, road works and local markets

In reality, the process of decentralisation is not yet fully achieved. Regional structures collect very little revenue from local taxes and are still very much dependent on state subsidies. The transfer of skills, as prescribed by law, is effective in a few fields (essentially limited to civil registry, roadworks, and management of markets). However, in May 2016 a delegate Ministry for Decentralisation was created within the Ministry of the Interior.

2.3. Human Rights in the Republic of Djibouti

The republic of Djibouti has ratified or adheres to the main Human Rights Instruments:

- The Universal Declaration of Human Rights, 1948;
- The Convention on the Rights of the Child;
- The Convention on the Prevention and Punishment of the Crime of Genocide;
- The Convention of the Elimination of all Forms of Discrimination against Women;
- The International Covenant on Economic, Social and Cultural Rights;
- The International Covenant on Civil and Political Rights;
- The Optional Protocol to the Covenant on Civil and Political Rights
- The second optional Protocol to the Covenant on Civil and Political Rights, aiming at the abolition of the death penalty;
- The Convention against Torture and other Cruel and Degrading Treatment or Punishment;
- The International Convention on the Elimination of all Forms of Racial Discrimination;
- The Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict
- The Convention on the Rights of Persons with Disabilities
- The Optional Protocol to the Convention on the Rights of Persons with Disabilities
- The African Charter on Human and Peoples' Rights
- The Optional Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa

At an institutional level, the National Commission for Human Rights (*Commission Nationale de Droit de l'Homme (CNDH*), created in 2014 (Law n° 59/AN/ 14/7ème L concerning the organisation and the operation of the National Commission for Human Rights) is in charge of ensuring the implementation and respect of the fundamental instruments related to Human Rights.

The legislative decree of Law 59 (decree n°2015-210/PR/MJDH of July 11th, 2015 concerning the application of law n° 59/AN/14/7eme L concerning the organisation and the operation of the National Commission for Human Rights) provides for the creation of four sub-commissions:

- The sub-commission for the pact on civil and political rights pact and the pact on economic social and cultural rights;
- The sub-commission for the convention on eliminating all forms of violence and discrimination towards women, for the convention on the rights of the child, and for the convention on the rights of persons with disabilities;
- The sub-commission for the convention against torture and other cruel or degrading treatments, and on the convention on the elimination of all forms of racial discrimination;
- The sub-commission for regional instruments on Human Rights

2.4. Human rights aspects considered for the Project

In this project, human rights were considered with two main questions:

1) Does the population located in the project zone represent or belong to a marginalised population (politically, economically?) Should they be considered as a marginalized community?
2) Could the government use that to establish a situation of domination, prevarication, to the detriment of the local population?

In response to the first question, it is important to underline that although Afar people are less numerous than Issa in Djibouti, Afar people have equal political and economic rights. They occupy key functions and professions in Djibouti such as ministers, contractors and various professional roles thereforethey are not be considered a marginalized population.

In response to the second question: the team identified no risk for this type of dynamic. On the contrary, the state is investing significantly in the area through public and private projects and this has not come in conflict with local human rights. The population have stayed in the region and benefit from the investments and development driven by the state.

In conclusion, the project is not considered at risk of being a tool of human rights violation and cannot be used as such. Based on our understanding and knowledge, gained through baseline surveys and stakeholder engagement activities, there is no evidence that there is a political will to use projects or investments in the area as levers to impact the rights of the local population.

After those analysis, the main issues relating to human rights in the project area concern working conditions and the protection of migrant populations.

Worker's rights

The legal framework appears to offer a relative protection to salaried workers and daily workers that we met in the project area. Both types of work are regulated by the Work Code7 under the section on fixed-term employment (Title II, Chapter 1, Section 2, Art. 12 GdD 2005).

The texts stipulate that the maximum working week is 48 hours (Title III, Chapter 1, Section 1, Art. 84, GdD 2005), plus a maximum of 5 hours' overtime (Title III, Chapter 1, Section 1, Art. 86, GdD 2005), a compulsory day of rest per week (Title III, Chapter 1, Section 3, Art. 97, GdD 2005), as well as access to universal health coverage via the employer's subscription to the National Social Security Fund[8] (Title 2, Chapter 1, Art. 5, GdD 2014). Child labour (under 16 years old) and night work for youth (under 18 years old) are forbidden (Title I, Art. 5 and Title III, Chapter 1, Section 2, Art. 94, GdD 2005). Discussions with people interviewed suggest that some of these provisions may not always be respected, especially when it comes to rest days and working hours. No child labour was observed nor mentioned by the various actors met.

Migrants' exploitation

In 2005, Djibouti was singled out in a report from the American State Department on human trafficking, concerning human rights abuses on immigrant populations (USDS, 2015[9]). The report described Djibouti as "a source country, a transit country and a destination country for men, women and children subjected to forced labour and sex trafficking. More than 90 000 men women and children from Ethiopia, Somalia and Eritrea are estimated to have transited through Djibouti as paperless voluntary economic migrants on their way to Yemen and other Middle Eastern destinations. […] During their stay in Djibouti, which can last for long periods, these populations are vulnerable to various forms of exploitation, including human trafficking. Certain migrant and Djiboutian women and girls become the victims of sex trafficking or modern slavery in Djibouti City, in the Ethiopia-Djibouti corridor or yet in Obock, the preferential point of departure for Yemen. Some migrants that appeal to smugglers are detained against their will and endure physical violence and abuse during their stay in Djibouti. The network of smugglers, including Djiboutian nationals, sometimes ask for exorbitant prices or kidnap migrants, including children, in order to obtain a ransom. […] reports indicate that some migrant women are forced into domestic slavery or prostitution in order to pay these ransoms. The Lac

7 Loi n°133/AN/05/5ème L concerning the Work Code

8 Loi n°24/AN/14/7ème of 5th February 2014 concerning the setting up of a Universal System for Health Insurance

9 Trafficking in person report, US Department of States, July 2015. Available at: https://www.state.gov/documents/organization/245365.pdf

Assal region, where the project is situated, is on the Ethiopia to Djibouti City corridor. Information on migrant exploitation was gathered and there was evidence from the economic data that suggested that the local economy is irrigated by the phenomenon. The teams conducting the social baseline surveys did not directly observe any form of migrant exploitation. Furthermore, they did not observe any monetary transaction or migrant groups waiting in the Project area in order to cross the land.

Access to water

Access to water is organized with the regular delivery of water by tank truck. As mentioned in chapter 5.5, those tank trucks are chartered by the Arta region for Cité Moumina and by Salt Investment for Lac Assal village. This service is entirely free with no prior subscription. The villages agree together on how to share the volume of water delivered. In Cité Moumina, the Village Organisation and Management Committee mediates any potential conflicts. Water for the Project is proposed to be extracted from bore holes in Ethiopia and delivered by truck, therefore there will be no increased demand on then water extracted from within Djibouti for the local communities due to the Project's requirements.

3. Local Demographics

The population in the project area are of the Afar ethnic group. They are mainly young with little formal education.

3.1. Population

There is a total of 129 households and 780 inhabitants in the two villages of the zone of influence. There is a great disparity in the distribution of the population between these two villages (Table 2), Cité Moumina is much more populated as it became the main local centre of attraction after its inauguration in 2016 (La Nation, 2016[10]). The villages of Layta and Lac Assal are in decline since the end of the Ethiopian demand for salt and the regulation of the salt trade by the State in the years 2002. The village of Layta has been completely abandoned in favour of Cité Moumina.

And a large number of deserted houses in Lac Assal bear witness to the exodus from Lac Assal village, from whence a proportion of the population has also have moved to Cité Moumina.

Table 2 : Population of the two villages in the project's zone of influence.

	Households	Population	Household size
Cité Moumina	105	641	6,1
Lac Assal	24	139	5,8
Total	129	780	6,0

Source: Census, February 2018

10 La Nation, 2016. Inauguration du village Moumina 1 au Lac Assal : Des logements décents pour une centaine de familles à Layta, (Inauguration of Moumina 1 village at Lac Assal : Decent Lodgings for a Hundred Families from Layta) Consulted on line 29th February 2016

The population of the zone of influence is clearly younger than the Djibouti average: 56% of the population of the two villages is under 15 years of age compared to 34% in the overall population and 38% in rural and nomadic populations nationally (Figure 1). The distribution by age class and sex of the urban population of Djibouti is imbalanced by the inclusion of "special" residents, which include national and international military personnel stationed in the country (DISED, 2017). The distribution by sex observed in the project zone does not show this imbalance and is comparable to that of rural and nomadic populations nationally. This suggests that economic migration of men towards more attractive sectors is limited.

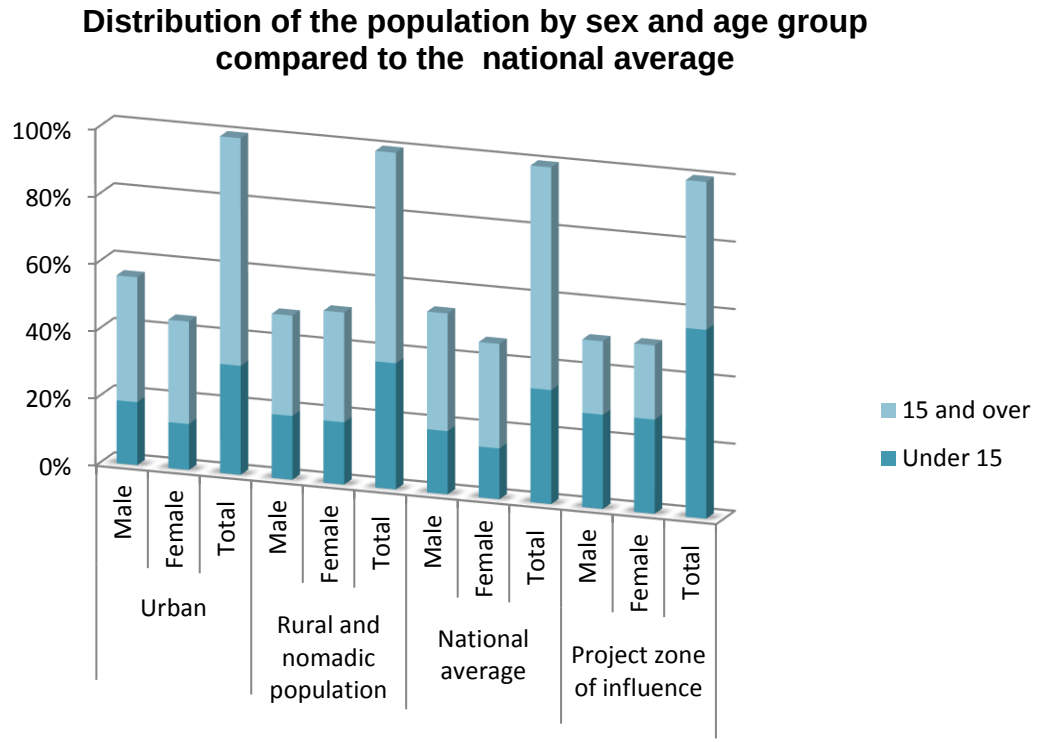


Figure 1 : Distribution of the population by sex and by age group compared to the national average.

Source: Project census Feb. 2018 and DISED 2017[11]

11 DISED, 2017. *Annuaire statistique* (Statistical Yearbook). Edition 2017. *Direction de la Statistique et des Études démographiques, République de Djibouti, 2017* (Direction of Statistics and Demographic Studies, Republic of Djibouti.

The differences in age class distribution illustrate the difference in attractiveness between the two villages in the project zone: The population of Lac Assal is ageing compared to that of the Cité Moumina which totals 86% of the under 15s from the area (Figure 2).

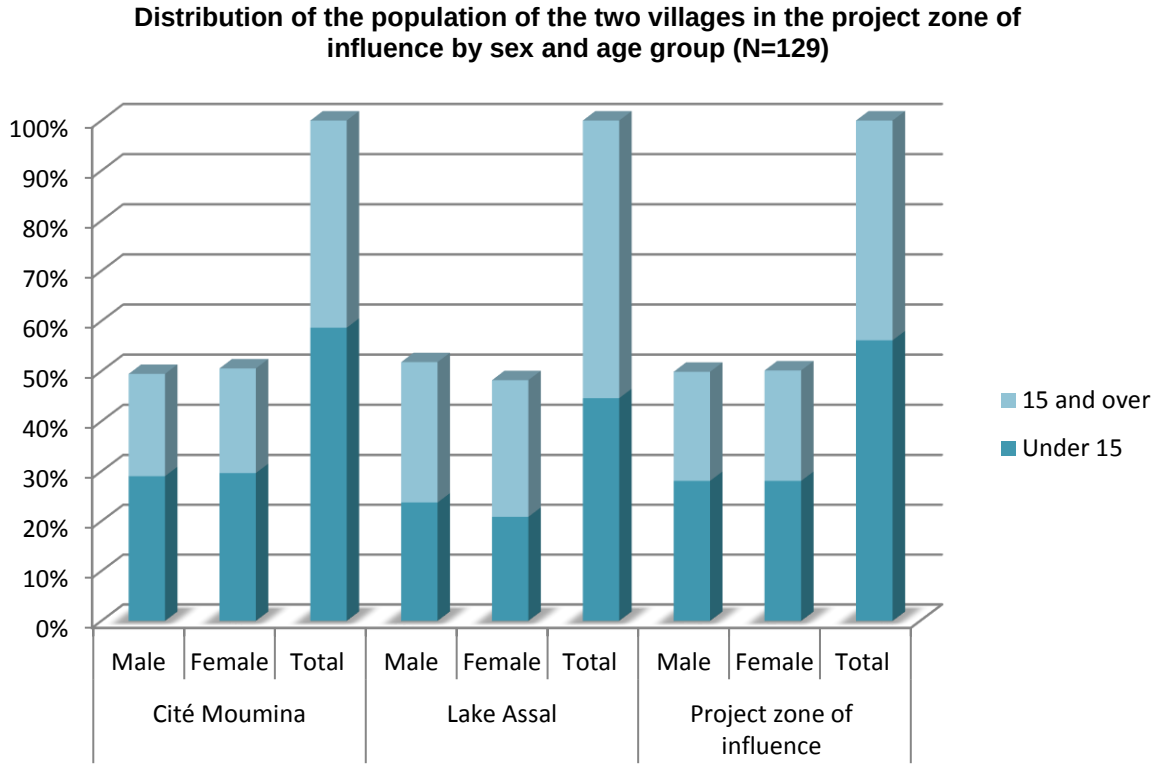


Figure 2 : Distribution of the population of the two villages of the project zone of influence by sex and by age group.

Source: Project census Feb. 2018

3.2. Ethnic Groups and Languages

The Afars and the Issa are the two main ethnic groups of Djibouti. There are fewer afar people than Issa people at national level. However, afar people cannot be characterized as a marginalized minority. Indeed, Afar people enjoy all rights provided for in the Constitution and are politically represented. The official languages are French and Arabic. Somali and Afar are the national languages.

Except for a single household of Ethiopian origin and one Issa household, all the heads of households of the project zone belonged to the Afar ethnic group (Figure 3). Afar was their mother tongue.

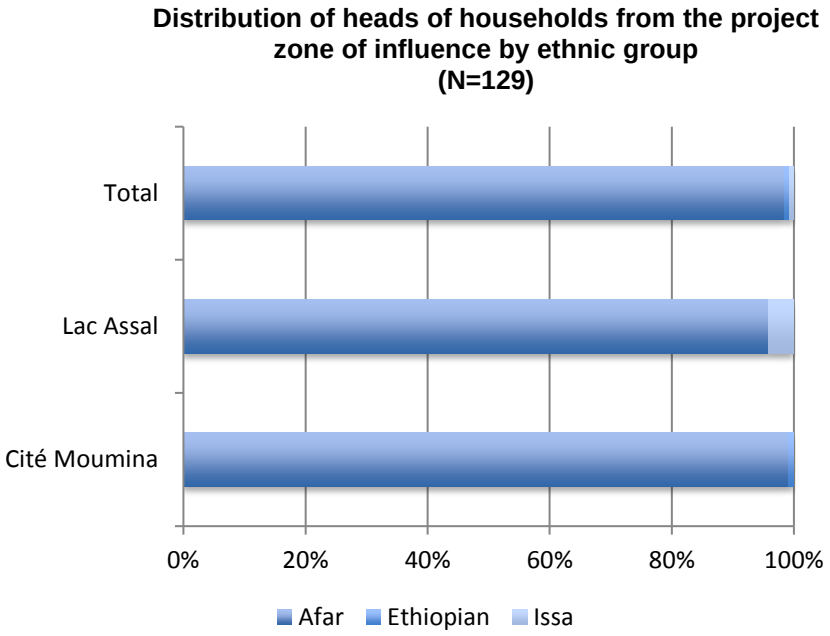


Figure 3 : Distribution of heads of households from the project zone of influence by ethnic group.

Source: Project census Feb. 2018

The heads of households of the project area mainly come from four tribes: Omarto, Mirganto, Fadihiteh, Haysamaleh (Figure 4).

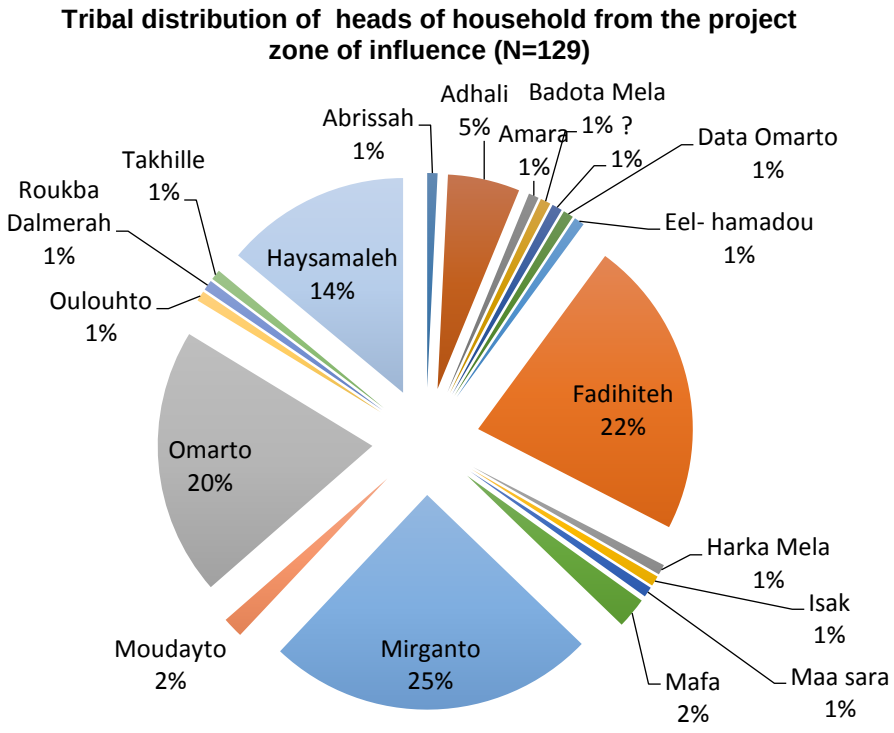


Figure 5 : Tribal distribution of heads of household in the project zone of influence.

Source: Project census Feb. 2018

The four tribes mentioned all belong to the intertribal confederation Debné, and the historical entity known as "*Adorassou*". These four tribes are bound by an alliance based on a codified matrimonial exchange system, and the sharing of a common territory. Certain informants defined this alliance by the name "*Afarabour*" (the four houses)[12].

The overall principles on which the system of matrimonial alliances is based are:

- Marriage between people of the same tribe is proscribed on principle
- An *absuma*[13] mariage is always preferred;
- Marriage is proscribed between members of two tribes descended from Adali (Omarto and Mirganto) and between two tribes descended from Moudadib (or non-Adali): Fadihiteh and Hansamaleh.

Consequently, the Omarto marry the Hayisamalé and the Fadihiteh. The Mirganto marry the Hayisamaleh and the Fadihiteh. The Mirganto do not marry the Omarto. The Hayisamaleh do not marry the Fadihiteh.

Marriages that do not respect these rules are rare. It may happen that an Afar individual marries someone from a foreign tribe. However, there are also prescriptions in this case. They tend to rule marriages with members of tribes with which there is an *Afbihah* (alliance/friendship) relationship. The members of the Mafa tribe are a small proportion of the population. They come from the area of Sagallou (towards Tadjoura). They are also part of the Debné confederation and the historical entity of the Adorassou.

3.3. The Notion of Gender in the Republic of Djibouti

In traditional Afar society, essentially focused on pastoralism, women benefit from relative social and economic autonomy. At birth, whatever the sex of the child, its umbilical cord is attached to a goat whose descendants will then constitute the new-born's herd. The child will only dispose of the herd upon his (or her) marriage. If a boy, he will have sole responsibility for the herd, whereas a girl's herd will be integrated into her husband's. However, in practice, a woman maintains a fair amount of say in the management of the animals of her herd. Thus, when necessary, and particularly for social obligations, a woman is able to mobilise her own resources.

In the project area, the transition from a pastoral economy towards an economy of services (salaried work, daily work) is underway. So far, this transition appears to offer a wider range of opportunities to men than to women. Women rarely have access to jobs in local businesses or administrations and even less to daily work. They nevertheless manage to generate some revenue through small businesses, such as selling tobacco or coffee, managing general food shops and creating handicrafts. They are three times less likely to be literate than men and play no official role in traditional structures of governance.

[12] According to some other informants, the term "Afaraboura" can also indicate a wider intertribal collective. Thus, we hesitate to restrict the alliance of the four tribes mentioned with the term "Afaraboura".

[13] In the Afar social system, the choice of spouse is limited. *Absuma* is the term which indicates the person who is foreseen to be the future spouse. The *absuma* is selected from a very restricted sphere defined by patrilineal descent. A boy's *absuma* would be:

- His crossed cousins on his father's side (eg. the daughter of his father's sister), thus sharing a common grand-father;

The daughters of his parallel cousin on his father's side (his father's brother's daughter's daughter) thus, with a generation between them and a common grand-father.

Their role in the post pastoral society of the study area remains focused on domestic duties: although the delivery of water by tank trucks has considerably reduced the time needed to find water, foraging for dead wood (for cooking), caring for the children, managing and cleaning the house and cooking meals is up to women. They thus constitute a vulnerable population group in the project area.

A single positive signal recently took place with the creation, in January 2018, of an association bringing together the women of Cité Moumina and Lac Assal in order to promote local handicrafts. This association is consulted by the Village Organisation and Management Committee on certain topics.

3.4. Training and Education

Results from the socio-economic baseline study of the zone show that the majority of the population is illiterate: 68% of men and 88% of women can neither read nor write in any language. This is considerably higher than the national average where 33% of men and 47% women are illiterate, which is nevertheless artificially improved by the inclusion of the "special" residents (Figure 5).

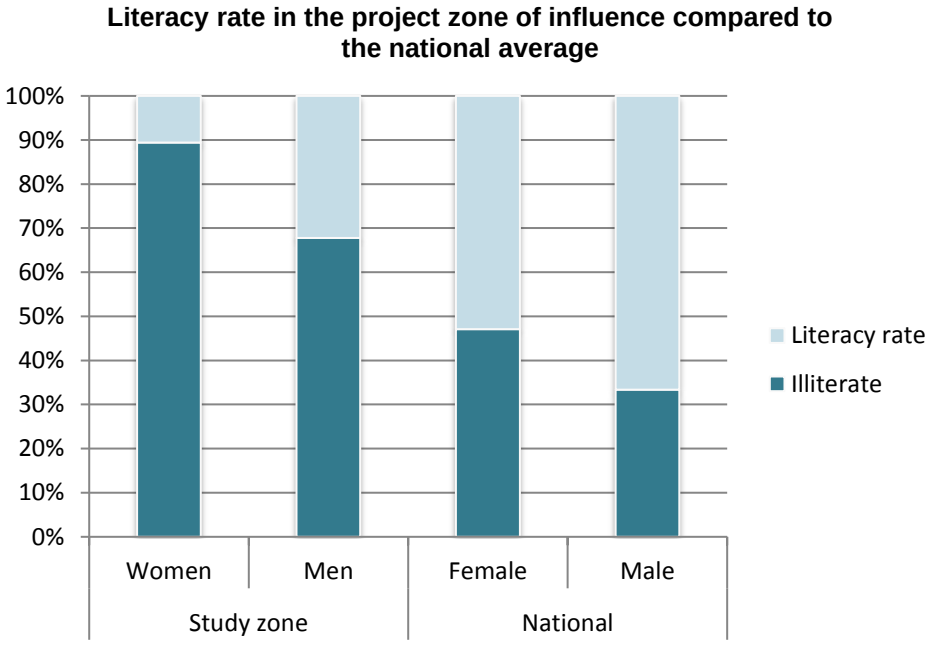


Figure 6 : Literacy rate in the project zone of influence, compared to the national average.

Source: Socio-economic study, Feb. 2018 (N=40) and DISED, 2017.

Adults who can read and write are mainly literate in French and Arabic. Only a small minority master Afar and Somali (Figure 6).

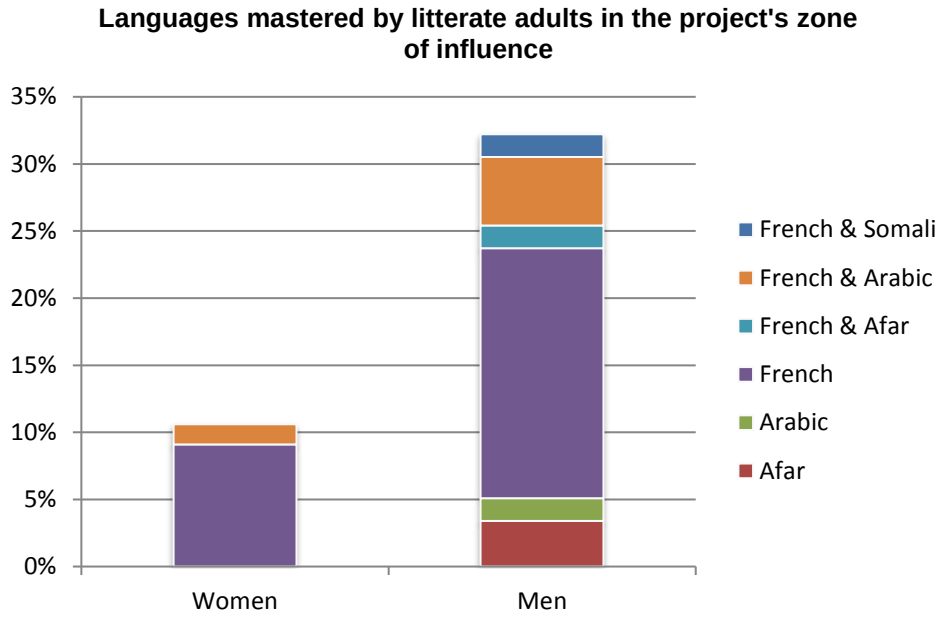


Figure 7 : Languages mastered by literate adults in the project's zone of influence

Source: Socio-economic study, Feb. 2018 (N=40)

Two-thirds of the adults (over 15 years) of the project zone have not been to school: 83% of the women and 69% of the men. The remaining third left school at the end of primary school. Only a tiny share (1%) of the people had followed professional or technical training. There were only 2% of adults that had gone to Koranic school, with no other form of education (Figure 7).

Amongst the 40 heads of household surveyed, 5 followed professional training in the following sectors: animal breeding, nursing, military, foreman, equipment driver.

The adults from the sample surveyed had an educational level far inferior to the national average. The absence of three prominent citizens included in the initial sample that could not be surveyed certainly brought down the overall level. However, even if we take this bias into account, the population in the study zone is far below the national average in terms of education and training. This could limit the access of local people to qualified positions in local businesses or the administration.

Distribution of adults from the project's zone of infmuence by last schoold grade completed

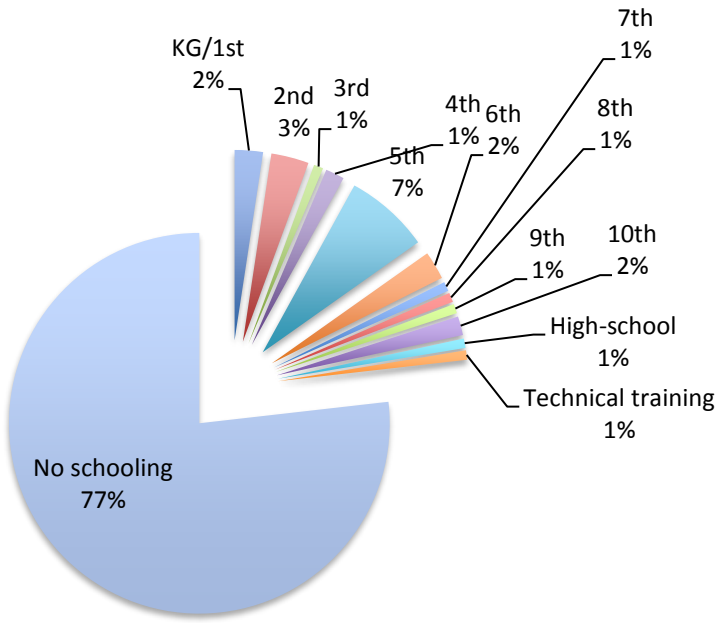


Figure 8 : Distribution of adults (over 15 years old) from the project's zone of influence by last school grade completed

Source: Socio-economic study, Feb. 2018 (N=40)

3.5. Demographic Implications for the ESIA

The population of the area can be considered vulnerable on account of the low level of education compared to the national average. Women are a particularly vulnerable group, as they have less economic opportunities than men and only play a very marginal role in local governance.

4. Economy and Livelihoods

Daily work, offered mainly by a single company was the main source of revenue for the households surveyed. Companies are the first sources of employment in the area. Trade and artisanal production also furnish some income but much less. Fishing, charcoal production, the sale of fire-wood and artisanal salt extraction help supplement household income. Herding is still prevalent in the area but is usually a net loss due to the absence of pastureland close to the villages.

4.1. Local Economy

The economy of the area is based first and foremost on the salt extraction company "Salt Investment", which furnishes most salaried and daily work job opportunities in the zone. This differs from the situation at the national level, where the tertiary sector represents almost 80% of the GDP, this implies a high level of dependency of the project area population of the area on Salt Investment.

4.2. Local Livelihoods

Salaried work (30% of households and 45% of household revenue) and daily work (47% of households and 13% of revenue) are the main sources of income for the surveyed households (Figure 9).

Salt Investment provides most of the opportunities for daily labour. Other positions available are night guard, head of security or construction worker. The geothermic project, the Djibouti National Telecommunication company, the Centre for Seismic Studies and the Karta Health Centre also provide a few job opportunities. Finally, the house building project and road maintenance also call for some daily labour.

About 30% of the households surveyed were involved in some form of trade which accounted for 17% of the average revenue. Most trade activities are managed by women, except for the sale of *khat* that is a male occupation. Monthly revenue varies from 500 to 30 000 DJF depending on the type of trade (sale of chewing tobacco, running of the 4 small shops that furnish the two villages in basic products, cafés).

The sale of handicrafts is widely practised (42% of households) but not very profitable (7% average household income). With the exception of limestone sculptures, women produce most of the handicrafts. These consist essentially of weaving various household objects using the leaves of the local palm tree (called *anga* in vernacular). These objects serve mainly to furnish the household with mats (*fidima* to sleep on, and *gourouf* for sitting on), with milking baskets (*aissena*, *guissa* and *kaounta*, which are three different sized baskets used respectively for milking camels, cows and goats/ewes), and storing food (*gabedo* for flat teff bread and *amourou* for milk. In the past ten years, production has also moved towards selling crafts to passing tourists. New, smaller and more colourful models have been developed for this market. Other products such pearl decorations were introduced through support from the National Union of Djibouti Women (known as UNEF in French). The local women's association in Cité Moumina acts both as a workshop and a showcase for the craftswomen of the two villages. In January 2018, the UNFD also financed sewing machines and a nine-month training course for young girls that are members of the women's association.

Only 7.5% of the households practised fishing at sea, which is thus a minor activity. It contributes an average of 6% of revenue and is practised on calm nights (no waves), along the shores of Ghoubet beach, during the hot season. The technique is rudimentary: the fishermen either throw leaded lines from the shore or install a small gill net, about 1.5 x 5m, to the edge of their boat. The main species caught are trevally (Carangidae) and grouper. Fish are preserved for household consumption during the cold period when productivity is low.

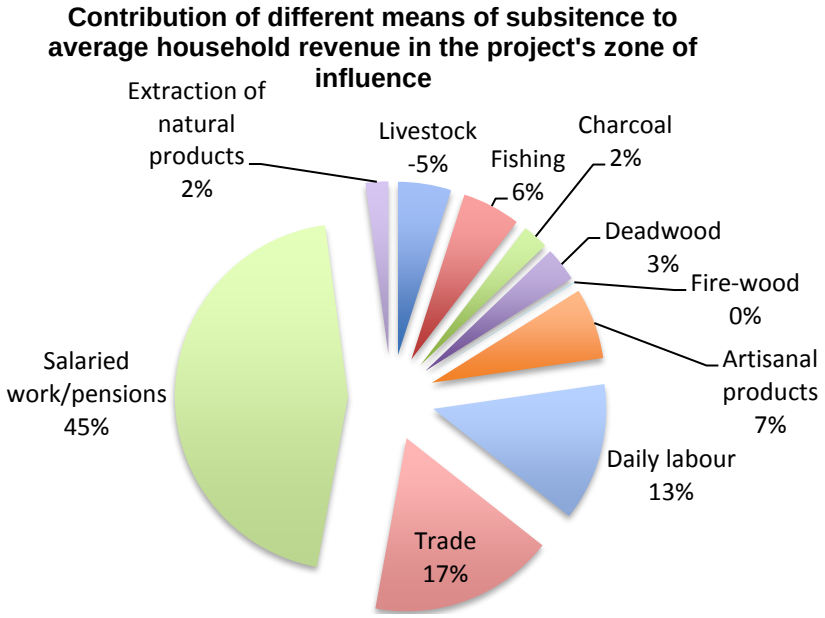


Figure 9 : Contribution of different means of subsistence to average household revenue in the project's zone of influence

Warm season surplus is sold to the resident workers of Salt Investment.

Sales of fire-wood and charcoal represent 5% of household income and concern 20% and 5% of households respectively. Charcoal is produced in a buried stack of about one cubic meter. Artisanal extraction of salt occupied 7.5% of the households. The salt is sold in 50kg bags on the edge of the road. This activity, along with the collection of *anga* leaves accounts for about 2% of average household income.

Finally, livestock breeding still concerns a large part of the population (67%) even though it has an annual cost of 18,525 DJF per year (for the surveyed households). This is due to the poor availability of pasture land in the area which implies that people have to purchase concentrated feed for a portion, or even all of the year. Working hands are less easily available than in pastoral areas and it is sometimes necessary to hire a herdsman, which entails an extra cost. Goats are better adapted to the arid local conditions and they are the main animals kept, with an average of almost 8 goats per household (Table 3). Goats are kept mainly for their milk. Milking takes place in the morning before sending the herd out to pasture and in the evening when they return; it lasts for one to two months after birthing. If there is enough food available a goat can give birth twice a year. However, the zone is so arid that they rarely give birth more than once a year. Households who only own a goat or two generally just let them feed on the village refuse. Larger herds are entrusted to a herdsman who is paid monthly. The goat's diet is supplemented with corn, at least during the hot season. Goats are penned in at night in stone or metal sheet shelters that protect them from the wind and predators. She-goats are kept for reproduction and for their milk and males are occasionally sold for their meat, generally within the village. Most households have a herd that is looked after by members of their family in the bush.

Table 3: Average size of herd per household in the projects zone of influence.

	Number of heads in the village per household	Number of heads in the bush per household	Total number of heads per households
Goat	301	4.5	7.6
Sheep	0.3	0.0	0.3
Cattle	0.0	0.1	0.1
Camel	0.1	0.2	0.3
Total	3.5	4.8	8.3

Source: Socio-economic study, Feb. 2018 (N=40)

Sheep and cattle breeding is very rare in the study zone. A single attempt to rear chickens, started in 2017 by a resident of Lac Assal, with 10 laying hens was recorded. The lack of access to veterinary care (vaccines) and the poor local availability of chicken feed appear to have been the main factors explaining the failure of his endeavour. About 10% of households own a camel that they use for transporting local goods, mainly salt, or for organising caravans. The traditional activity of caravaneer seems to have almost disappeared, with a single instance recorded in the forty surveys. It was a herder who exchanged salt for corn to feed his herd of goats.

- **Income**

The average income, calculated on the basis of forty households surveyed, is 355 027 DJF/year, namely 127 182 DJF per consumption unit and per year or 105 250 DJF per adult equivalent per year (Table 4). This income is 99% monetary, the in-kind share provided through fishing and livestock rearing is minimal.

Table 4: Average income of households surveyed in the project's zone of influence.

	Total household income DJD/year	Income per unit of consumption DJF/UC/year	Equivalent income per adult DJF/EA/year
Average	355027	127182	105250

Source: Socio-economic study, Feb. 2018 (N=40)

Almost a third (28%) of the households surveyed received financial or in-kind support from outside, generally from a relative working in town. This help represents 47 300 DJF/year and amounts to 13% of the total average household income. About one out of five households (18%) sends money to dependents, either family in the bush or a second wife based in another village. These transfers amount to 24 700 DJF/year, which is 7% of the annual income (Figure 10).

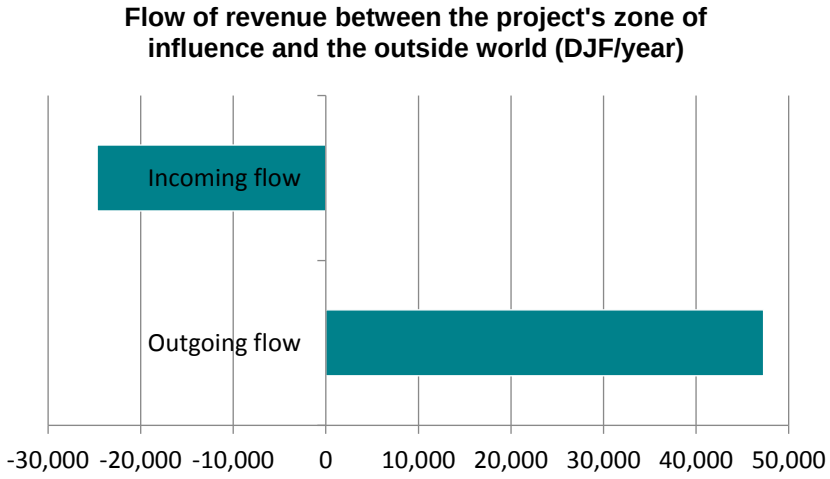


Figure 10 : Flow of revenue between the project's zone of influence and the outside world

Source: Socio-economic study, Feb. 2018 (N=40)

About a third of the surveyed households (28%) contracted some credit during the 12 months preceding the study, always with a trader and at zero interest rate. The average borrowed sum was 70 875 DJF. Most debts were contracted in order to purchase essential goods (9 out of 11 cases). Schooling and the purchase of raw materials for artisanal production where the two other motives for borrowing that were mentioned. The payback period generally extended over the course of a month, rarely over more than a year (2 cases out of 11). Cash savings are inexistent but can take the form of livestock being kept by relatives in the bush. However, this traditional strategy is becoming riskier as the probability of drought increases.

- **Poverty**

The average household income is just above the food poverty line but below the threshold for extreme poverty as defined by the Republic of Djibouti (Table 5).

Table 5: Poverty thresholds as defined by the Republic of Djibouti

	Threshold for food poverty(DJF/EA.year)	Threshold for extreme poverty(DJF/EA.year)	Overall poverty threshold(DJF/EA.year)
Djibouti City	79 579	112 179	172 981
The rest of the country	83 074	111 425	147 622
Djibouti (whole country)	79 925	111 607	167 266

Source: (DISED, 2013), updated by taking into account inflation (WB, 2017)

Half the surveyed households (53%) had an estimated income that was below the food poverty threshold and about two third of the households (68%) were below the extreme poverty threshold. Only one household in five (23%) lives above the overall poverty threshold (Figure 11).

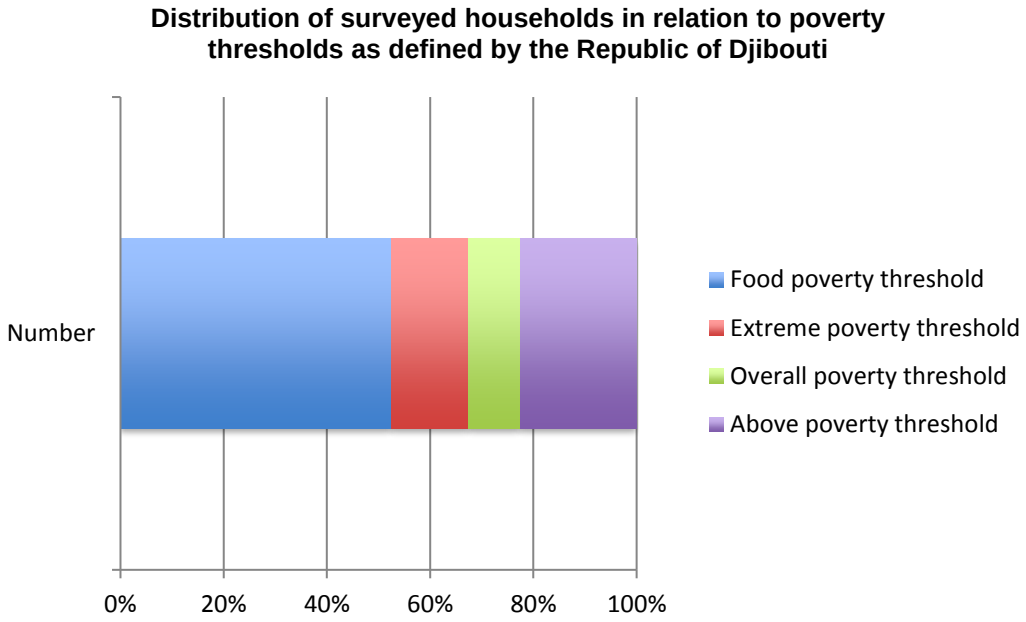


Figure 11 : Distribution of surveyed households in relation to poverty threholds as defined by the Republic of Djibouti

Source: Socio-economic study, Feb. 2018 (N=40)

However, the sampling methodology did not enable us to draw definitive conclusions about the incidence of poverty in the project area because low income households were overrepresented. As indicated in section 1.1.3, it is also possible that part of the population of the two villages derives additional income from the movement of migrants travelling along the Ethiopia to Djibouti City corridor. A few surveys provided elements supporting this hypothesis, such as allusions to opportunities for working as a guide for migrants on the territory of the four tribes south of Lac Assal. This activity could generate up to 40,000 to 100,00 extra DJF per month.

- **Housing and household possessions**

A majority of people in the project area of influence live in one of the hundred hard-wall structures of the Cité Moumina. This housing is free but the occupants do not have official property titles. The rest of the households of the area live in sheet-metal houses (15%) or stone houses (10%) and a minority (2%) live in traditional huts - *tukuls* - covered with palm fibre mats (Figure 12).

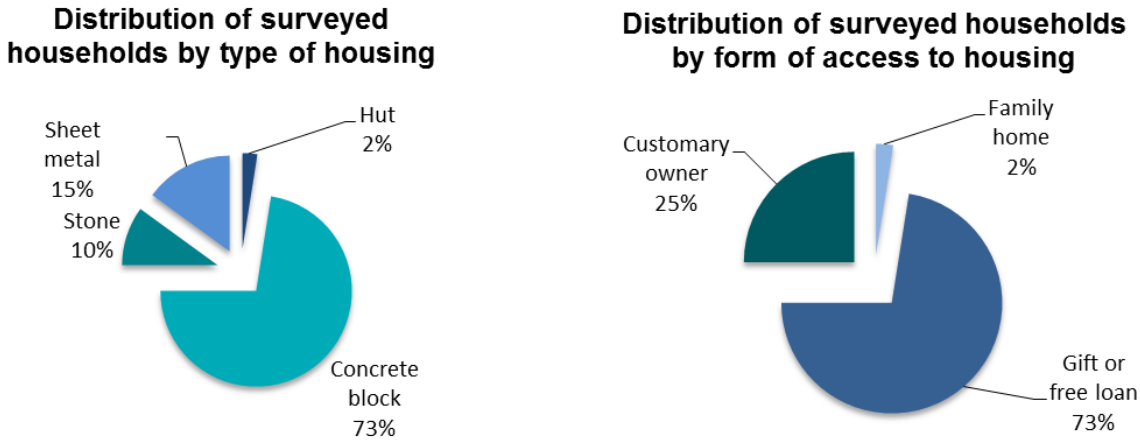


Figure 12 : Distribution of surveyed households by type of housing and form of access to housing

Source: Socio-economic survey, Feb. 2018 (N=40)

The accommodation in Cité Moumina have improved latrines and a few of the people with metal-sheet houses have also built this type of latrine. The remaining households use traditional latrines (13%) or have no sanitary facilities (Fig. 13).

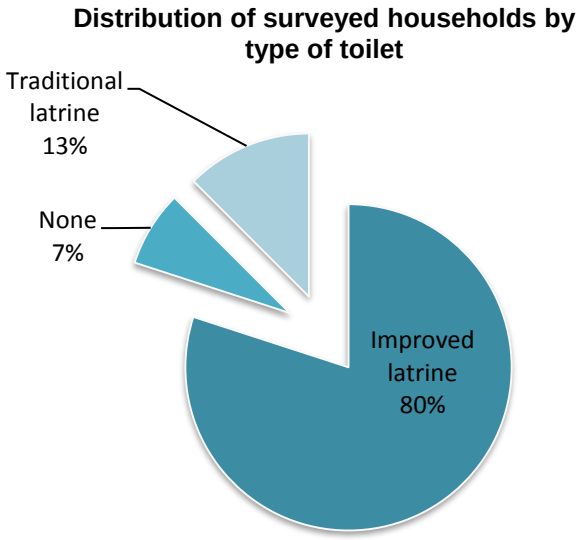


Figure 13 : Distribution of surveyed households by type of toilets

Source: Socio-economic survey, Feb. 2018 (N=40)

Household possessions are limited to the bare minimum (Table 6). However, compared to the national average for rural areas, a larger proportion of households owned a radio (50% compared to 13%) and a mobile phone (85% compared to 14%) (DISED, 2017).

Table 6: Ownership rate of basic equipment in surveyed households

EQUIPMENT	OWNERSHIP RATE
Radio	0.68
Telephone	1.05
Solar panels	0.23
Foam mattress	1.50
Cushions	3.10
Mats	1.85
Beds	0.23
Chairs	0.05
Thermos	0.98
Plastic barrels	2.93

Source: socio-economic survey, Feb. 2018 (N=40)

4.3. Land Tenure and Land Use

- **Legal resources for stabilising or securing land rights in rural areas**

Land legislation goes back to 1991. It is governed by the principle of state-ownership: any non-registered plot belongs to the State (Art. 1 of Law n° 171 from 1991 concerning the organisation of the public domain[14]). Law n°173 from 1991 on the organisation of the State's private domain[15] fixes the conditions for access to land ownership.

The conditions for access to rural land are stated in Articles 22 and 45. Rural land is awarded, under the form of a temporary concession, by decree taken in a Council of Ministers and on a proposition by the Minister in charge of Land, after advice from the Land Commission (Art. 22). Specifications are established by the Prefect (Art. 24) after consultation with the appropriate administrative services. The specifications are based both on the planed farming operation and on local conditions. The document must be approved by the Minister in charge of Land. The specifications fix the delay for the development of the land (Art. 37) and the duration of the concession. These aspects are not specified by law. A prior authorisation is necessary to obtain a partial or total transfer, be it permanent or temporary, for money or for free, of the right to provisionally own a conceded plot of rural land. It is subject to a decree taken in the Council of Ministers on a proposition of the Minster in charge of Land, and after advice from the Land Property Commission (Art. 35).

[14] Loi N° 171/AN/91/2e L of October 10th 1991concerning setting up and organisation of the public domain

[15] Loi n°173/AN/91/2ème L of October 10th 1991concerning organisation of the State's private domain

Any cession obtained outside this context automatically entails the withdrawal of the title. Article 32 and 33 of Law 173 from 1991, mention the possibility, for the administration to recuperate at any moment the free usage of any lands that would be necessary for the needs of state services or for any public interest works. Reimbursement would only concern eventual usage-fees. In the case of the implementation of a right to passage, no form of compensation is foreseen for the concessionary. The temporary concession must thus be considered to grant a level of security vis-à-vis other users, but not vis-à-vis the public administration.

- **Customary principles of land management**

No one has ever taken any steps to obtain a temporary concession inside the project perimeter. In the area, land rights and obligations concerning use of land and natural resources are essentially ruled by customary law and principles.

These principles have been shaped in the course of events related both to local and regional history. They integrate on one side, general management practices for the use of natural resources typical of the Afar traditions, and on the other side, specific constraints linked to a paradoxical territory. The territory is both inhospitable if you consider its pastoral potential but also attractive if you take into consideration the mineral reserves and the possibility of organising and controlling the salt trade.

The project zone can be analysed at multiple levels of territorial integration:

The first level of analysis is the fact that the zone is included within the vast territory of the confederation of Debné tribes. Despite the fact that it is not possible to draw precise boundaries for this territory, its overall limits are: Sagallou to the northeast, the Ethiopian border to the north, Galafi to the West, Dikhil and the grand Bara to the south, and at last the village known as “kilometre 51 to the east (see Map 2). It is a vast expanse in common management where all members of the Debné confederation tribes enjoy a wide range of rights including:

- Free circulation of people and herds;
- Free access to pasture land over the territory
- The right to settle and to put up temporary camps anywhere on the territory
- Free access to water holes (nevertheless with the moral obligation to inform the closest customary authorities of one’s intention to water the animals);
- The right to collect resources from the territory according to one’s needs (eg. fire-wood and wood for construction); and to freely benefit from it (eg. by selling wood bundles).

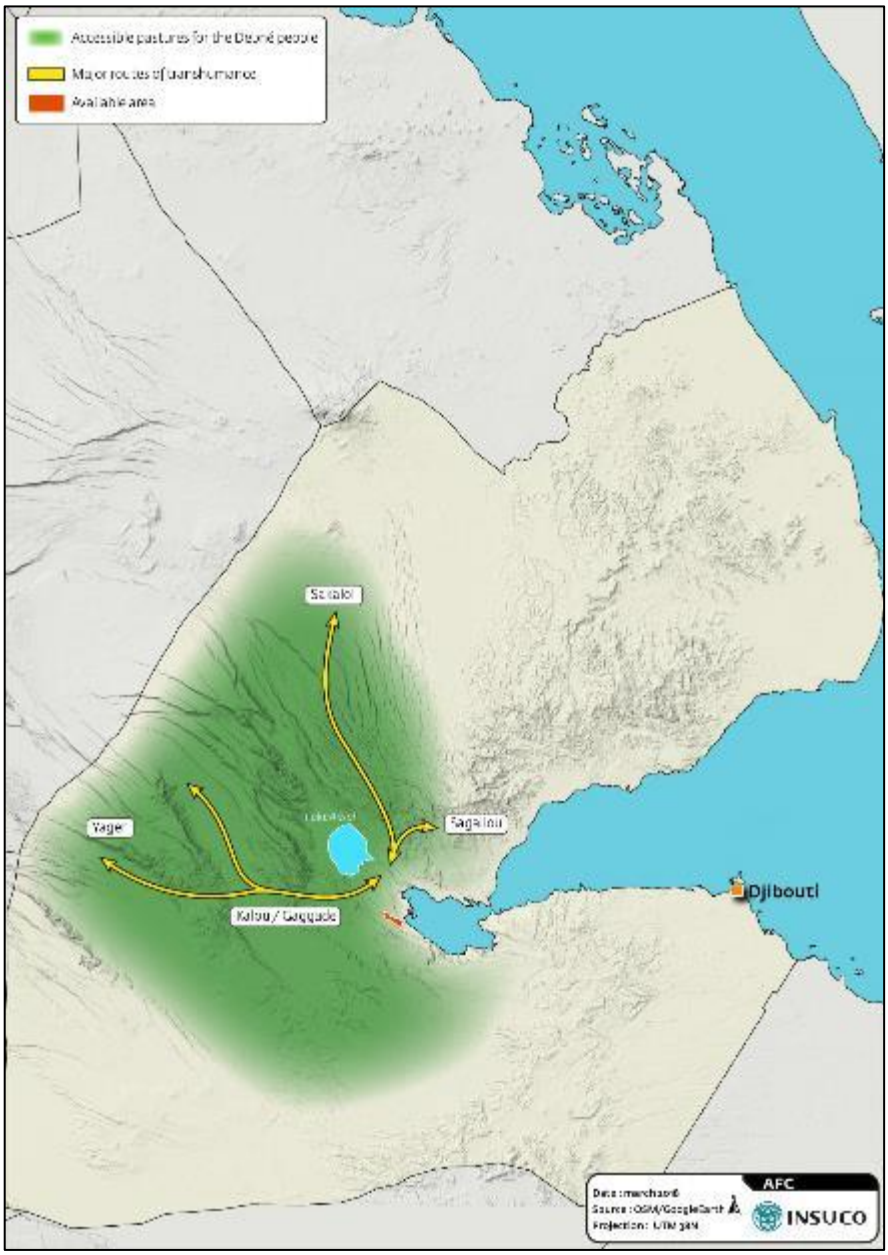
The principle is that of a common resource (*common*). There are important differences with pastoral land management systems in other Afar regions of the country. In Obock Region for example, the territory is divided into pasture areas that are under the authority of different lineage groups. In the vast Debné lands, there is no division of the territory and the pasture areas (*desso*, in Afar) do not exist in the form of regulated land units. Contrarily to other regions where pasture rights are submitted to in-kind payment, a sort of tax that goes to the Sultan, in the study zone there is no form of tax or para-fiscal payment. In fact, the institution of *Houlouta*, that manages all affairs linked to pasture land in other areas and levies taxes for the sultan, does not exist in the Debné territory.

These elements back up the concept of a common resource. However, free access to resources does not mean that there is no regulation whatsoever, and the local customary authorities ensure that basic principles of resource management are respected. In practice, they intervene in two types of situation: if there is a conflict linked to the use of pastoral resources (in which case they may decide on sanctions), and when

"foreigners" access the territory. Are considered "foreigners" members of tribes that do not belong to the Debné confederation.

They may have access to the territory but this access is conditioned by a verbal agreement given by an authority representing the confederation: the overall *Okal*, or one of the local elders who will refer to the overall *Okal*. When a member of non-Debné tribe marries a Debné woman, he acquires the same rights as the members of the confederation.

This system of free circulation and access to resources over the entire territory offers livestock breeders plenty of freedom of movement between different areas in order to find the best pastures. Choices are based



Map 2 : Stretch of pasture land available to members of the Debné group, and main migration pathways around Ghoubet and Lac Assal.

on agro-ecological conditions and the distribution of rains, with whatever information is available. The spread of mobile phones has greatly facilitated decision making for people moving with their herds.

The second level of analysis is based on the territorial history of each of the tribes of the Debné confederation. Within the principle of free access to common pastoral and land resources for all those within the Debné confederation, the different tribes that compose the confederation nevertheless each have their own, more or less precise, territorial base. This is the basis for the assertion of territorial units called “sectors” and historically linked to the settlement of tribes or federations of tribes, but at a smaller level than the great Debné confederation. It is not a principle that is in contradiction with that of the “common resource” but a principle that allow some differentiation between the various territorial scales.

In the project zone, an identity discourse has been developed, based on the historical presence of the four tribes, Omarto, Mirganto, Hayssamaleh and Fadihiteh.

In terms of pastoral land principles and practices, this level of territorial identification has no major implications, in as much as it does not put into question the general principle of free access for all the members of the Debné confederation. On the other hand, this discourse may be amplified if higher stakes appear. Such as when large investments and development projects, infrastructure projects of productive projects appear. It is important to highlight the fact that next to the main principle of a shared common resource at the level of the confederation of tribes, a local discourse is using geographic proximity and long historical occupation of the area as justifications for privileged access to project benefits.

The third level of analysis takes us the furthest. It is not linked to the principles of pastoral land management but to the specific history of the zone and its main resource: salt. In colonial times when different powers were vying for control the Lac Assal region, the conflict affected various Afar tribes. To face this situation which had the potential to weaken both the Gobaad Sultanate (Dikhil) as well as the other Afar sultanates, The Sultan of Gobaas, Ahmad La’De took the initiative in the early 1900s to declare lac Assal as the collective property of the Afar people[16]. This declaration includes all the Afar peoples, including those that live in Ethiopia and the scope goes well beyond the Debné confederation.

The statement of the principle of free access to all those who are recognized as Afar does not seem to have any land implications. It is a measure allowing all Afars to access the salt reserves and to profit from them. However, in the construction of a discourse on the resources of the territory, an ambiguity may creep up between the resource (salt – freely available to all Afar) and the territory (the Lac Assal zone – a common resource for the Debné confederation).

In conclusion, we highlight that the project area is embedded within a territorial system, in which multiple claims on customary land rights co-exist and can be called upon: resources common to all Debné, resources common to a limited number of localised tribes, resources common to the entire Afar population. The analysis of pastoral practices indicate that the first claim is the most pertinent. However, in the face of major economic stakes –the multiplication of projects planned for the area between lac Assal and the Golf of Ghoubet – other territorial claims may be mobilised as arguments for actors on the three different levels to be able to position themselves as best as possible in the race to appropriate benefits.

- **Land use**

The inhabitants of the area consider the land within the project perimeter as unsuitable for any type of productive activity. Lack of water is a major issue and the land is considered unfit for pasture. When asked about land use in the project perimeter, informants were unanimous in declaring that: « over there, there is

[16] Imbert Viez, 2011, cited by https://gobaqadsultaana.weebly.com/ consulted on line on 02/03/2018

nothing ». In reality, traces of old camp sites, within the perimeter identified for the installation of the wind farm, bear witness to the presence of pastoral activities up to the 1980s.

According to the inhabitants, in those days, rainfall was sufficient for grass to grow and animals to pasture for at least part of the year. In the old days, next to Oued Garabl'iya, a small camp was installed. The ruins of the stone huts are situated just 70 meters from the project perimeter.

Since the end of the 1980s, it would appear that no one has settled inside or near the project perimeter. No agricultural activity was ever undertaken in the zone. If the zone is considered unfit for pastoral activity, it still remains an area that is crossed by herds migrating between the various pasture zones of the Debné confederation. The most commonly used paths are those that link the pastures of Oued Kalou (Gagaddé, Koussour Koussour, Allouli), situated south of Lac Assal and near the project's zone of influence, to the pastures north of Lac Assal in the area of Sakalo (near the Ethiopian border), or to the Sagaloou area in the North-east. The tracks that cross the project zone take the shortest route. Due to the fact that is of no pastoral interest, the herdsmen usually go through it without stopping.

In the past, when reliable information on pasture conditions and water availability was unavailable, migrations used to take place in the first months of the year. Today, the timetable varies depending on information communicated via the mobile phone network. According to informants, the passage of herds may now occur at any time of the year.

The area was used as a storage area for the construction of the national road number 9 and the mining road that links the mining port to Lac Assal. There are still some old containers and worksite residue left on the site. A single piece of infrastructure may be found in the project area: a buried cistern that collects rainwater and contributes to Lac Assal village water supply. The cistern was provided by a project based in Tadjoura (probably linked to Caritas).

In conclusion, except for the passage of migrating herds, the area within the project perimeter is effectively unused.

4.4. Implications of the Local Economy and Livelihoods for the ESIA

The strong dependency of the local population on one main employer, Salt Investment, as well as the biophysical conditions of the project area, severely limit the development of agro-pastoral activities and represent factors of vulnerability for the populations in the project zone.

5. Local Development and Organisation

Settlement in the project area is comparatively recent. Local population dynamics are linked to the extraction and export of salt when the demand was great between 1999 et 2002. Local organisation structured itself around the opportunities furnished by salt extraction companies, rather than with a genuine project of settlement and community organisation.

5.1. Local Governance

Local governance is structured around the two community population centres of the area: Cité Moumina and Lac Assal. Each of these villages has their own characteristics.

- **Cité Moumina**

The Okal general[17], Abdallah Hamadou Abdallah, the highest customary authority of the Debné confederation, resides in Cité Moumina. The Okal general always comes from the Omarto tribe. At the village level, he has considerable power to mobilize the community either for or against a project. He is also the representative of his tribe at the village level. The three other tribes (Mirganto, Hayssamaleh, Fadihiteh) are also represented by a customary authority called the *makaban*.

The group of four customary authorities that represent the four tribes meet up in a committee called the "Village Organisation and Management Committee). This committee has no formal existence but plays a very important role in Cité Moumina. All decisions are taken at the committee level. The committee pronounces itself upon the current village affairs and controls key issues for the village economy, especially the list of candidates available for work when Salt Investment, or other companies or work-sites need labour. The local control of the list of candidates should normally ensure a fair distribution of resources (i.e. jobs) between the different tribes. In reality, this type of system can easily fall prey to patronage, cronyism, bribery and trading of favours.

Table 7 : Composition of the Cité Moumina Organisation and Management Committee

TRIBE	NAME	TITLE
Omarto	Abdallah Hamadou Abdallah	Okal general
Mirganto	Hamadou Moussa Goundous	Makaban
Hayssamaleh	Houmed Moussa Aras	Makaban
Fadihiteh	Hamadou Mohamed Ali	Makaban

The authority of the *makaban* is only recognized in a limited sector (Lac Assal sector as described above) and by the members of their respective tribes. The *okal* general exercises his authority over a larger area. This disparity creates some difficulty when collaborating on daily affairs: the *makaban* want to manage local issues independently and consider the *okal* to be committed to affairs that go beyond Cité Moumina. The *okal* general, on the other hand, wants to maintain control of the village affairs of his village, even though he is often absent, as he is frequently called upon in other localities.

This creates some tension between the various local powers of Cité Moumina. Eager to manage the opportunities linked to the development of the different projects (port, chemical plant, geothermal plant, wind farm), the local authorities are all vying for positions that will enable them to maximise their chances to harness any form of benefit from the projects. Cité Moumina, was only inaugurated in 2016 and does not yet have any official administrative agents.

In Cité Moumina, there is an associated registered under the name: Association for the Development of the Lac Assal region (*Association pour le Développement de la Région de Lac Assal*). It is presided by Hamadou Moussa Goundous, the association has not yet started any real activities, due to the difficulty in mobilising funds. The registration dates back to 2005 and the headquarters are in Lac Assal.

In January 2018, the women of Cité Moumina and Lac Assal created an association to promote handicraft activities.

[17] The introduction of the Okal general was created during the colonial period (Decree n° 68/SPCG defining the status of the Okals, 31 May 1958), with the purpose of enlisting native figures of authority to represent the colonial administration to their communities.

- **Lac Assal**

The village of Lac Assal is the seat of the sub-prefecture and the sub-prefect resides there.

The village chief, Mohamed Guellé, manages current affairs. He is head of security at Salt Investment and plays a key role in the facilitation of relationships between the company and the village. The selection of candidates for jobs is part of the prerogatives of the village chief. He is also the brother of the Minister in charge of Investments and the first entrepreneur who founded Lac Assal village at the time of the Lac Assal Exploitation Company. Mohamed Guellé thus wields considerable influence in the village.

Contrarily to Cité Moumina, Lac Assal is managed by authorities who do not have customary legitimacy. In case of need, the inhabitants approach the tribal representatives that live in Cité Moumina. As for Cité Moumina, the real issue around village governance is the capacity to intervene with the Company or with the projects. The management of job attributions is a real instrument of governance. An association called « Difu » is active within Lac Assal village. The association's purpose is to promote village hygiene and cleanliness and they received a gift of wheelbarrows for collecting village refuse.

The two villages do not share the same system of governance. Apart from the Okal general who is a recognised authority in both villages, each village has its own ruling class: a small elite issued from the local tribes on one side; a village chief linked to the historical development of the salt resource on the other side. The instruments of governance are similar and rely on the capacity to access project opportunities. In both cases, these local elites have a real power to mobilise or demobilise the communities.

During this study, we never encountered any evidence for any form of political marginalisation of the project area. On the contrary, the area benefits from considerable efforts on the part of the central government, in terms of the scale of investments and productive projects. The projects do not appear to harm the local population. According to both villages, the only form of marginalisation that they might experience would be that the projects planned for their area, end up resorting to external (non-local) labour.

5.2. Development Plan

Lac Assal area is at the heart of a national strategy for industrial development, elaborated in the document: Vision 2035, already mentioned in the first sections of the report. Plans for local development are done at the regional level. Each region must produce a Regional Development Plan (RDP) that serves as a tool for planning, for mobilisation of funds and for monitoring of actions for a 5-year period. The project's zone of influence is at the boundary of two regions. This means that the actions considered are included in two different RPDs: that of Tadjoura and that of Arta, both prepared in 2017.

Tadjoura's regional plan focuses on the potential of the Assal mineral sector and the port activities at Ghoubet for shipping Lac Assal salt and other mineral resources such as perlite, gypsum and diatomaceous earth.

Arta's regional plan focuses more on basic equipment and infrastructure, and has identified the development of water storage and distribution infrastructure as one of the main priorities.

Lac Assal is registered as a sub-prefecture in the Tadjoura RDP, but is also registered as a village in the Arta RDP. In section 1.1 we treated the question of the uncertainty of the regional boundaries.

5.3. Community health

The Law n°48/AN/99/4ème L establishes the health policy direction in the Republic of Djibouti. According to article 2, the nation proclaims the right to health for all people. It is the State's mission to secure this right and put in place the different means making it possible. The health policy's general purpose is to provide the nation with a public service available and free for all citizens. The Ministry of Health is in charge of implementing the health policy. In 2001, the government reformed the health sector and published 3 five-year plans between 2002 and 2017 called Health Development National Plan.

The latest plan (2012-2017) states that the decentralization of the health system is one of the priorities of the health policy. The health center is the base unit of the public service and is managed by a nurse. The health center is responsible for caring activities, prevention and education about health. In the hinterland, the health center is linked to the nearest hospital. Each district has its hospital that provides surgery, maternity care and a service of medicine.

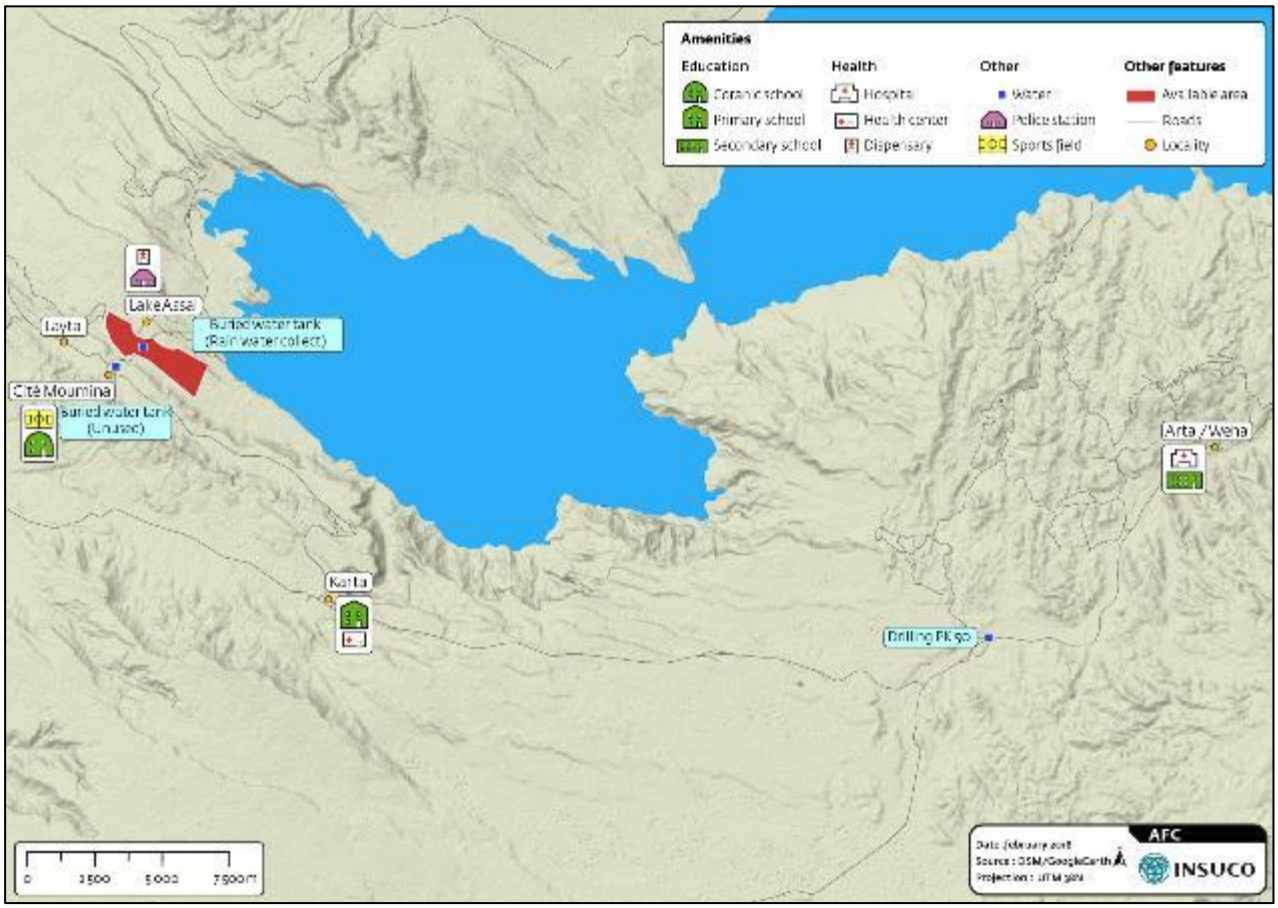
According to the plan, there is no parapublic or private health services in the hinterland. Most of the care services are located in Djibouti-town and the inland régions in general face an issue of accessibility. The plan also mentions that the budget in the regions is clearly lacking and there is also a medical staff shortage. In Djibouti-town, the medical index is 1 doctor for 10 500 inhabitants (table 8). In the inland regions this is 1 doctor for 74 500 people. All the specialist doctors and 79% of the medical staff are located in the capital city, as well as most of the health infrastructures. This situation negatively affects the rural population.

Table 8 : Health coverage indicators

2011	General practitioner/ ha	Specialist physician/ha	Nurse/ha	Midwife/ha
Djibouti-town	1/10 500	1/7500	1/2400	1/6000
Hinterland	1/74 500	1/12 4000	1/3400	1/7500
Total	1/16 000	1/12 000		
World Health Organization standards	1/5 to 10 000	1/3 to 5000	1/1400	1/300

Source: Plan National de Développement Sanitaire 2008-2012.

There is no health service in either of the two villages of the zone, apart from a health post within the police station in Lac Assal where there is a nurse who distributes free medicines when he has them in stock. It appears that the population of Cité Moumina does not have access to this service. Most households surveyed (85%) initially consult the clinic in Karta Sub-prefecture, about 20 km in the direction of Djibouti City. In the case of a more serious problem, patients from Cité Moumina are referred to the Regional Arta hospital (in Wea, 60 km away), and patients from Lac Assal are referred to Tadjoura (83 km) (Map 3). Most of the households surveyed (52%) go the regional hospital for the next level of medical care. An ambulance stationed in Lac Assal is made available for the inhabitants of both villages by the Tadjoura region, it enables transport of patients needing swift care.



Map 3 : Location of basic services accessed the population of the project influence zone.

Only four traditional practitioners were mentioned during the census, all in Cité Moumina. According to information obtained from key informants, and confirmed by the socio-economic survey, few people still consult these traditional practitioners, and when they do it is usually only after conventional medical treatments have not been successful (Figure 14).

Source: Socio-economic study, Feb. 2018 (N=40)

Health care given by health clinics and hospitals are free. Last year, overall health costs amounted on average to 3325 DJF per household.

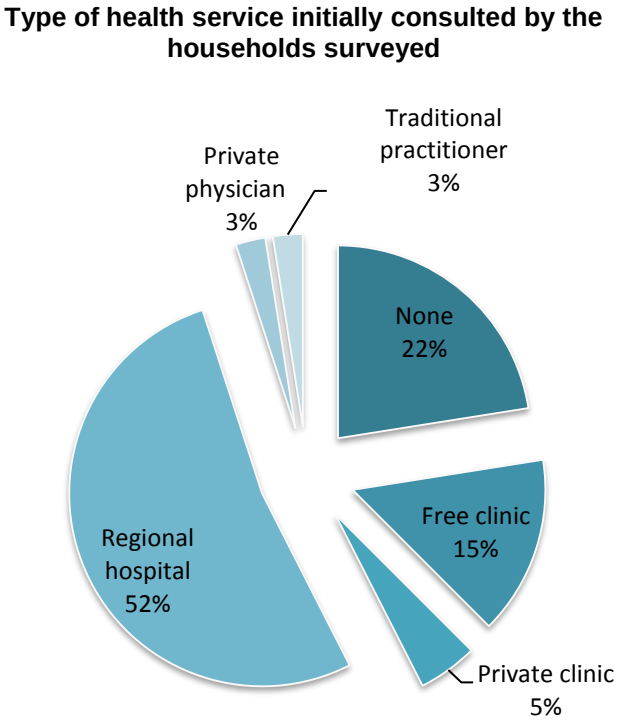


Figure 14 : Type of health service initially consulted by the households serveyed

Results from the socio-economic study indicated that 15% of women and 8% of men had a disability. The incidence of disability for the under 15 year olds was around 1 for 1000 (Figure 15). The disability rate for men is probably inferior, as the sampling method favoured heads of households who were available for the survey. They would have a higher probability of being inactive due to a handicap than the heads of household who were unavailable, as most of those were absent for reasons linked to their economic activities.

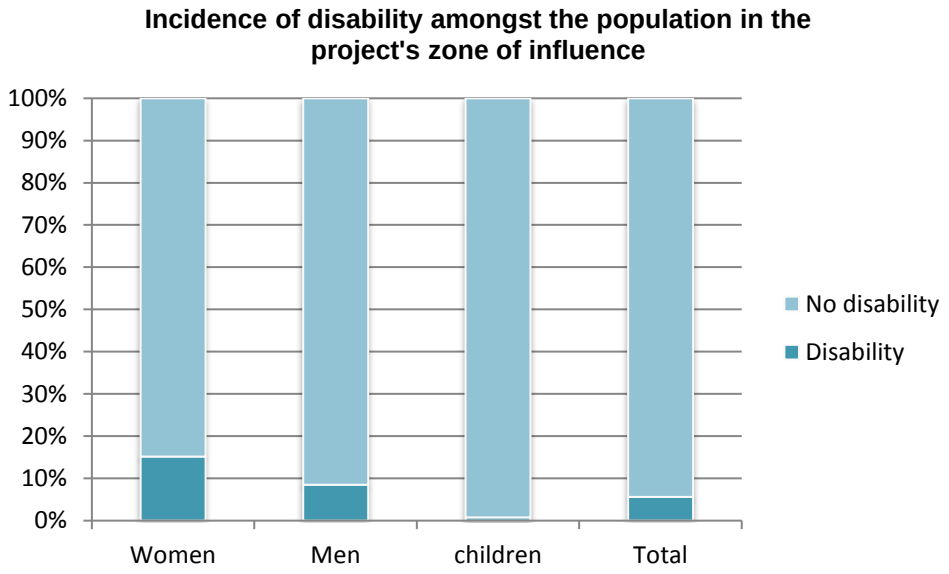


Figure 15 : Incidence of disability amongst the population in the project's zone of influence

Source: Socio-economic study, Feb. 2018 (N=40)

The most common disability was visual impairment, and it was always linked to the person's age. Mental problems and chronic diseases were only found in women and children (Figure 16).

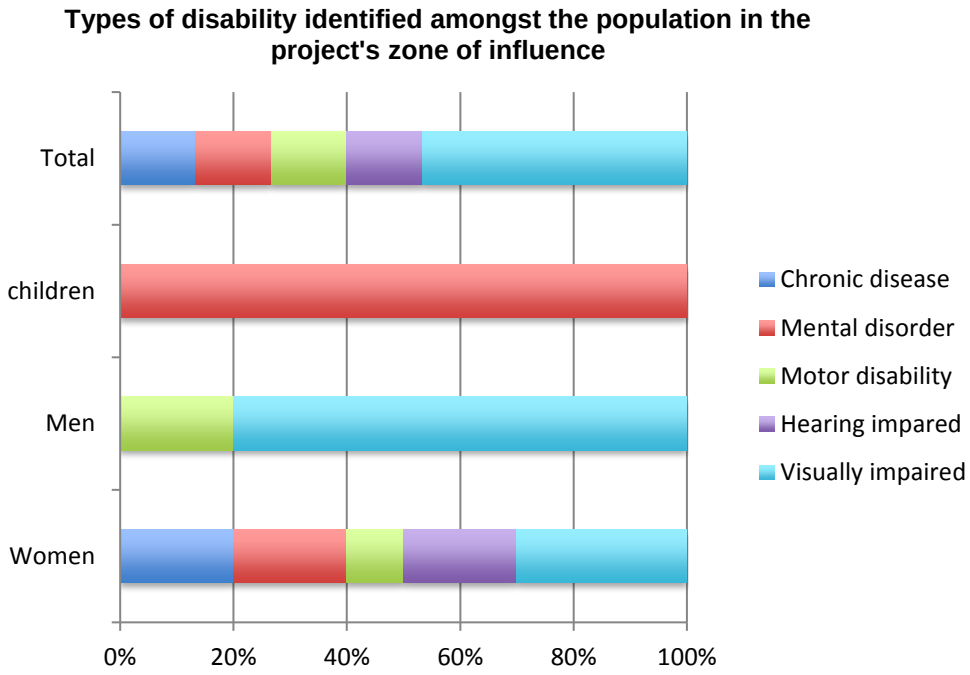


Figure 16 : Types of disability identified amongst the population in the project's zone of influence

Source: Socio-economic study, Feb. 2018 (N=40)

The studies showed that almost half the households (45%) had at least one member who had been ill in the past 3 months, with an average of 0.825 people ill. No recent data on the incidence of health problems or disability was available at the national or regional level for comparison.

5.4. Education

Apart from the Koranic school in Cité Maimouna, there are no educational structures in the project zone. The closest primary school is in Karta. Due to the distance and the absence of a bus, only children who can be housed by a family member in Karta have access to school. The survey indicated that the majority of children between 6 and 10 years old did not go to school. This situation differs significantly from national school attendance statistics (see Fig. 17). However, this data must be taken with caution as children who had spent less than 6 months in the project zone in 2017 would not have been tallied as household members. If we into account the declaration of one of the customary authorities in Cité Moumina who stated that 70 village children were attending school in Karta, that would bring up the enrolment rate of children aged 6 - 10, up to 34%.

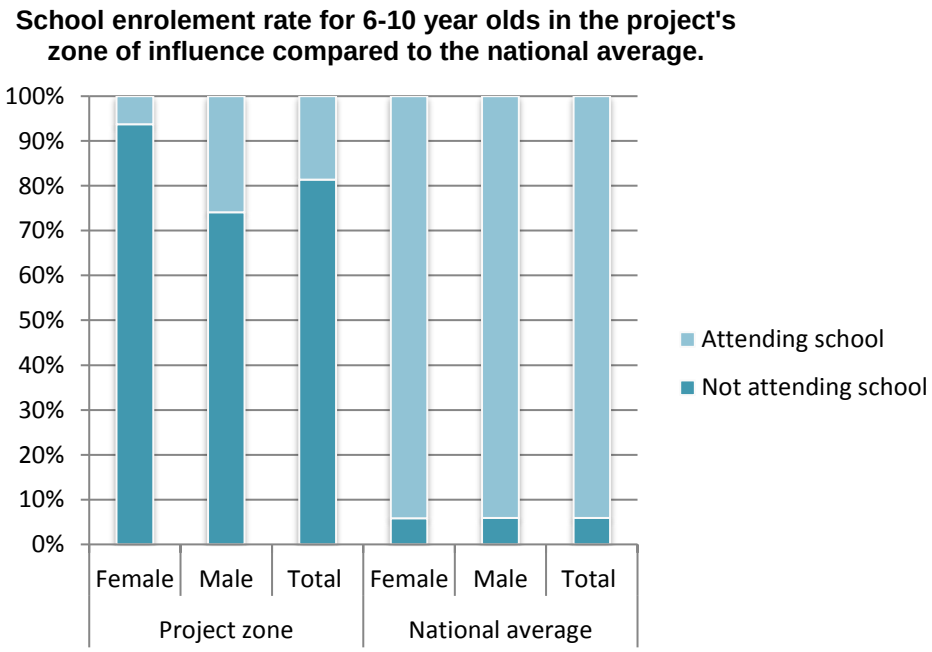


Figure 17 : School enrolment rate for 6-10 year olds in the project's zone of influence compared to the national average

Source: Socio-economic study, Feb. 2018 (N=40)

The closet junior high (*collège*) and high school (*lycée*) are in Wea. A free school bus, furnished by the Arta region, allows students based in Karta to attend.

The twelve class Koranic school building integrated into the Cité Moumina plan has never been used. A football field and basketball hoops are the only sports infrastructure for both villages.

5.5. Local Infrastructure

The two villages in the project zone are supplied with water by tank truck once a week. They are chartered by the Arta region for Cité Moumina and by Salt Investment for Lac Assal village. This service is entirely free with no prior subscription. The villages agree together on how to share the volume of water delivered. In Cité Moumina, the Village Organisation and Management Committee mediates any potential conflicts. The water comes from a bore-hole situated at PK 50 on the NR1 (National Road 1, see Map 3)[18]. Poor hygiene at the bore-hole and in the oxidised storage tanks has given rise to water-borne diseases and contamination detrimental to health (Arta, Regional Development Plan – Arta Region, March 2017). The households surveyed use on average 546 litres of water per week, an amount considered inadequate to cover a family's basic needs (drinking water, cooking, washing dishes and clothes, hygiene) as well as the animal's needs. Improving access to water was the first priority identified by the association of women of the two villages in the project zone. The amount delivered was identified as the limiting issue. Unused storage reservoirs exist in both localities: a buried tank to furnish running water in Cité Moumina, several tanks offered by Salt Investment to Lac Assal village, as well as a buried tank situated within the perimeter of the planned wind farm.

Neither village is linked to the electrical power grid. About one out of five households (22%) have a few small solar panels, one out of ten has a battery, and two thirds (67%) have no available source of electricity. There is no organisation for collecting garbage, or a waste storage site. In most cases, refuse is either deposited in an open rubbish tip, such as may be found in Cité Moumina (45% of households), or put out onto the roadway to be blown away (45%). Some households bury their trash (7.5%) or burn it (2.5%).

The mobile phone network is good in Cité Moumina, erratic or inexistent in Lac Assal village. Both villages have a hard-wall mosque and are linked to Djibouti City and Tadjoura by the NR9. Basic necessities are available from three shops in Cité Moumina and from a single shop in Lac Assal.

5.6. Implications of Local Development for the ESIA

The project area currently displays mixed characteristics. On the one hand, it benefits from the explicit will of the Government to develop an extraordinary wealth of investment projects of national importance, with the objective of creating an industrial and energy sector. On the other hand, the zone is in an alarming situation when it comes to accessing basic social services. Water supply is a real problem and the health and educational structures are far from sufficient.

The local population who has moved away from an exclusively pastoral economy now waits for large projects to be implemented and so absorb local labour. The actual set up of these projects will most probably attract many more people, thereby increasing the pressure on the already weak and almost inexistent basic social services.

The hypothesis that the new projects will create jobs, and that this will result in more well-being for the people and the improvement of basic social services, may very well not be verified. Improving social services will need to be planned before-hand as a necessary and supporting measure. Local structures are not up to implementing the development of basic services, especially not based exclusively on revenue created by jobs; particularly when one considers that the only jobs possible will be unskilled.

[18] This borehole will not be used by the Project in any capacity. Water for the Project will be delivered by truck and extracted from Ethiopia. Therefore the water supply to communities within the Social AoI will not be impacted by the Project.

The population may well find itself marginalised by the fact that, even if large projects are developed, access to the better-paid jobs will most probably be reserved for more skilled people coming from outside the area.

Considering food security, the project will have no direct or indirect impacts. Pastoralist will still be able to cross the land with their herds without major change and there's currently no agricultural activities on the project site that could be effecetd.

However, if the project employs people from the zone, an indirect positive impact may be produced on food security for people will have the opportunity to increase their revenues. Moreover, if the project develops a community development plan, that looks at farming activities, this will also have a positive impact. In conclusion, the project in its current design will have no direct or indirect impact on food security.

5.7. Traffic

Traffic on the NR9, the main throughway that crosses the project perimeter, is dominated by 4X4 company cars, in particular those from Salt Investment (Table 9).

Table 9 : Daily traffic rates on the NR9 at the level of lac Assal village and extrapolation to a full year

Type of vehicules	Weekend traffic	Weekday traffic	Extrapolation to a year's traffic
Motorised 2 wheel	0	0	0
4X4 Tourism vehicle	9	9	3276
4X4 other uses	10	9	3380
Minibus	58	101	32292
Bus	6	4	1664
Van or small truck	0	15	3900
Truck trailer	2	23	6188
Tank truck	7	12	3848
Bicycle	0	0	0

Source: Socio-economic study, Feb. 2018.

6. Cultural Heritage

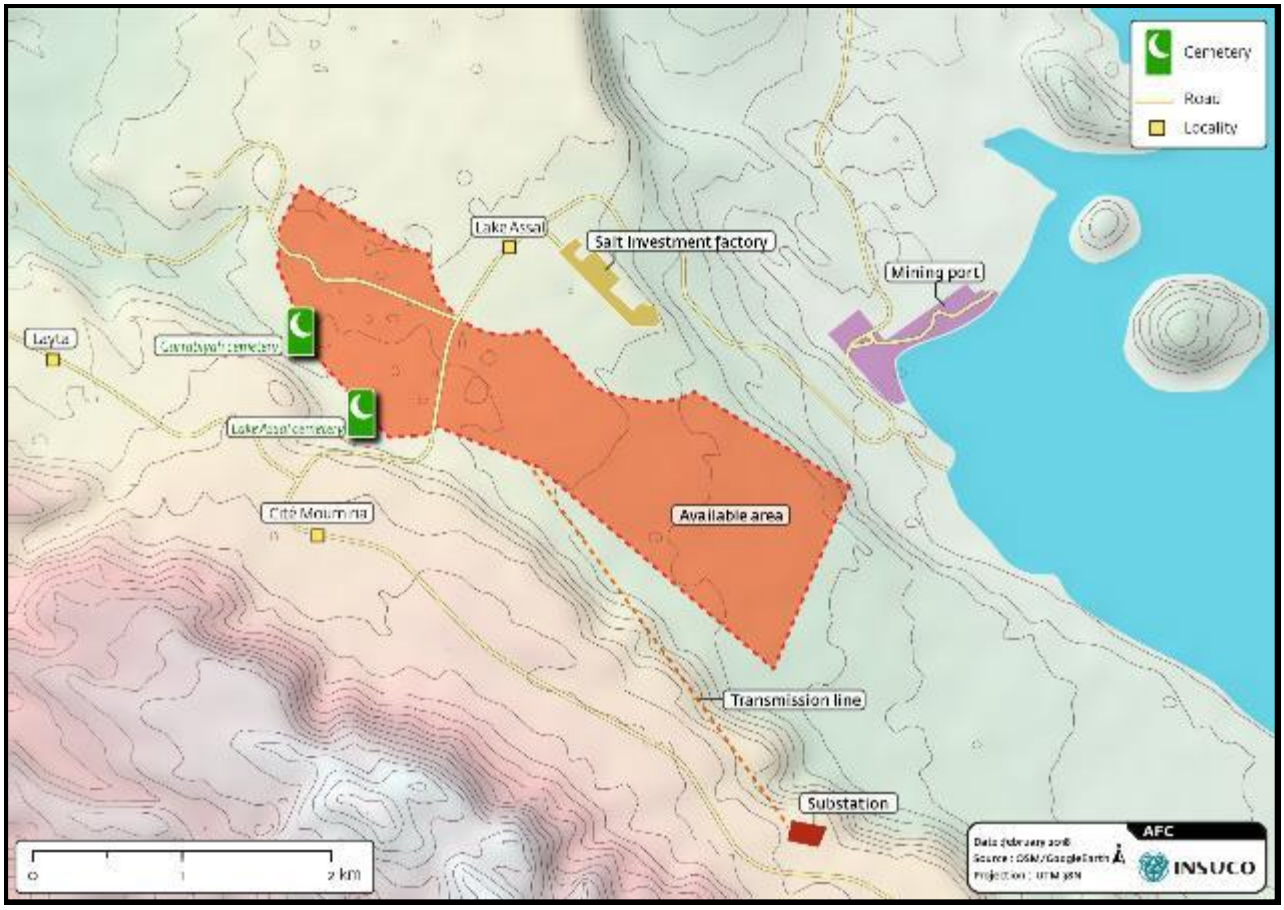
No cultural heritage site was discovered inside the project perimeter. Only two sites were recorded, in proximity – but outside – the project perimeter. In both cases, they were cemeteries.

- Lac Assal village cemetery. It is situated 80 meters outside the project perimeter (N 11.530371°; W 42.487129°). There are about 50 tombs. It is still used.

During the wind farm construction phase, it is highly recommended to ensure this site is protected from any damage, especially when transporting materials or during earthworks.

- Le Garabl'iya camp cemetery. It is situated 50 meters outside the project perimeter (N 11.535274°; W 42.483636°).

The camp has been abandoned since the 1980s. The former inhabitants now live in Lac Assal village. The cemetery has about 4-5 tombs. It is no longer used. Even though the site is naturally protected by a rock barrier, it is recommended that it be well indicated and marked-off during the construction phase, so as to avoid it being accidentally disturbed.



Map 4 : Cultural heritage sites in proximity to the project zone

7. APPENDICES

Appendix 1: Census Questionnaire

Windfarm-Denombrement_FINAL

Interviewer's name

- Interviewer 1
- Interviewer 2
- Interviewer 3
- Interviewer 4
- Interviewer 5
- Other

Type your name

Household code (géocode.day.interviewer.number)

In which region does the household reside?

- Arta
- Ali Sabieh
- Dikhil
- Obock
- Tadjourah
- Other

If other, specify

In which sub-prefecture?

- Karta
- Other

If other, specify

In which village?

- Layta (old)

- Cité Moumina / Layta new / Crossroad
- Lac Assal
- Other

If other, specify

_____

Head of household's first name

_____

Head of household's second name

_____

Head of household's third name

_____

Head of household's tribe

_____

Head of household's lineage

_____

Head of household's ethnic group

- Afar
- Ethiopian
- Issa
- Somali other
- Arabic / Yemeni
- Other

If other, specify

_____

Head of household's sex

- Man
- Woman

Approximate age of head of household

_____

Total number of individuals in the household (residing at least 6 months last year under the same roof, including head of household)

Total number of male individuals of 15 years and over

_____

Total number of male individuals under 15 years

_____

Total number of female individuals of 15 years and over

_____

Total number of female individuals under 15 years

_____

The total is different from the sum of the members

From where does the father of the head of household come?

- Arta
- Ali Sabieh
- Dikhil
- Obock
- Tadjourah
- Dijbouti City
- Ethiopia
- Somalia
- Yemen
- Other countries

Since when has the household resided in this village?

- Between 1 and 10 years
- Entre 10 et 20 years
- Since over 20 years
- Since always

What are the three main activities of the household?

- Livestock breeder
- Herdsman

- Fisherman
- Hunter / harvesting natural resources (stones, honey, etc.)
- Extracting salt
- Salt mine employee
- Making charcoal or collecting fire-wood
- Daily worker (salt mine, etc.)
- Caravaneer (transporting salt and other materials)
- Tradesman (construction, blacksmith, tailor, mechanic, repairer, etc.)
- Producing handicrafts for tourism (mats etc.)
- Tourist guide
- Small trade (including foodstuffs)
- Wholesale trade
- Transport
- Traditional healer
- Nurse / health worker
- Medical doctor / Pharmacist
- Artist
- Civil servant in an administration
- Military / Policeman
- Teacher
- NGO employee
- Student / Apprentice
- Old person or handicapped without activity
- Housekeeper, housewife
- None
- Other

Take the GPS coordinates of the household

- latitude (x.y °)

- longitude (x.y °)

- altitude (m)
- accuracy (m)

Appendix 2: Socio-economic Survey Questionnaire

Windfarm_Socio-eco_F2

Interviewer's name

- Interviewer 1
- Interviewer 2
- Interviewer 3
- Interviewer 4
- Interviewer 5
- Other

Type your name

Household code (given during the census)

Head of household's first name

Head of household's second name

Head of household's third name

Head of household's sex

- Man
- Woman

Head of household's marital status?

- Married
- Widow
- Divorced
- Single
- Don't know/ Won't answer

The head of household is a married woman. Since when has her husband been gone?

- Less than 6 months
- Lore than 6 months
- Don't know/ Won't answer

This woman is not considered as a head of household. Stop your survey and find her husband to continue. Move on to the next survey if he is not available.

In order to do what activity did your husband leave?

In which region does the household reside?

- Arta
- Ali Sabieh
- Dikhil
- Obock
- Tadjourah
- Other
- Don't know/ Won't answer

If other, specify

In which sub-prefecture?

- Karta
- Other
- Don't know/ Won't answer

If other, specify

In which village?

- Layta (old)
- Cité Moumina / Layta new / Crossroad
- Lac Assal
- Other

- Don't know/ Won't answer

If other, specify

Does the household have a functional telephone number?

- Yes
- No

What is the telephone number? _____

Head of household's nationality?

- Djiboutian
- Ethiopian
- Somalian
- Eritrean
- Yemeni
- Other
- Don't know/ Won't answer

If other, specify:

Head of household's ethnic group

- Afar
- Ethiopian
- Somali / Issa
- Arabic / Yemeni
- Other
- Don't know/ Won't answer

If other, specify:

Head of household's tribe

- Abrissah
- Adhali
- Badoyta Mela

- Debneh
- Elele Hamadou
- Fadihite
- Harka Mela
- Hayssamaleh
- Maa sara Mafa
- Mirganto
- Modayto
- Oulouhto
- Omarto
- Assahyah Mela
- Roukba Delmela
- Takhille
- Other
- Don't know/ Won't answer

If other, specify:

Since when has the household resided in this village?

- Between 1 and 10 years
- Entre 10 et 20 years
- Since over 20 years
- Since always
- Don't know/ Won't answer

Does the head of household have a disability?

- None
- Mental disability
- Chronic disease
- Physical disability
- Eye sight

- Hearing
- Other
- Don't know/ Won't answer

If other, specify:

Can the head of household read and write?

- French
- Arabic
- English
- Somali
- Afar
- Oromo
- Amhara
- Tigrinya
- Can't read or write
- Other
- Don't know/ Won't answer

What is the last school grade completed by the head of household?

- No schooling
- Kindergarten/1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- 7th grade
- 8th grade
- 9th grade
- 10th grade
- 11th grade

- 12th grade
- Technical training
- University
- Koranic school (if no other schooling)
- Don't know/ Won't answer

Have you had any professional training?

- Yes
- No

If yes, in what field?

- Construction site workman
- Site foreman
- Driver/Operator of site machinery
- Security agent
- Truck driver
- Chauffeur (light vehicle)
- Trade
- Accounts
- Livestock breeding
- Administration
- Handicrafts
- Cook
- Other
- Don't know/ Won't answer

If other, specify:

What are the activities of the head of household (activities that he does himself)?

- Livestock breeder
- Herdsman
- Fisherman
- Hunter / harvesting natural resources (stones, honey, etc.)
- Extracting salt

- Salt Mine employee
- Making charcoal or collecting fire-wood
- Daily worker (salt mine, etc.)
- Caravaneer (transporting salt and other materials)
- Tradesman (construction, blacksmith, tailor, mechanic, repairer, etc.)
- Producing handicrafts for tourism (mats etc.)
- Tourist guide
- Small trade (including foodstuffs)
- Wholesale trade
- Traditional healer
- Nurse / health worker
- Medical doctor / Pharmacist
- Artist
- Imam
- Okal / Village chief
- Civil servant in an administration
- Military / Policeman
- Teacher
- NGO employee
- Student / Apprentice
- Old person or handicapped without activity
- Housekeeper, housewife
- None
- Other
- Other
- Don't Know/ Won't answer

If other, specify:

_____

We would now like to ask you about the members of your household

◯ Next

A part from the head of household, how many people make up your household (people who have spent more than 6 months in your household, or who have been gone for less that 6 months)?

_____

Fill in the information for each household member

◯ Next

Household members

1

First name of person n°1/

_____

Relationship _ with the head of household

- Spouse
- Father / mother of the head of household
- Father-in-law / Mother-in-law of the head of household
- Child of the head of household
- Grand-child of the head of household
- Child entrusted to the household
- Other relative of the head of household
- Non-related adult
- Don't Know/ Won't answer

Sex of_

- Man
- Woman

Age of_____

_ does he/she have a disability?

- Yes
- If yes, which type?
- None

- Mental Disability
- Chronic disease
- Physical disability
- Eye-sight
- Hearing
- Other
- Don't Know/ Won't answer

If other, specify:

_____

_ can he/she read and write in:

- French
- Arabic
- English
- Somali
- Afar
- Oromo
- Amhara
- Tigrinya
- Can't read or write
- Other
- Don't Know/ Won't answer

What is the last school grade completed by _?

- No schooling
- Kindergarten/1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- 7th grade

- 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade
- Technical training
- University
- Koranic school (if no other schooling)
- Don't know/ Won't answer

Does he/she still attend school?

- Yes
- Non

What is the main activity of _?

- Livestock breeder
- Herdsman
- Fisherman
- Hunter / harvesting natural resources (stones, honey, etc.)
- Extracting salt
- Salt Mine employee
- Making charcoal or collecting fire-wood
- Daily worker (salt mine, etc.)
- Caravaneer (transporting salt and other materials)
- Tradesman (construction, blacksmith, tailor, mechanic, repairer, etc.)
- Producing handicrafts for tourism (mats etc.)
- Tourist guide
- Small trade (including foodstuffs)
- Wholesale trade
- Traditional healer
- Nurse / health worker
- Medical doctor / Pharmacist
- Artist

- Imam
- Okal / Village chief
- Civil servant in an administration
- Military / Policeman
- Teacher
- NGO employee
- Student / Apprentice
- Old person or handicapped without activity
- Housekeeper, housewife
- None
- Other
- Don't Know/ Won't answer

If other, specify:

- You are missing 1/ member to finish!
- You have filled up too many members!

We would like to ask you about the activities of your household

◯ Next

Did you breed any animals in the past 2 years?

◯ Yes
◯ No

Did you breed goats in the past 2 years?

◯ yes
◯ No

How many goats do you possess (now)?

In this village:

_____

In the bush:

_____

Did you purchase any goats during the past 12 months?

- Yes
- No

How many?

Male 1 week (Moulkouqta)

_____

Male 3-4 months (Douraqto)

_____

Male 6 months (Girgiri)

_____

Male 8 months castrated (Dabela)

_____

Female 1 week (Mota)

_____

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

_____

Female 8 months (Reita)

_____

At what price per animal?

Male 1 week (Moulkouqta)

_____

Male 3-4 months (Douraqto)

_____

Male 6 months (Girgiri)

_____

Male 8 months castrated (Dabela)

_____

Female 1 week (Mota)

_____

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

_____

Female 8 months (Reita)

_____

Where did you buy them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you sell any goats in the past 12 months?

- Yes
- No

How many?

Male 1 week (Moulkouqta)

_____

Male 3-4 months (Douraqto)

_____

Male 6 months (Girgiri)

_____

Male 8 months castrated (Dabela)

_____

Female1 week (Mota)

_____

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

_____

Female8 months (Reita)

_____

At what price (per head)?

Male 1 week (Moulkouqta)

_____

Male 3-4 months (Douraqto)

_____

Male 6 months (Girgiri)

_____

Male 8 months castrated (Dabela)

_____

Female1 week (Mota)

_____

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

Female 8 months (Reita)

Where did you sell them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

How much did it cost you in transport costs?

How much did it cost you in taxes?

Did you eat any goats in the past 12 months?

- Yes
- No

How many?

Male 1 week (Moulkouqta)

Male 3-4 months (Douraqto)

Male 6 months (Girgiri)

Male 8 months castrated (Dabela)

Female 1 week (Mota)

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

_____

Female 8 months (Reita)

_____

Did you give away any animals in the past 12 months?

- Yes
- No

How many?

Male 1 week (Moulkouqta)

_____

Male 3-4 months (Douraqto)

_____

Male 6 months (Girgiri)

_____

Male 8 months castrated (Dabela)

_____

Female 1 week (Mota)

_____

Female 3-4 months (Douraqto)

_____

Female 6 months (Rihdo)

_____

Female 8 months (Reita)

_____

Did you produce any milk in the past 12 months?

- Yes
- No

For how many months were you able to milk, during the dry season last year?

_____

On average, how much milk did you get by day of milking during the dry season?

Number of 0.5l kaounta:

_____

Number of 1.5l kaounta:

_____

Number of litres:

_____

For how many months were you able to milk, during the wet season last year?

_____

On average, how much milk did you get by day of milking during the wet season?

Number of 0.5l kaounta:

_____

Number of 1.5l kaounta:

_____

Number of litres

_____

On average, what proportion of milk did you sell?

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't know / Won't answer

At what price?

In DJF per kaounta of 0,5L:

_____

In DJF per kaounta of 1,5L:

_____

In DJF per litre:

_____

Did you breed any sheep in the past 2 years?

- Yes
- No

How many do you have (now)?

In this village:

_____

In the bush

_____

Did you buy any sheep in the past 12 months?

- Yes
- No

How many?

Male 1 week (Labdou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female1 week (Lema)

_____

Female3-4 months (Anatou

_____

Female 8 months nullipara (Seben)

_____

Female 8 months primipara (Ida)

_____

At what price (per head)?

Male 1 week (Laddou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female1 week (Lema)

_____

Female3-4 months (Anatou

_____

Female8 months nullipara (Seben)

_____

Female8 months primipara (Ida)

_____

Where did you buy them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you sell any sheep in the past 12 months?

- Yes
- No

How many?

Male 1 week (Laddou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female1 week (Lema)

_____

Female 3-4 months (Anatou

_____

Female 8 months nullipara (Seben)

_____

Female 8 months primipara (Ida)

_____

At what price (per head)?

Male 1 week (Labdou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female 1 week (Lema)

_____

Female 3-4 months (Anatou)

_____

Female 8 months nullipara (Seben)

_____

Female 8 months primipara (Ida)

_____

Where did you sell them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you eat any sheep in the past 12 months?

- Yes
- No

How many?

Male 1 week (Labdou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female1 week (Lema)

_____

Female3-4 months (Anatou)

_____

Female 8 months nullipara (Seben)

_____

Female 8 months primipara (Ida)

_____

Did you give any sheep away in the past 12 months?

- Yes
- No

How many?

Male 1 week (Labdou)

_____

Male 3-4 months (Mara)

_____

Male 8 months castrated (Marow)

_____

Female1 week (Lema)

_____

Female 3-4 months (Anatou)

_____

Female 8 months nullipara (Seben)

_____

Female 8 months primipara (Ida)

_____

Did you produce milk in the past 12 months?

- Yes
- No

For how many months were you able to milk, during the dry season last year?

_____

On average, how much milk did you get by day of milking during the dry season?

Number of 0.5l kaounta:

_____

Number of 1.5l kaounta:

_____

Number of litres :

_____

For how many months were you able to milk, during the wet season last year?

_____

On average, how much milk did you get by day of milking during the wet season?

Number of 0.5l kaounta:

_____

Number of 1.5l kaounta:

_____

Number of litres

_____

On average, what proportion of milk did you sell?

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't know / Won't answer

At what price?

In DJF per kaounta of 0,5L:

_____

In DJF per kaounta of 1,5L:

_____

In DJF per litre:

Did you breed any cattle during the past 12 months?

- Yes
- No

How many head of cattle do you own (now)?

In this village:

In the bush:

Did you buy any cattle during the past 12 months?

- Yes
- No

How many?

Male < 1 month

Male 1-2 year

Male 5 year

Female < 1 month

Female1-2 year

Female 3 year or more

At what price (per head)?

Male < 1 month

Male 1-2 year

Male 5 year

Female< 1 month

Female1-2 year

Female 3 years or more

Where did you buy them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

How much did it cost you in transport costs?

How much did it cost you in taxes?

Did you sell any cattle in the past 12 months?

- Yes
- No

How many?

Male < 1 month

Male 1-2 years

Male 5 year

_____

Female < 1 month

_____

Female1-2 years

_____

Female 3 years or more

_____

At what price (per head)?

Male < 1 month

_____

Male 1-2 years

_____

Male 5 years

_____

Female < 1 month

_____

Female 1-2 years

_____

Female 3 years or more

_____

Where did you sell them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you eat any cows in the past 12 months?

- Yes
- No

How many?

Male < 1 month

_____

Male 1-2 years

_____

Male 5 year

_____

Female < 1 month

_____

Female 1-2 years

_____

Female 3 years or more

_____

Did you give away any animals in the past 12 months?

- Yes
- No

How many?

Male < 1 month

_____

Male 1-2 years

_____

Male 5 years

_____

Female < 1 month

_____

Female 1-2 years

_____

Female 3 years or more

_____

Did you produce milk in the past 12 months?

- Yes
- No

For how many months were you able to milk, during the dry season last year?

_____

On average, how much milk did you get by day of milking during the dry season?

Number of guissa (4L)

_____

Did you breed camels in the past 2 years?

- ○ yes
- ○ No

How many camels do you possess (now)?

In this village:

_____

In the bush:

_____

Did you purchase any camels during the past 12 months?

- Yes
- No

How many?

Male few weeks (Dalitou)

_____

Male 2 months (Narig)

_____

Male 7 months (Sosaitou)

_____

Male 5 years (Rakoub)

_____

Female few weeks (Dalitou)

_____

Female 2 months (Nargo)

_____

Female 7 months (Addo)

_____

Female 5 years (Ala)

_____

At what price (per head)?

Where did you buy them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify :

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you sell any camels in the past 12 months?

- Yes
- No

How many?

Male few weeks (Dalitou)

_____

Male 2 months (Narig)

_____

Male 7 months (Sosaitou)

_____

Male 5 years (Rakoub)

_____

Female few weeks (Dalitou)

_____

Female 2 months (Nargo)

_____

Female 7 months (Addo)

_____

Female 5 ans (Ala)

_____

At what price (per head)?

Male few weeks (Dalitou)

_____

Male 2 months (Narig)

_____

Male 7 months (Sosaitou)

_____

Male 5 years (Rakoub)

_____

Female few weeks (Dalitou)

_____

Female 2 months (Nargo)

_____

Female 7 months (Addo)

_____

Female 5 years (Ala)

_____

Where did you sell them?

- Djibouti market
- In the village
- Both in the village and outside (Djibouti market or other)
- Other
- Don't know / Won't answer

If other, specify:

_____

How much did it cost you in transport costs?

_____

How much did it cost you in taxes?

_____

Did you eat any camels in the past 12 months?

- Yes
- No

How many?

Male few weeks (Dalitou)

_____

Male 2 months (Narig)

_____

Male 7 months (Sosaitou)

_____

Male 5 years (Rakoub)

_____

Female few weeks (Dalitou)

_____

Female 2 months (Nargo)

_____

Female 7 months (Addo)

_____

Female 5 years (Ala)

_____

Did you give away any animals in the past 12 months?

- Yes
- No

How many?

Male few weeks (Dalitou)

_____

Male 2 months (Narig)

_____

Male 7 months (Sosaitou)

_____

Male 5 years (Rakoub)

_____

Female few weeks (Dalitou)

_____

Female 2 months (Nargo)

_____

Female 7 months (Addo)

_____

Female 5 years (Ala)

_____

Did you produce milk in the past 12 months?

- Yes
- No

For how many months were you able to milk, during the dry season last year?

_____

On average, how much milk did you get by day of milking during the dry season?

Number of amourou (3-4L):

_____

Number of aissena:

Number of litres:

_____

For how many months were you able to milk, during the wet season last year?

_____

On average, how much milk did you get by day of milking during the wet season?

Nmrbre of amourou (3-4L):

_____

Number of aissena:

_____

Number of litres:

_____

On average, what proportion of milk did you sell?

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't know / Won't answer

At what price?

In DJF by amourou:

_____

In DJF by aissena:

_____

In DJF by litre:

_____

Did you breed any chickens/fowl during the past 12 months?

- Yes
- No

How many do you have (now)?

_____

Did you buy and chickens/fowl during the past 12 months?

- Yes
- No

How many?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

_____

Geese

_____

At what price (per head)?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

_____

Geese

Did you sell any chickens/fowl during the past 12 months?

- Yes
- No

How many?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

_____

Geese

_____

At what price (per head)?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

_____

Geese

_____

Did you eat any chickens/fowl during the past 12 months?

- Yes
- No

How many?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

_____

Geese

_____

Did you give away any chickens/fowl during the past 12 months?

- Yes
- No

How many?

Chicks

_____

Hens

_____

Rooster

_____

Guinea-Fowl

Geese

Did you buy any feed-concentrates (corn, sorghum, pellets, etc.) for the animals in the past 12 months?

- Yes
- No

For how many months?

How many bags did you buy?

How much does a bag cost (DJF/bag)?

Did you buy any fodder (straw, etc.) for the livestock?

- Yes
- No

During how many months?

How many bags did you buy?

How much does a bag cost (DJF/bag)?

How much did you spend in the past 12 months for the following?

Herdsman

Veterinary costs (traditional and modern)

Other

If other, specify:

_____

How many animal shelters do you have?

_____

Did you spend money to build one or more animal shelters?

- Yes
- No

How much did each shelter cost (DJF)?

Shelter 1

_____

Shelter 2

_____

Shelter 3

_____

Shelter 4

_____

Shelter 5

How long does each shelter last (in years)?

Shelter 1

_____

Shelter 2

_____

Shelter 3

_____

Shelter 4

_____

Shelter 5

_____

Have you, or members of your household gone fishing during the past 12 months?

- Yes
- No

How many fishermen are there in your household?

_____

Hot season

Length if fishing season (months)

_____

Number of weeks conducive to fishing per month (average of the household fishermen)

_____

Number of days of fishing per week (average of the household fishermen)

_____

Number of fishing trips per day (average of the household fishermen)

_____

Volume of fish caught in kg or local unit (average of the household fishermen)

Species 1

_____

Species 2

_____

Species 3

_____

Species 4

_____

Species 5

_____

Make a note of the unit used

Species 1

_____

Species 2

Species 3

Species 4

Species 5

Price of sale of fish/crustaceans

Species 1 (in DJF/)

Species 1 (in DJF/)

Species 1 (in DJF/)

Species 1 (in DJF/)

Species 1 (in DJF/)

Average revenue per fishing trip (DJF/trip)

Fishing equipment that belongs to the household (number)

Polyester boat

Houris (traditional wooden sailboat)

Motor 15CV

Motor 18CV

Motor 40CV+

net

Line

Harpoon

Crustacean trap

Fish trap

Ice machine

Cool box

Preservation materials (salting, drying)

Lifetime of fishing equipment

Polyester boat (in years)

Houris (traditional wooden sailboat) (years)

Motor 15CV (years)

Motor 18CV (years)

Motor 40CV+ (years)

Net (months)

Line (weeks)

Harpoon (months)

Crustacean trap (months)

Fish trap (months)

Ice machine (years)

Cool box (years)

Preservation materials (salting, drying) (years)

Cost of purchase of fishing materials (DJF/unit)

Polyester boat

Houris (traditional wooden sailboat)

Motor 15CV

Motor 18CV

Motor 40CV+

Net

Line

Harpoon

Crustacean trap

Fish trap

Ice machine

Cool box

Preservation materials (salting, drying)

How much have you spent in the past 12 months for the following?

Rental of fishing materials

Repairing fishing material

Taxes

Labour (ship's boy, another fisherman, etc.)

Gasoil

Transport of products (fish/crustaceans)

Other

_____

If other, specify:

_____

Have you or a member of your household produced charcoal in the past 12 months?

- Yes
- No

In all, how many times have you produced charcoal in the past 12 months?

_____

How many stacks did you produce each time?

How many bags of charcoal did you get per stack (on average)

_____

What is the selling price for a bag of charcoal (DJF/bag)?

_____

How much did you spend in the past 12 months for the following (in DJF)?

Labour

_____

Transport

_____

Taxes

_____

Other

_____

If other, specify:

_____

How much did you spend in tools (axe, shovel, chimney, etc.) in the past 12 months?

_____

Have you or members of your household collected fire-wood in the past 12 months

- Yes
- No

In all, how many times in the past 12 months?

_____

How many bundles each time?

_____

What was the sales price per bundle (DJF/bundle)?

_____

Did you, or a member of your household, work as a caravaneer in the past 12 months?

- Yes
- No

How many trips in the years?

_____

Average income per trip?

_____

Do you or a member if your household produce handicrafts?

- Yes
- No

Number of pieces made per year by members of the household:

Fidima

_____

Gourouf

_____

Aissena

_____

Amourou

_____

Guissa

_____

Kaounta 1,5L

Kaounta 0,5L

Gabedo

Miniature *Gabedo*

Other

Sales price per product:

Fidima

Gourouf

Aissena

Amourou

Guissa

Kaounta 1,5L

Kaounta 0,5L

Gabedo

Miniature *Gabedo*

Other

Cost of the materials per year?

Did you or a member of your household work as a daily labourer in the past 12 month?

- Yes
- No

For how many months?

Person 1

Person 2

Person 3

Person 4

Person 5

On average for how many days each month?

Person 1

Person 2

Person 3

Person 4

Person 5

_____

Daily salary (DJF/day)?

Person 1

_____

Person 2

_____

Person 3

_____

Person 4

_____

Person 5

_____

Do you, or any members of your household, do any trade?

- Yes
- No

Average earnings per month

_____

Do you, or any members of your household, perceive a salary or a pension?

- Yes
- No

How many persons?

_____

What is the sum of these revenues (DJF)?

_____

Have you, or any members of your household, hunted or harvested wild products in the past 12 months?

- Yes
- No

What quantities (use local unit)?

Wild animals

_____

Honey

_____

Palm fibres (*anga*)

_____

Salt

_____

Medicinal plants

_____

Geodes and other stones

_____

Other

_____

If other, specify:

_____

Note the units used:

Wild animals

_____

Honey

_____

Palm fibres (*anga*)

_____

Salt

_____

Medicinal plants

_____

Geodes and other stones

Other

What proportion of these products was consumed by the household?

Wild animals

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't Know/ Won't answer

Honey

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't Know/ Won't answer

Palm fibre (*anga*)

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't Know/ Won't answer

Salt

- 0 %
- 25 %
- 50 %
- 75 %

- 100 %
- Don't Know/ Won't answer

Medicinal plants

- 0 %
- 25 %
- 50 %
- 75 %
- 100 %
- Don't Know/ Won't answer

For the rest, at what price where they sold?

Wild animals (in DJF/)

_____

Honey (in DJF/)

_____

Palm Fibres (*anga*) (in DJF/)

_____

Salt (in DJF/)

_____

Medicinal plants (in DJF/)

_____

Geodes and other stones (in DJF/)

_____

Other (in DJF/)

_____

We will now talk about your accommodation and the access to services.

◯ Next

What is the main source of drinking water for your household?

- Tank truck
- Traditional well

- Improved well (with lining)
- Bore-hole / covered well with pump
- Surface water (barrage, water dam, river, buried cistern, reservoir)
- Other
- Don't Know/ Won't answer

If other, specify:

_____

At what distance (in minutes) is it?

_____

Is it the same source as for household service water (hygiene, dish and clothes washing, etc.)?

- Yes
- No

What is the main source of service water for your household?

- Tank truck
- Traditional well
- Improved well (with lining)
- Bore-hole / covered well with pump
- Surface water (barrage, water dam, river, buried cistern, reservoir)
- Other
- Don't Know/ Won't answer

If other, specify:

_____

At what distance (in minutes) is it?

_____

How many litres of water to you use per week (number of 200 litre barrels)?

_____

How many litres of water to you use per week (litres)?

How much does the supply of water for the family cost per week (drinking, hygiene, animals)?

_____

How many people from your household were ill during the past 3 months?

_____

Did you consult anyone (traditional healer, health post, clinic, physician) during the past 3 months?

- Yes
- No

In general, who do you consult in case of illness?

- Medical caravan
- Free clinic
- Community health centre
- Regional hospital
- Private clinic
- Traditional healer
- Independent physician
- No one
- Other
- Don't Know/ Won't answer

Who do you consult next (if the first was not effective)?

- Medical caravan
- Free clinic
- Community health centre
- Regional hospital
- Private clinic
- Traditional healer
- Independent physician
- No one
- Other
- Don't Know/ Won't answer

Have you taken any medicine in the past 3 months (including traditional pharmacopoeia)?

- Yes
- No

Where did you get this medicine?

- Medical caravan
- Free Clinic
- Community health centre
- Regional hospital
- Private clinic
- Traditional healer
- Independent physician
- Shop that sells medicine
- Harvested in nature
- Other
- Don't Know/ Won't answer

What sum did you spend on health in the past 3 months?

_____

What type of toilet do the adults in your household use?

- None available
- Traditional latrine
- Improved latrine (sceptic tank and chimney)
- Toilet (with water system)
- Other
- Don't Know/ Won't answer

If other, specify:

_____

What is the main source of electricity for your home?

- None
- Generator set
- Solar panel
- Battery
- EDD
- Don't Know/ Won't answer

What do you do with your household waste?

- Sanitation department
- Open sky dump
- In a buried dump
- Burn it
- Leave by the road to be taken away with the wind
- Other
- Don't Know/ Won't answer

If other, specify:

_____

Do you have mobile phone network coverage?

- No coverage
- Intermittent
- Good
- Don't Know/ Won't answer

Are your forbears buried in the village cemetery?

- Yes
- No

How many times per year to you go to the village cemetery?

_____

What status do you have regarding your home?

- Owner with land title (delivered by the Land Service)
- Owner with temporary title (delivered by the sub-prefecture)
- Customary owner
- Family home
- Free accommodation (on loan or a gift)
- Official lodgings
- Tenant
- Don't Know/ Won't answer

How many buildings do you use in your household (sleeping, store, covered kitchen)?

_____

What type of lodging is it?

- Tukul (hut made of mats)
- Stone home
- Sheet-metal
- Hard-wall
- Other
- Don't Know/ Won't answer

Do you own any lodgings outside your village?

- Yes
- No

Did you rent out a lodging last year?

- Yes
- No

For how many months?

_____

What was the rent per month?

_____

How many of the following materials does your household own?

Radios

_____

Mobile phones

_____

Solar panels

_____

Generator sets

_____

Foam mattresses

_____

Mat

Cushions?

Beds

Chairs

Thermos

Plastic or metal barrels

Motor bike

Badjaj

Bicycles

Carts

Cars

How do you save money?

- CPEC or other micro-finance establishment
- Family
- Trader
- Bank
- Livestock
- No savings

- Don't Know/ Won't answer

Have you borrowed any money in the past six months?

- Yes
- No

From where:

- CPEC or other micro-finance establishment
- Family
- Tontine
- Trader
- Bank
- Don't Know/ Won't answer

For what purpose:

- Social event (wedding, death, circumcision, *Aïd*, etc.)
- Illness
- Education
- Drought
- Construction
- Livestock feed
- Purchase of livestock
- Daily expenditure
- Other
- Don't Know/ Won't answer

If other, specify:

_____

What is the status of your credit?

- Reimbursed
- Partially reimbursed
- Late
- Don't Know/ Won't answer

What is the total amount of your loans (DJF)?

Over what period does your most important debt run (in months).?

What is the highest interest rate (% per month)?

What is the total amount that you pay back every month (DJF/month)?

Does your husband send money regularly?

- Yes
- No

How many times per year?

About how much on average each time?

Do you receive other financial help in money or in-kind from relatives in town or abroad?

- Yes
- No

How many times per year?

About how much on average each time?

Do you have other dependents outside your household?

- Yes
- No

How many times a year do you assist them financially (in cash or in-kind)?

What is the average value of this assistance each time?

During the past six months, what were the three main expense items in your household?

- Feeding the family

- Water supply for the family
- Livestock food
- Clothes
- Social events
- Health
- Education
- Construction or lodging
- Transport
- Trade
- Handicrafts
- Other
- Don't Know/ Won't answer

If other, specify:

_____

Thake the GPS coordinates in the courtyard

Check that the precision is at least around 5 meters

- latitude (x.y °)
- longitude (x.y °)
- altitude (m)
- accuracy (m)

Take a picture of the head of household (optional)

Do you have comments on the survey?

◯ Yes

◯ No

Be succinct!

ERM

Appendix 3: Minutes of the Public Consultation in Lac ASSAL Village

INSUCO

IPP WIND FARM PROJECT – REPUBLIQUE DE DJIBOUTI

Procès Verbal de réunion

Date:	Lieu:
14/02/2018	VILLAGE LAC ASSAL
Objet: CONSULTATION PUBLIQUE IMPACTS PROJET EOLIEN	

- Introduction et tours de table
- Présentation du Projet par Ali
- Prise de Parole par le Sage : Aucune connaissance des impacts négatifs
- Prise de Parole par le sous-Préfet, Attente : — emploi, formation
- Réponse par EDD
- Prise de parole par la secrétaire générale ; Attente : poste de santé, éducation,
- Prise de Parole par Louigi pour recadrer le débat.
- Prise de parole par les jeunes ; Attente : Emploi, formation.

~~Attente~~ du Question du sous-Préfet : [illegible] impact environnemental !

INSUCO

INSUCO

Réponse : Pas d'impact

- Question : Impact sur les animaux et bétails ?

Réponse : Pas d'impact

- Question : Nuisance sonore pour les animaux.

Réponse : Pas d'impact.

- Question : Sécurité ("au cas où une pal se détacherait ?")

Réponse : ~~sur~~ Entretien périodique ; suivi et surveillance.

- Question : Cimetière : Présence ou non.

Réponse : Présence d'une tombe isolée !!

Attente après l'installation de tous ces projets : ~~Protection~~ Protection de l'environnement, commerce, urbanisation,

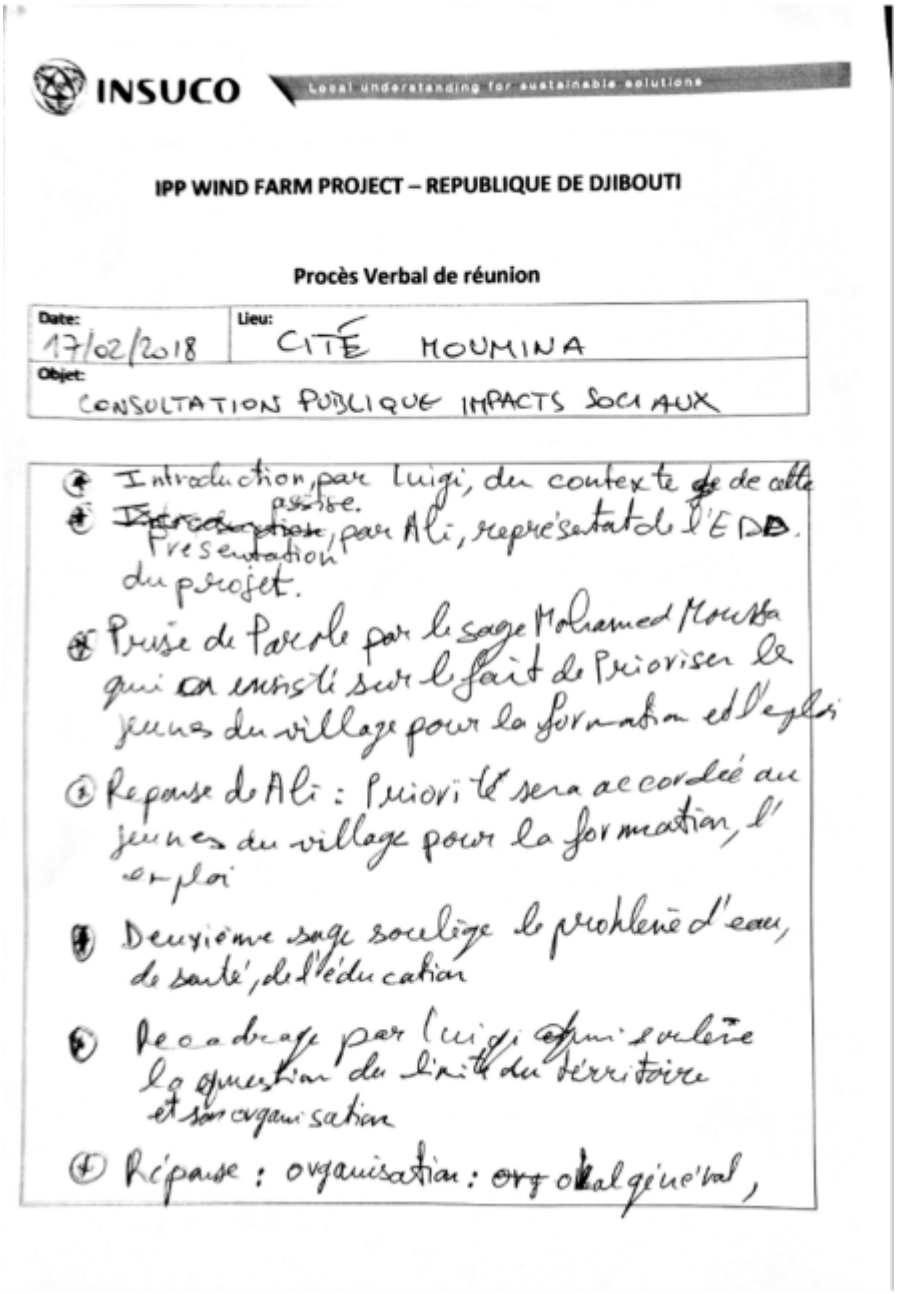
Liste de présences

Date : 14/02/18 **Lieu :** LAC ASSAL

#	Nom	Organisation et Rôle / Statut	Contact téléphonique	Signature
1	Mohamed Ahmed Oudaa	Sous-Préfet	77 87 37 5[illegible]	
2	Mohamed Gadileh Aubaker	Chef de village	77826445	
3	Moussa Mohamed Abdallah	Adjoint Chef	77706016	
4	~~Waffieh~~ Goundouss Moussa	Président Asso "Goubet"	77607609	
5	Ahmed Hamed Hamad	Trésorier d'ass. Goubet	77.81.07.07	
6	Mohamed Aubaber	Vice-Président Asso "Goubet"		
7	Fatouma Youssouf Mda	Présidente Femme "Goubet" de l'ass.	77826445	
8	Goura Ali Ibrahim	Asso "Goubet" Secrétaire Général	77 82 64 45	
9	Mohamed Ali Gohar	Association Jeunesse	77172654	
10	Ibrahim Hamed Aras	Sage du village		
11	Gadito Mohamed Gadito	Association Jeunesse	77.76.82.45	
12	Ahmed Aras Hassan	Association Jeunesse		
13	Hamed Ali Hamadou	Association Jeunesse	77.78.07.09	

Appendix 4: Minutes of the Public Consultation in Cité Moumina

`



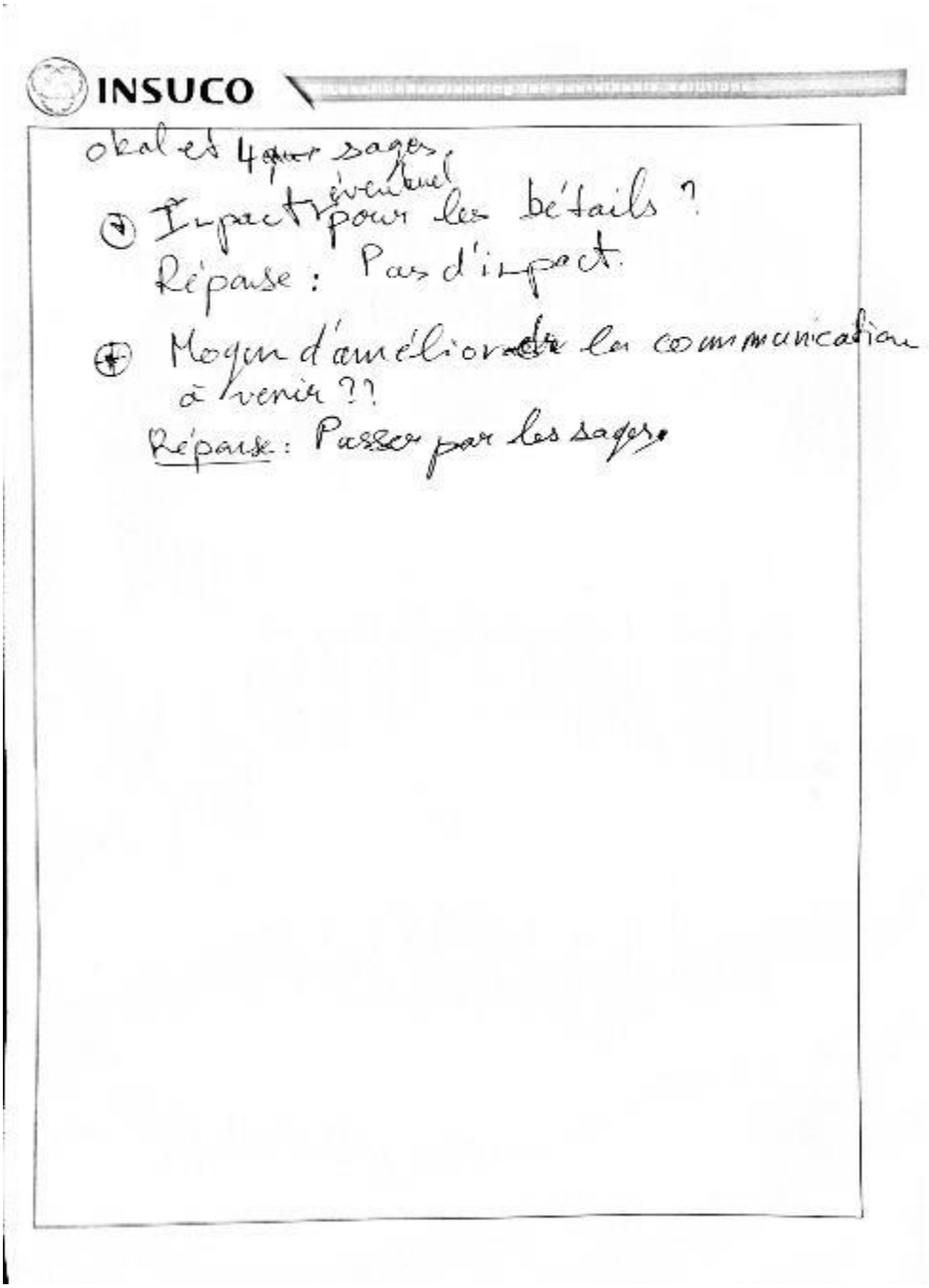
INSUCO Local understanding for sustainable solutions

IPP WIND FARM PROJECT – REPUBLIQUE DE DJIBOUTI

Procès Verbal de réunion

Date:	Lieu:
17/02/2018	CITÉ MOUMINA
Objet: CONSULTATION PUBLIQUE IMPACTS SOCIAUX	

1. Introduction par Luigi, du contexte de cette passe.
2. ~~Introduction~~ Présentation par Ali, représentant de l'EDD. du projet.
3. Prise de Parole par le sage Mohamed Moussa qui a insisté sur le fait de prioriser les jeunes du village pour la formation et l'emploi
4. Réponse de Ali : Priorité sera accordée aux jeunes du village pour la formation, l'emploi
5. Deuxième sage souligne le problème d'eau, de santé, de l'éducation
6. Recadrage par Luigi qui soulève la question de limite du territoire et son organisation
7. Réponse : organisation : ~~org~~ coutumier,



INSUCO

okal et 4 pour sages.

① Impact éventuel pour les bétails ?
Réponse : Pas d'impact.

② Moyen d'améliorer la communication à venir ??
Réponse : Passer par les sages.

Liste de présences

Date : 07/02/13 **Lieu :** CITÉ RAMADAN

#	Nom	Organisation et Rôle / Statut	Contact téléphonique	Signature
1	Hourmed Moussa Abas	Intermédiaire	77.74.86.89	
2	Mohamed Aloyta Gadito	Adjoint du global	77.84.23.49	
3	Mohamed Moussa Coundas	Intermédiaire	77.84.85.21	
4	Ali Hourmed Mahisso	Intermédiaire	77.05.20.99	
5	Hamadou Mohamed Ali	Intermédiaire	77.83.23.58	
6	Hourmed Hassan Ali	Secrétaire Général	77.04.32.17	

INSUCO

ERM

Appendix 5: Report on the Public Consultation in Lac Assal Village

Purpose of the consultation	Sharing information on the project and stakeholder consultation
Site of the consultation	Village Lac Assal
Project Zone	Lac Assal
Date	14/02/2018
Duration	2 hours
Villages represented	Lac Assal Village
Number of people consulted	13
Groups consulted	

Generalities (presence and authority's speech, etc.)

Presence and effective participation of the Sub-prefect of Lac Assal.

All the groups whose presence was hoped for where there: women's association of Ghoubet, youth group, "Difu" association.

The meeting was co-facilitated by one of the Insuco team members and a representative of EDD.

Sharing information about the project.

Project presentation by the EDD engineer.

Photos of a Wind farm were shown and made available and commented.

Questions and answers about the project.

OPINIONS AND DEBAT ABOUT THE MAIN CONCERNS

- **Economic concerns: Employment**

Observation and concerns

The main assessment was that currently, most of the village are un employed or underemployed. And also, that the local youth are unable to access anything other than unqualified positions (guards on the Chinese worksites), due to lack of schooling and professional training

Identified impacts

The project could have a positive impact through the creation of direct jobs (especially during the construction phase).

In the future, the electrification of the area could enable the installation of schools and improve the chances of the inhabitants to access qualified positions.

Expectations and Recommendations

All participants shared high expectations in terms of access to jobs.

There were also expectations in terms of opportunities linked to the demographic growth of the village (a cumulative effect of the different projects) and access to electrification. It is recommended to envisage professional training.

- **Economic concerns: access to land (project perimeter). Implications for the passage of herds during and after construction**

Observation and concerns

The realisation that the project will take up some land is not a major issue. According to the participants, the perimeter selected is unsuitable for any productive activity. The project should thus not prejudice any projects (agricultural or pastoral) of the residents. The only fear expressed was that the turbines could somehow disturb the animals (goats) or modify their behaviour. It will be up to environmental expert assessment to evaluate this fear.

The sub-prefect insisted on the nationwide nature of the project and that the zone was, in any case, earmarked for national interest projects.

Identified Impacts

No major impact was highlighted concerning loss of the lands that will be occupied by the wind farm.

Expectations and Recommendations

The only recommendation – common to all the concerns raised – is that the project actually come into existence. The inhabitants were uneasy with the fact, that several projects had been announced in the past, without ever materializing.

- **Social concerns (demography, in-migration towards the worksite and safety)**

Observation and concerns

If one considers the cumulative effects of the various projects (port, chemical plant, geothermal plant), it is highly likely that they will induce population in-migration to the zone which will result in a demographic increase in the villages. This is viewed by the villagers as an opportunity, for re-enforcing and increasing basic services, rather than as a threat.

The only fears expressed were linked to unplanned/chaotic urbanisation and the difficulty of managing a greater volume of waste.

Identified Impacts

Demographic increase with the arrival of new inhabitants, economic activities, services.

Increase in the housing area and impact on the environment due to an increase in urban waste.

Expectations and Recommendations

Expectations are high as an increase in population is perceived by the inhabitants as an opportunity. The recommendation made by the sub-prefect is that Lac Assal be endowed with an urban plan to ensure the orderly construction of new houses. Temporary authorisations for construction are to be anticipated.

The village waste disposal system is to be reinforced to avoid environmental hazards.

- **Environmental and eco-system concerns**

Observation and concerns

The participants were not aware of ecological issues linked to the installation of a wind farm.

After discussions, noise pollution was the only theme that could remain an issue, but for the moment, the participants felt that they did not have enough information to be able to give an enlightened opinion on the topic.

Identified Impacts

Not enough information to be able to discuss impacts.

Expectations and Recommendations

The only recommendation is that the project promotors do everything so as not to affect the environment. Overall, after discussion, the project does not arouse any specific fears concerning the preservation of the eco-system.

- **Cultural heritage concerns**

Observation and concerns

The only concern expressed was that the cemeteries situated just outside the project perimeter could be disturbed or damaged during construction work.

There was no cultural heritage site within the project perimeter.

Fears were linked to prior bad experiences with other construction projects.

Identified Impacts

Risk of damaging cemeteries.

Expectations and Recommendations

It is recommended that a new cemetery be identified (in addition to the current one in Lac Assal) and to ensure that it is not within the project footprint.

It is recommended that this preoccupation be attended to, when the construction-site is opened.

- **Health and Security: impact of infrastructure (accidents, noise, dust, health structures) during and after construction**

Observation and concerns

There were no particular concerns about security and traffic safety during the installation phase; especially if local people were to be in charge of work-site security.

Fears were expressed about the safety of the area once the wind turbines were installed:

A question about lightening was asked. EDD reassured people about the lightening rod system that would be in place.

Fear that the rotor blades may detach form the tower was expressed. EDD reassured people about the security mechanisms in place.

Identified Impacts

No specific impacts in terms of security.

Recommendations

It is recommended that the work-site be well guarded both during construction and after installation, so as to avoid accidents that could affect the local population.

Set up stakeholder communication, information and public consultation practices to improve communication between all concerned parties during construction and operation.

Expectations and Recommendations

The EDD plan, which consists in a weekly meeting with the neighbouring population, as soon as the work begins, was welcomed as a good communication system to keep everyone up to date and to anticipate any potential issues.

- **Specific concerns brought up distinctive groups: women, youth, religious authorities, tradesmen**

The women insisted particularly on the need to see the project come to light. The experience of past projects in the area, that never came to anything, generated overall frustration amongst the inhabitants and explains their impatience to see the work begin.

The women also insisted on the lack of village infrastructure. This situation puts them in such difficult circumstances, that rather than heading for emancipation, they feel they are being drawn backwards. Of all the difficulties that burden women, access to water was the most painstaking.

The youth insisted on job availability and on the environment (in particular the « Difu » association)

Other questions …nothing to report.

Appendix 6: Report on the Public Consultation in Cité Moumina

Purpose of the consultation	Sharing information on the project and stakeholder consultation
Site of the consultation	Cité Moumina village
Project Zone	Lac Assal
Date	17/02/2018
Duration	2 hours
Villages represented	Cité Moumina
Number of people consulted	6
Groups consulted	

Generalities (presence and authority's speech, etc.)

Absence of the Okal general, who should have organised the meeting.

Presence of all the village elders.

Absence of the representatives of the women's association, by request of the elders who requested a separate meeting for the women.

Presence of a representative of the Association for the Development of Lac Assal Region.

The meeting was co-facilitated by one of the Insuco team members and a representative of EDD.

AVIS ET DEBAT SUR LES PRINCIPAUX ENJEUX

- **Economic concerns: Employment**

Observation and concerns

The question of employment monopolised a good part of the meeting. People feared that the jobs would be taken by outsiders. This situation would be unacceptable for the villagers.

People were also worried that the Ministry was already training people in Djibouti. But EDD clarified that local employment would be favoured.

Identified Impacts

The project could have positive impact through job creation, especially during the construction phase. And on the reverse side, under-employing the local population could have detrimental consequences.

Expectations and Recommendations

The main expectation is for local jobs. The main recommendation is that the company in charge of the construction and maintenance of the infrastructure directly approach the village elders to identify manual labourers to be employed. The elders are in the best position to evaluate the local situation so as to ensure that the local population is satisfied.

It is also recommended to consider professional training for village youth.

- **Economic concerns: access to land (project perimeter). Implications for the passage of herds during and after construction)**

Observation and concerns

The territorial footprint of the project does not constitute a major issue. According to the participants, nobody would envisage claiming any rights over the lands selected for the project.

Identified Impacts

No major impact was highlighted concerning the loss of land that will be occupied by the wind farm.

Expectations and Recommendations

No particular recommendation.

- **Social concerns (demography, in-migration towards the worksite and safety)**

Observation and concerns

If one considers the cumulative effects of the various projects (port, chemical plant, geothermal plant), it is highly likely that they will induce population in-migration to the zone which will result in a demographic increase in the villages. The participants maintained that the presence of workers or job seekers coming from other areas is a real concern for them.

Identified Impacts

In-migration and the settlement of new arrivals will have detrimental consequences if the issue of access to work is not managed by the local authorities.

Expectations and Recommendations

The main recommendation is that the village authorities be constantly consulted, so as to keep under control the eventual influx of people who are not native to the area.

- **Environmental and eco-system concerns**

Observation and concerns

The participants expressed concerns over the use of chemical products. This is due to the fact that for the starting up of the geothermal installations, the population had been informed of the use of chemicals. EDD reassured them by explaining the principles a wind farm, thus lifting any environmental concerns.

Identified Impacts

No particular impacts.

Expectations and Recommendations

No particular recommendations.

- **Cultural heritage concerns**

Observation and concerns

As the work to identify cultural heritage sites (the cemeteries) had already been undertake, no particular concerns were raised.

Identified Impacts

Risk of damaging the cemeteries

Expectations and Recommendations

No particular expectations, except for respecting the zones identified (that are just outside the project perimeter).

- **Health and Security: impact of infrastructure (accidents, noise, dust, health structures) during and after construction**

Observations and concerns

No particular concerns were expressed concerning security conditions and traffic during the installation phase. Especially if the work-site was guarded by local people.

Identified Impacts

No specific impacts in terms of security.

Recommendations

It is recommended that the work-site be well guarded both during construction and after installation, so as to avoid accidents that could affect the local population.

- **Communication procedures, information, public consultation, dialogue (practices that are suggested to be put in place to improve communication with other stakeholders during and after construction)**

Expectations and Recommendations

The focus was put on the necessity of always consulting the four elders of Cité Moumina. They consider themselves to be the only secure relay for correctly transferring information and to guarantee village support.

- **Specific concerns brought up distinctive groups: women, youth, religious authorities, tradesmen**

People insisted upon the fact that the biggest problem in the village is access to water. Also, the village already has buildings earmarked for the school and the health clinic, but neither are functional.

The association for the development of Lac Assal region, created in 2005, has difficulty in accessing funds. The members would like to see the association supported.

Other questions …nothing to report.

Appendix 7: List of Persons Met during the Assignment

N.	Phase	Place	Name	Organisation	Function	Telephone
1	Scoping	Djibouti	Osaruyi Orobosa-Ogbeide	Africa Finance Corporation	AVP Project Development	
2	Scoping	Djibouti	Aden Ougoureh Aden	EDD	Legal department	77706652
3	Scoping	Djibouti	Awalé Moussa	EDD	Project lead Windfarm	77884148
4	Scoping	Djibouti	Ali Mohamed	EDD	Engineer	77829982
5	Meeting with Institution	Arta	Abdillahi Darar Okie	Arta Prefecture	Prefect	77017271 27422117
6	Meeting with Institution	Tadjourah	Abdoulmalik Mohamed Benoita	Tadjourah Prefecture	Prefect	77830808 27424145
7	Meeting with Institution	Tadjourah	Bara Goita Saida	Ministry of Agriculture	Director	77810488
8	Individual interview	Cité Mimouna	Abdallah Mamadou Habdallah	Customary authority	Okal general	
9	Public consultation	Lac Assal	Mohamed Ahmed Oudoum	Lac Assal Sub-Prefecture	Sub-prefect	77873557
10		Lac Assal	Mohamed Guellé Aubaker	Lac Assal authority	Village chief	77826445
11	Public consultation	Lac Assal	Moussa Mohamed Abdallah	Lac Assal authority	Assistant village chief	77705016
12	Public consultation	Lac Assal	Goundouss Moussa	Association "Diffu"	President	77607609
13	Public consultation	Lac Assal	Ahmed Houmed Hamad	Ghoubet Association	Treasurer	77810707
14	Public consultation	Lac Assal	Mohamed Aubaker	Ghoubet Association	Vice-President	
15	Public consultation	Lac Assal	Fatouma Youssouf Moleh	Ghoubet Womens' association	President	77826445
16	Public consultation	Lac Assal	Gounati Ali Ibrahim	Ghoubet Womens' association	Secretary general	77826445
17	Public consultation	Lac Assal	Mohamed Ali Gobar	Youth association	Member	77172654
18	Public consultation	Lac Assal	Ibrahim Houmed Aras	Lac Assal authority	Elder	

19	Public consultation	Lac Assal	Gadite Mohamed Gadite	Youth association	Member	77768245
20	Public consultation	Lac Assal	Ahmed Aras Hassan	Youth association	Member	
21	Public consultation	Lac Assal	Houmed Ali Hamadou	Youth association	Member	77780709
22	Public consultation, focus group and individual interview	Cité Moumina	Houmed Moussa Aras	Cité Moumina authority	Makaban (Hayssamaleh)	77748689
23	Public consultation and focus group	Cité Moumina	Mohamed Aloyta Gadito	Cité Moumina authority	Elder, representing Okal General	77842349
24	Public consultation and focus group	Cité Moumina	Mohamed Moussa Goundous	Cité Moumina authority	Makaban (Mirganto)	77848521
25	Public consultation	Cité Moumina	Ali Houmed Malisso	Cité Moumina authority	Elder	77052099
26	Public consultation	Cité Moumina	Hamadou Mohamed Ali	Cité Moumina authority	Makaban (Fadihiteh)	77832758
27	Public consultation	Cité Moumina	Houmed Hassan Ali	Cité Moumina	Resident	77043217
28	Focus group	Cité Moumina	Mohamed Ali Mahamed	Cité Moumina authority	Elder (Fadihiteh)	
29	Focus group	Cité Moumina	Ali Houmed Mahisso	Cité Moumina authority	Makaban (tribe Adhali)	
30	Focus group	Cité Moumina	Aïcha Gohar Houmed	Cité Momina/Lac Assal Womens' association	Steering committee	
31	Focus group	Cité Moumina	Assia Birigo Ali	Cité Momina/Lac Assal Womens' association	Steering committee	
32	Individual interview	Karta	Cheiko Aras	Karta authority	Okal	
33	Individual interview	Karta	Mohamed Hamadou Ragueh		Livestock breeder	
34	Individual interview	Lac Assal	Walleh Moussa Goundous		Fisherman	77607609
35	Individual interview	Cité Moumina	Ali Hamadou Borito		Livestock breeder	77767049
36	Individual interview	Cité Moumina	Hamadou Gohar Houmed	Village organisation and management committee	Member (Oumarto)	77055283
37	Individual interview	Oued Hemed	Alassane Mohamed Ali		Sells fire-wood	
38	Individual interview	Ghoubbet beach	Houssein Said	Tourist resort	Manager	77728421
39	Individual interview	Koussour Koussour	Mahamed Youssouf Hamadou	Isolated camp	Livestock breeder	

40	Household survey	Cité Moumina	Abdallah Ibrahim Abdallah		Resident	77376847
41	Household survey	Cité Moumina	Ali Gadito Aloyta		Resident	77128381
42	Household survey	Cité Moumina	Ali Hamadou Borito		Resident	77767049
43	Household survey	Cité Moumina	Ali Houmd Moussa		Resident	77664976
44	Household survey	Cité Moumina	Ali Mohamed Ali		Resident	77187735
45	Household survey	Cité Moumina	Ali Moussa Ali		Resident	77379103
46	Household survey	Lac Assal	Ali Moussa Hamad		Resident	77752595
47	Household survey	Cité Moumina	Ali Moussa Hamadou		Resident	77301461
48	Household survey	Cité Moumina	Ali Oudoum Abaideh		Resident	77017772
49	Household survey	Cité Moumina	Arass Ali Isseh		Resident	77716167
50	Household survey	Cité Moumina	Doro Sanalasseh Oudoume		Resident	77679963
51	Household survey	Lac Assal	Goumhati Ali Ibrahim		Resident	77888751
52	Household survey	Cité Moumina	Hamad Ali Mohamed		Resident	77601396
53	Household survey	Cité Moumina	Hamadou Borito Hamadou		Resident	77615493
54	Household survey	Cité Moumina	Hamadou Cheko Abdallah		Resident	
55	Household survey	Cité Moumina	Hamadou Gohar Houmed		Resident	77055283
56	Household survey	Cité Moumina	Hasna Ali Isseh		Resident	77663755
57	Household survey	Cité Moumina	Hassan Isse Ahmed		Resident	77602582
58	Household survey	Lac Assal	Hawa Adou Hamad		Resident	
59	Household survey	Lac Assal	Hemeda Oudoum Guadito		Resident	
60	Household survey	Cité Moumina	Houmed Hassa Ali		Resident	77043217
61	Household survey	Cité Moumina	Houmed Ibrahim Abdallah		Resident	
62	Household survey	Cité Moumina	Houssein Houmed Ibrahim		Resident	77682605
63	Household survey	Cité Moumina	Issa Moussa Hamad		Resident	77632682
64	Household survey	Cité Moumina	Isse Ali Isse		Resident	
65	Household survey	Cité Moumina	Mohamad Ali Gohar		Resident	77172654
66	Household survey	Cité Moumina	Mohamed Ali Mohamed		Resident	77887625
67	Household survey	Cité Moumina	Mohamed Ali Moussa		Resident	
68	Household survey	Cité Moumina	Mohamed Ali Ragueh		Resident	77128089

69	Household survey	Cité Moumina	Mohamed Gadito Aloyta		Resident	77842349
70	Household survey	Cité Moumina	Mohamed Gohar Hamadou		Resident	77675863
71	Household survey	Cité Moumina	Mohamed Hassan Kabir		Resident	77701948
72	Household survey	Cité Moumina	Mohamed Houmed Moussa		Resident	77748713
73	Household survey	Cité Moumina	Momina Houmed Mohamed		Resident	77159923
74	Household survey	Lac Assal	Moussa Goundouss Moussa		Resident	27533437
75	Household survey	Cité Moumina	Moussa Assanleh Ali		Resident	77680048
76	Household survey	Lac Assal	Sanalasse Hamad Hamadou		Resident	77054979
77	Household survey	Lac Assal	Silalo Mohamed Aboubaker		Resident	77615374
78	Household survey	Cité Moumina	Sitani Hamadou Hamad		Resident	77343097
79	Household survey	Lac Assal	Walleh Moussa Goundouss		Resident	77607609

Annex G

Stakeholder Engagement Plan

1 INTRODUCTION

1.1 CONTEXT OF THE DOCUMENT

Africa Finance Corporation (AFC), Great Horn Investment Holding SAS (GHIH), Nederlandse Financierings-Maatschappij coor Ontwikkelingslanden N.V (FMO) and Climate Investor One (CIO), as part of a development consortium (hereafter referred to as 'the Consortium'), are seeking to gain permission for the construction and operation of a 60 MW (megawatt) windfarm, dedicated transmission line (up to 3.5 km in length) and associated facilities located in Ghoubet, between Lake Assal and Lake Ghoubet in Djibouti ('the Project'). The Consortium has appointed Environmental Resources Management (ERM), INSUCO and Combined Ecology to conduct an Environmental and Social Impact Assessment (ESIA). The ESIA is required to meet local permitting requirements to gain permission for construction and operation. In addition, to ensure the Project's equity partner policies, standards and requirements are adhered to and met, the ESIA will also be completed to meet the International Finance Corporation (IFC) Performance Standards (PS), Equator Principles, World Bank Group's (WBG) Environmental and Social guidelines, including the Environmental, Health and Safety (EHS) General Guidelines and EHS Guidelines for Wind Energy.

A 38 km 230 kV double-circuit transmission line and substation will also be constructed by Electricté de Djibouti (EDD) for the evacuation of electricity from the windfarm and other nearby power projects. It should be noted that this 230kV transmission line is an independent project and is not considered in the scope of this ESIA.

A Scoping Report has been submitted by ERM following scoping visits to the Project site in December 2017, and the report summarises the potential environmental and social impacts that may arise from the Project and which will need to be examined in more detail in the ESIA. This Stakeholder Engagement Plan (SEP) describes how stakeholders are being engaged as part of this ESIA, and the engagement activities that are planned throughout the construction and operation of the Project.

Stakeholder engagement refers to a process of sharing information and knowledge, seeking to understand the concerns of others and building relationships based on trust and collaboration. It is essential for the successful implementation of the ESIA and the Project itself.

1.2 OBJECTIVES OF THE STAKEHOLDER ENGAGEMENT PLAN

This Stakeholder Engagement Plan (SEP) provides a framework for stakeholder engagement throughout the life of the Project (planning, construction and operation). It has been designed so that the Project can demonstrate engagement that is effective, meaningful, consistent, comprehensive, coordinated and culturally appropriate, in line with all the relevant legal and regulatory commitments and good international industry practice.

Stakeholder(1) engagement is an ongoing process and as such, this SEP is a 'living document' that will be updated and adjusted as the Project progresses.

1.3 STRUCTURE OF THIS PLAN

This SEP is organised in the following subsequent sections:

- *Section 2*: Project Description;
- *Section 3*: National and International Standards and Legislation;
- *Section 4*: The Stakeholder Engagement Process;
- *Section 5*: Project Stakeholders;
- *Section 6*: Stakeholder Engagement;
- *Section 7*: Grievance Mechanism; and
- *Section 8:* Monitoring and Reporting.

(1) Stakeholders are defined as persons, groups, organisations or communities who may be directly or indirectly affected (positively or negatively) by the Project, or have interest in it.

2 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

The Project involves the construction of a windfarm with a total 60 MW of generating capacity, through 13 wind turbines, each with a capacity of up to 4.8 MW. Generated electricity will be fed via aerial collector lines (i.e. cables) to a substation on the Project site. An overhead transmission line will connect the Project substation to the 230 kV circuits located in the EDD transformer 3.5km from the Project site.

This initiative fits within Djibouti's master development plan 'Vision 2035' which sets the ambitious objective to supply 100% of domestic energy demand through renewable energy by 2020. The Gulf of Ghoubet has been identified as one of the most suitable areas in Djibouti for a windfarm due to its consistent high wind speeds throughout the year. Furthermore, the Project site was chosen as an area with good feasibility due to its proximity to existing road infrastructure and planned grid connections.

2.2 PROJECT LOCATION

The 395 hectare Project site is located approximately one kilometre west of Lake Ghoubet, where the RN9 and RN10 roads intersect, in the Arta region of Djibouti. The nearest settlements are Cité Moumina community, 600m south of the Project site, Lac Assal village, 500m north of the Project site, and Layta community, 1.5 km west of the Project site. The Project site location and extent is shown in Figure G2.1.

Figure G2.1
Project Location

PROJECTION: WGS 1984 UTM Zone 38N

SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap

Path: P:\Projects\0438399 AFC Ghoubet Wind Farm.BP\02 Working Files\GIS\MAPS\ESIA Report\0438399_ProjectLocation_A02.mxd

3 NATIONAL AND INTERNATIONAL STANDARDS AND LEGISLATION

3.1 DJIBOUTIAN LEGISLATION

The engagement process has been designed to meet both Djiboutian legal requirements for public participation, and international requirements for engagement as outlined by the IFC Performance Standards.

According to Djiboutian legislation, Environmental Impact Assessments "shall be carried out with the participation of the populations and the public concerned through consultations and public hearings, in order to collect and take into account the populations' opinions of the project" (per Décret n°2011-029/PR/MHUEAT, Article 15(1)).

3.2 INTERNATIONAL REQUIREMENTS

In addition to aligning with national standards, the Consortium has committed to developing the Project in line with international good practice standards, and in particular the International Finance Corporation (IFC) Performance Standards (PS).

Relevant Equator Principles that are reflected in the IFC requirements include:

- Principle 5: Stakeholder engagement
- Principle 6: Grievance mechanism; and
- Principle 10: Reporting and transparency.

IFC Performance Requirements relating to stakeholder engagement are summarised in *Box G3.1.*

Box G3.1 Performance Standard Requirements for Engagement

IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts: Stakeholder engagement is an on-going 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 on-going reporting to Affected Stakeholders.

Disclosure of relevant project information: Provide affected stakeholders with access to relevant information on: (i) the purpose, nature, and scale of the project; (ii) the duration of proposed project activities; (iii) any risks to and potential impacts on such stakeholders and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism.

Informed Consultation and Participation: For projects with potentially significant adverse impacts on affected stakeholders, conduct an informed consultation and participation process. It should involve deep exchange of views and information, and an organized and iterative consultation, leading to the project incorporating into their decision-making process the views of the affected stakeholders on matters that affect them directly, such as the proposed mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

The process should be documented, in particular the measures taken to avoid or minimize risks to and adverse impacts on the affected stakeholders. The stakeholders should be informed about how their concerns have been considered.

External Communications: Implement and maintain a procedure for external communications that includes methods to (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them; (iii) provide, track, and document responses, if any; and (iv) adjust the management program, as appropriate. In addition, clients are encouraged to make publicly available periodic reports on their environmental and social sustainability.

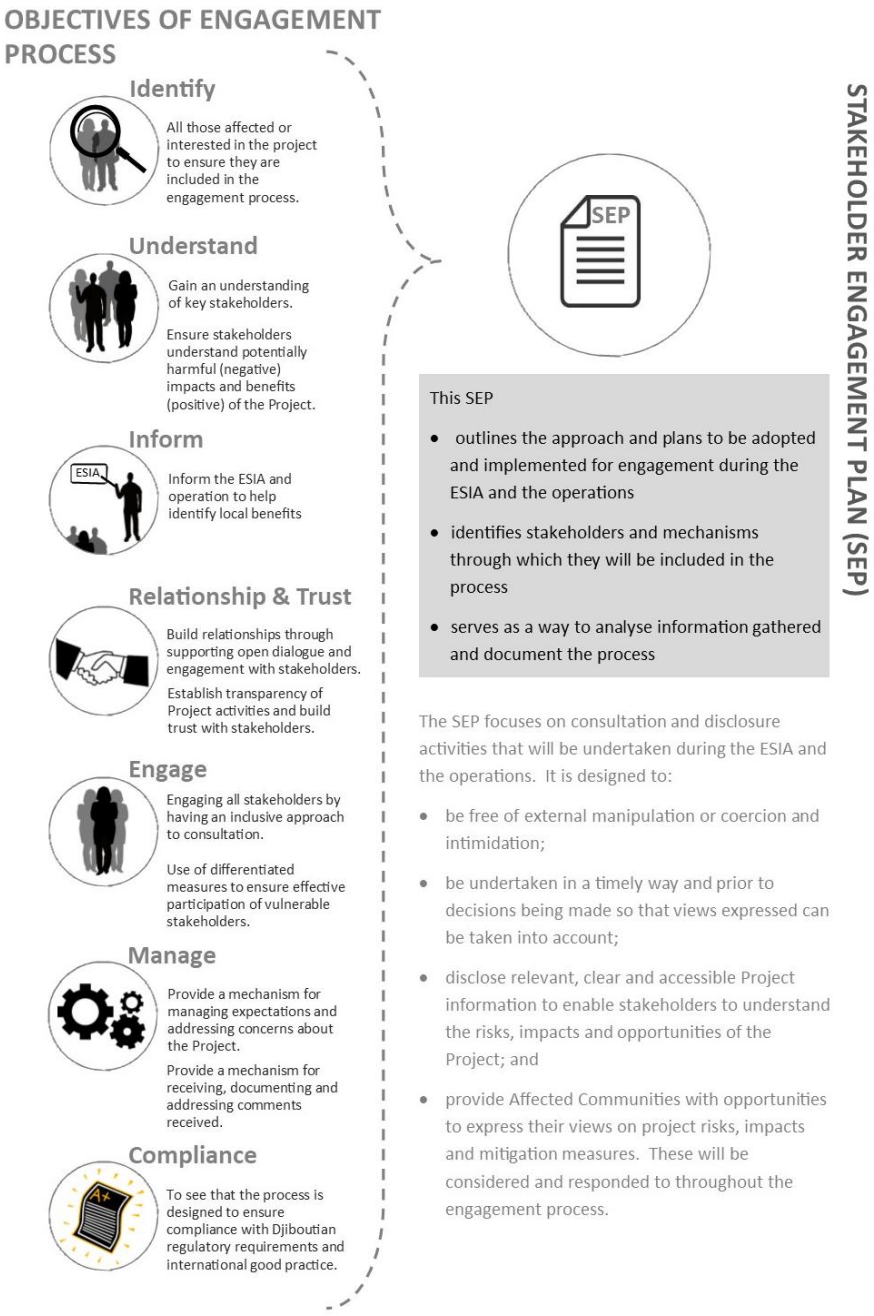
The international requirements for the Project require a systematic approach to stakeholder engagement that is designed to help build and maintain a constructive relationship with Project stakeholders. This SEP has been designed accordingly.

4 THE STAKEHOLDER ENGAGEMENT PROCESS

4.1 APPROACH TO STAKEHOLDER ENGAGEMENT

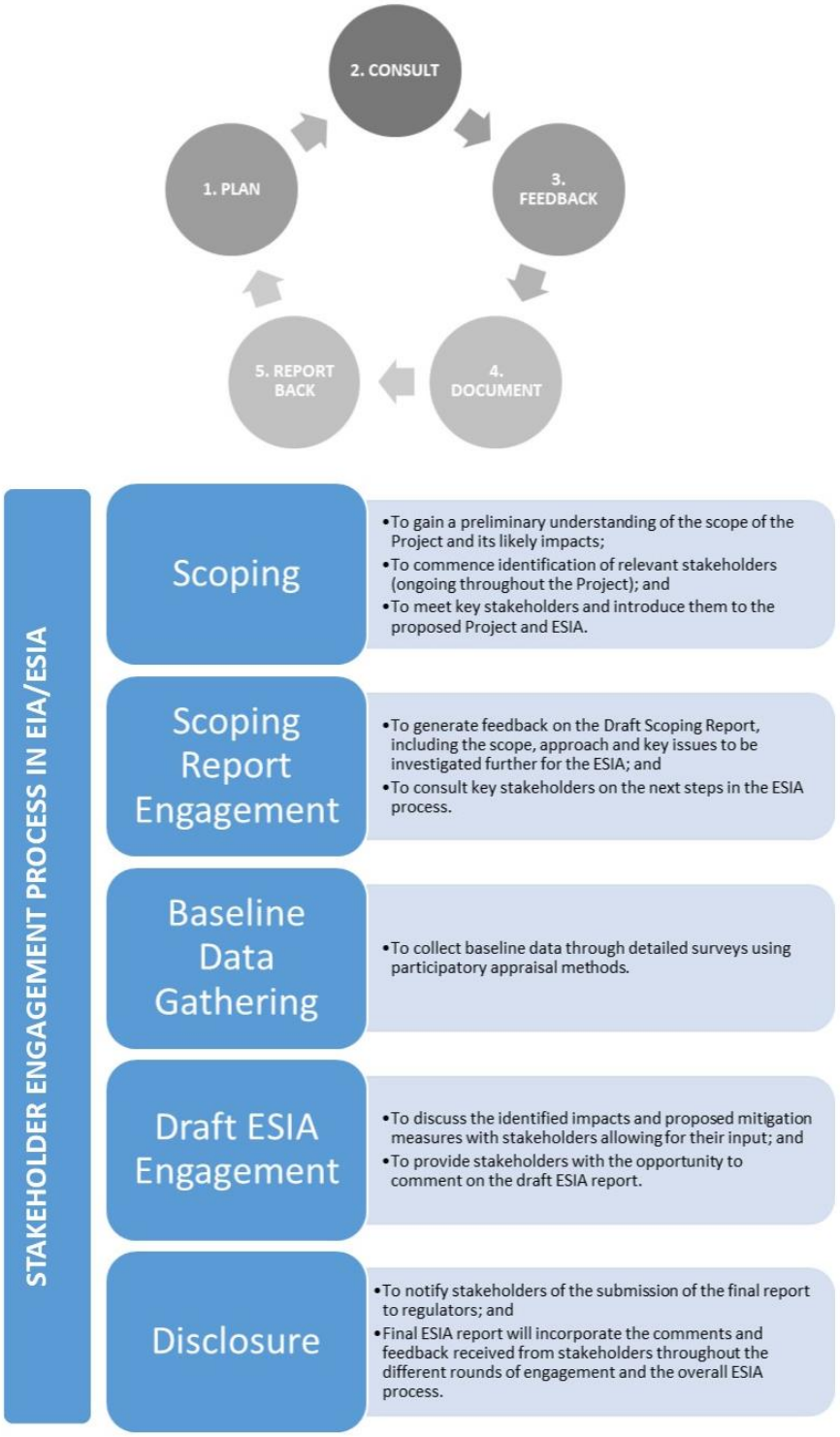
All stakeholder engagement activities for the Project will be informed by an iterative approach to stakeholder identification and analysis. The overall objectives and approach to engagement is shown in *Figure G4.1* and the process followed during the ESIA is presented in *Figure G4.2*. The next level of engagement undertaken will be the disclosure of the final ESIA report planned for July 2018.

Figure G4.1 Objectives of Engagement



Source: ERM (2018)

Figure G4.2 ESIA Engagement Process



Source: ERM (2018)

5 PROJECT STAKEHOLDERS

5.1 INTRODUCTION

This section describes the stakeholder groups identified to date, but stakeholder identification is an on-going process, requiring review and update as the Project progresses. The approach to engagement with identified stakeholder groups is outlined in *Section 5.2*.

5.2 STAKEHOLDER IDENTIFICATION AND ANALYSIS

Key objectives of stakeholder identification are to:

a) establish which organisations, groups and individuals may be directly or indirectly affected (positively and/or negatively), or have an interest in the Project; and
b) understand their needs and expectations for engagement.

Stakeholder analysis enables engagement to be tailored appropriately to the needs and interests of different stakeholder groups to ensure their views and concerns are addressed in a suitable manner. In order to ensure that the engagement process is inclusive, it is important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the Project because of their marginalised or vulnerable status.

A diverse range of Project stakeholders have been identified. Details of these stakeholders have been compiled to enable the Project to readily communicate with them. The stakeholder lists developed will be continually updated by the Consortium as the Project progresses. Stakeholder groups identified (during the ESIA) are listed in *Table G5.1.* In terms of governmental stakeholders, engagement with the relevant Ministries is undertaken through the Director of the Environment and Sustainable Development (at the Ministry of Housing, Town Planning and Environment Planning), as the single point of contact, who will disseminate relevant information to other Ministries.

Table G5.1 Stakeholder Groups and Connections to the Project

Project Stakeholders	Relevance/ Importance of Stakeholder
National Government Stakeholders	
Ministry in charge of Investments under the Presidence	The Ministry oversees the administrative aspects of public and private investments, links the government strategies with the Ministries and coordinates the Ministries to facilitate investments into the country.
Ministry of Labour and Administrative Reform	The Ministry is responsible for implementing government policy in the areas of labour, employment, employability, social relations, management of agents of the State and social protection. The ministry has authority over the Labour inspectorate.

Project Stakeholders	Relevance/ Importance of Stakeholder
Ministry of Housing, Town Planning and Environment Planning	The Ministry is responsible for drafting and implementing policies related to the habitat, urban development, environment and spatial planning in order to promote a balanced and harmonious development of the territories. In addition, MHUE is tasked with drafting and implementing the urban and regional development policy. The Ministry also develops legislative and regulatory instruments, monitors environmental standards in the areas of infrastructure, housing, equipment, transport and energy in partnership with the other relevant ministries. The Ministry is in charge of enforcing and overseeing environmental impact studies. The MHUE comprises of two Directorates: • The Spatial Planning, Town Planning and Housing Directorate is tasked with drafting, implementing and controlling, over the territory, the ministerial policies in relation to territory development and spatial planning, town planning, habitat as well as public and private constructions; and • The Environment and Sustainable Development Directorate is tasked with drafting, implementing and controlling the ministerial policies in relation to the environment and sustainable development over the territory. The Environment and Sustainable Development Directorate is seen as the key point of contact for the project. A meeting was held with the Directorate in order to present the Scoping report in February 2018 and another meeting was held in May 2018 to present the draft ESIA findings, and to obtain their feedback.
Ministry of Energy and Natural Resources	The Ministry is responsible for the implementation of the sectoral policies relating to energy and natural resources, including renewable energy, and to the promotion and development of oil and mining resources, both onshore and offshore. The Ministry is also tasked with implementing policies relating to access to and supply of electricity across the territory.
Ministry of Equipment and Transport	The Ministry is responsible for the implementation and coordination of road, rail, sea and air transport policies as well as of the national meteorological services. It is also responsible for the management, operation, maintenance and renovation of public facilities. In addition, the Ministry is responsible for designing and implementing the government's policy on road, ports and airport infrastructure.
Ministry of Agriculture	The Ministry is responsible for the implementation of sectoral policies in the areas of food security, rural development and water. A meeting was held with the Ministry during the social baseline engagement stage.
ONEAD (Office National de l'eau et de l'assainissement de Djibouti – The National Office for Water and Sanitation, Djibouti)	ONEAD has exclusivity to supply water in Djibouti, and is also in charge of waste management. The Ministry of Agriculture is responsible for supplying water to rural communities, supported by ONEAD. ONEAD confirmed that they would be able to supply the amount required by the Project, gave indicative costings for the water including transportation, and confirmed that the Project would have to provide a storage facility on site.
Electricté de Djibouti (EDD)	During the scoping visit in December 2017, the social baseline surveys in February 2018 and the draft ESIA disclosure activities in May 2018 meetings were held with representatives of EDD.

Project Stakeholders	Relevance/ Importance of Stakeholder
Local / District Authority Stakeholders	
Arta Prefecture (Regional Prefecture)	The project's area of social influence spreads throughout the zone situated between Lac Assal and the Gulf of Ghoubet, and this area is located at the borders of the administrative regions of Tadjourah and Arta. Due to this, the project's activities are included in the Regional Development Plans of both regions. Individual meetings were held with both Prefects (Administrators) during the social baseline data engagement, in order to share information about the project.
Tadjourah Prefecture (Regional Prefecture)	As above, the Prefect (Administrator) of Tadjourah was engaged during the social baseline data collection in order to exchange information.
Lac Assal Sub-prefecture	The Lac Assal village is the seat of the sub-prefecture, and the sub-prefect lives in the village. The Sub-prefect was invited and attended the public consultation meeting held in Lac Assal village as part of the social baseline studies and also attended the draft ESIA engagement session in Lac Assal village in May 2018.
Karta Sub-prefecture	A meeting was also held with the Karta authorities during the social baseline engagement in order to cross-reference data collected in Lac Assal village and Cité Moumina, and also to collect data related to basic services provided at the sub-prefecture level. It is reported that – due to the lack of health care facilities in Lac Assal village and Cité Moumina – the residents visit the clinic in Karta sub-prefecture. Similarly, the primary school closest to the project zone is located in Karta.
Community Stakeholders / Traditional leaders	
Okal general	The Okal general, who is the highest customary authority of the Debne confederation of tribes, resides in Cité Moumina. The Okal general always comes from the Omarto tribe, and at the village level he is also the representative of his tribe, and has considerable power to mobilise the community. There are three other tribes (Mirganto, Hayssamaleh and Fadihiteh) who are also represented by a customary authority called the makaban. The group of four customary authorities that represent the four tribes meet up in a committee called the "Village Organisation and Management Committee". This committee has no formal existence but plays a very important role in Cité Moumina, and all decisions are taken at the committee level. The committee pronounces itself upon the current village affairs and controls key issues for the village economy, especially the list of candidates available for work when Salt Investment, or other companies or work-sites need labour. Cité Moumina village was inaugurated in 2016 and does not yet have any official administrative agents. A meeting was held with the Okal general during the social baseline engagement, in order to share project information with him, and to consult him for his points of view. The Okal was also consulted during the draft ESIA engagement session in May 2018.
Makaban (Representatives of tribes at the local level, Cité Moumina village)	As above, the Makaban form part of the customary authority in the Cité Moumina village. The authority of the Makaban is only recognized in a limited sector (Lac Assal sector) and by the members of their respective tribes. The Okal general exercises his authority over a larger area. Representatives of the Makaban were invited to, and attended, the public consultation session held in Cité Moumina as part of the social baseline engagement in February 2018 and also attended the draft ESIA engagement session in May 2018.

Project Stakeholders	Relevance/ Importance of Stakeholder
Lac Assal Village chief	The village chief manages current affairs of the village. He is head of security at Salt Investment and plays a key role in the facilitation of relationships between the company and the village. The selection of candidates for jobs is part of the prerogatives of the village chief. He is also the brother of the Minister in charge of Investments and the first entrepreneur who founded Lac Assal village at the time of the Lac Assal Exploitation Company. He thus wields considerable influence in the village. He was invited to, and attended, the public consultation session held in Lac Assal village as part of the social baseline engagement and also attended the engagement session in Lac Assal village on the draft ESIA findings in May 2018.
Imam of Cité Moumina Mosque	The Imam of Cité Moumina Mosque was invited to and attended the draft ESIA engagement consultation event in May 2018.
NGOs, Associations and Other Organisation & Individuals	
Association 'Difu'	The association is active in the Lac Assal village, with the purpose to promote village hygiene and cleanliness. The President of the association was invited to, and attended, the public consultation session held in Lac Assal village as part of the social baseline engagement.
Ghoubet Association	The association is active in the Lac Assal village. Members of the association were invited to, and attended, the public consultation session held in Lac Assal village as part of the social baseline engagement.
Ghoubet Women's Association	The association is active in the Lac Assal village. Members of the association were invited to, and attended, the public consultation session held in Lac Assal village as part of the social baseline engagement.
Youth Association	The association is active in the Lac Assal village. Members of the association were invited to, and attended, the public consultation session held in Lac Assal village as part of the social baseline engagement.
Cité Moumina / Lac Assal Women's Association	The association is active in the area. Members of the association were invited to, and attended, the public consultation session held in Cité Moumina as part of the social baseline engagement and also the draft ESIA engagement event in May 2018.
Community residents	In addition to the above-mentioned public consultation and individual meetings, the Project team engaged community members through various meetings throughout the social baseline collection stage. The team held 4 focus group discussions with key informants, and individual interviews with other key informants to gather information on issues such as pastoral practices, customary rights for access to other land-based resources, fishing practices, territorial structure and local governance, and cultural heritage sites. These studies were undertaken in addition to the household surveys which were conducted with 40 households from the project area. Residents were also invited to attend the draft ESIA consultation event in May 2018.

6 STAKEHOLDER ENGAGEMENT

This section expands on the process described in *Section 4*, providing more detail on the engagement undertaken during the scoping visit and baseline data collection. Plans for future engagement is also described.

6.1 COMMUNICATION METHODS AND CONSIDERATION FOR ENGAGEMENT

A variety of communication methods have been used during engagement on the draft Scoping report and social baseline data collection. They were determined based on the level and objective of engagement, as well as the target group. Communication methods have included:

- presentations outlining the Project and ESIA process; and
- meetings with key interest groups and potentially impacted and/or interested stakeholders.

Communication will continue between the Consortium and stakeholders throughout the ESIA process, with the next step being the public disclosure of the final ESIA in July 2018. This will involve community presentations and engagement on the draft, and the outputs of these meetings will be incorporated into the final version of the ESIA. *Section 6.4*).

6.2 ENGAGEMENT UNDERTAKEN TO DATE

Stakeholder engagement activities throughout the scoping visit and baseline data collection stages are summarised in the following sections and a full list of meetings held to date is presented in *Table G6.1*.

6.2.1 *Scoping Site Visit Engagement*

Stakeholder engagement was commenced by the ESIA project team during the Scoping site visit in December 2017. During the Scoping site visit, meetings were held with the Electricté de Djibouti (EDD).

These meetings aimed to:

- introduce the Project, the ESIA and proposed stakeholder engagement process;
- introduce the ESIA team;
- obtain an initial understanding of the Project area;
- gather any existing reports, plans and data to support the impact assessment; and
- gain an initial understanding of the perceptions and any concerns about the Project.

6.2.2 *Scoping Engagement and Baseline Data Collection*

Further stakeholder engagement meetings were held in February 2018 to:

- introduce the Project to stakeholders and inform them of the ESIA process;

- present the findings of the Scoping Report;
- discuss potential environmental and social impacts associated with the Project and potential options for their mitigation and management;
- identify and discuss any issues of concern;
- provide stakeholders with an opportunity to ask questions.

As part of this process, meetings were held with the regional administrative authorities from the Arta and Tadjourah prefectures. In addition, public consultation meetings were held with local administrative and customary authorities, community representatives and members of different local associations from the Lac Assal village and Cité Moumina communities. These meetings were attended by 18 local community representatives.

Focus group discussions were arranged, in addition to key informant interviews to gain a thorough understanding of the project area and to ensure that all stakeholders had an opportunity to send a representative. At all of the meetings, details of the Project were presented and stakeholders were invited to ask questions and comment on potential impacts and mitigation measures.

6.2.3 Draft ESIA Engagement

Following baseline data analysis and drafting of the impact assessment and mitigation measures, an engagement meeting was held to:

- update stakeholders regarding the Project;
- disclose ESIA findings, including identification of impacts and proposed mitigation measures; and
- provide details of the grievance mechanism and company contact details.

For this stage of engagement stakeholders were re-visited to provide an update of the project and present the contents of the draft ESIA, including detail on the impacts and proposed mitigation measures. This included formal meetings and meetings in communities. This stage was held in early May 2018.

A list of meetings held is provided in Table G6.1

Table G6.1 Stakeholder Engagement undertaken during Scoping, Social baseline and Draft ESIA disclosure stages

Date	*Stakeholder*	*Participants*		
		Male	*Female*	*Total*
Government meetings				
12 Dec 2018 17-19 Feb 2018 3 May 2018	Electricté de Djibouti (EDD)	1		1
11 Feb 2018	Ministry of Agriculture	1		1
26 Feb 2018	Ministry of Habitat, Urban Planning, Environment and Town Planning (MHUE)	1		1
2 May 2018	Environment and Sustainable Development Directorate (part of MHUE)	2		2
	Total	*5*		*5*
Local level meetings				
8 Feb 2018	Arta Prefecture, meeting with Prefect	1		1

Date	Stakeholder	Participants		
		Male	*Female*	*Total*
10 Feb 2018	Cité Moumina, Focus Group discussion with customary authorities	2		2
10 Feb 2018	Karta authority	1		1
11 Feb 2018	Tadjourah Prefecture, meeting with Prefect	1		1
14 Feb 2018	Public consultation in Lac Assal village. Attendees included: Sub-prefect and Village Chief of Lac Assal, members of local associations (including the Women's and Youth associations)	11	2	13
17 Feb 2018	Meeting with Okal, customary authority	1		1
17 Feb 2018	Public consultation in Cité Moumina community. Attendees included customary authorities and village elders.	6		6
19 Feb 2018	Focus Group discussion, Cité Moumina / Lac Assal Women's Assocation		2	2
18-19 Feb 2018	Individual interviews with Key informants (such as livestock breeders, fishermen, manager of the tourist resort) during the social baseline engagement.	7		7
15-19 Feb 2018	Household surveys were completed with 40 households in the project area during the social baseline engagement.			40
3 May 2018	Public consultation on draft ESIA in Lac Assal village's Community Building. Attendees included: Sub-prefect and Chief of Lac Assal village, Lac Assal Women's Association, General Okal, Imam of Cité Moumina Mosque, Makaban (customary authorities representing the Debné tribes) and community members.	14	2	
	Total	*30*	*6*	*74*
	Grand Total	***35***	***6***	***79***

6.3 OUTCOMES OF ENGAGEMENT

During the three public consultation meetings, the discussions with the stakeholders were facilitated in order to include:

- presentations of the Project; and
- debates and exchanges on the potential impacts of the Project, on the proposed solutions to minimise negative impacts and maximise positive benefits.

The themes brought up during these public meetings included:

- Economic issues and the management of expectations concerning local employment. The community members have high expectations in terms of access to jobs, both during the construction phase of the project and as a result of the electrification of the area. Some members expressed concerns that outsiders would take the jobs, due to the lack of schooling and professional training of the local population – and this would reportedly be unacceptable for them. EDD confirmed that local employment would be favoured. The recommendation from the meetings is to approach the village elders to identify manual labourers, and to look into opportunities for training of local youth.

- Constraints linked to the loss of the land needed for the installation of Project infrastructure. The outcome of the meetings was that the project footprint does not constitute a major issue for the community. The affected land is unsuitable for any productive activity, and the Project is thus not expected to hinder any agricultural or pastoral projects of the residents. During the discussion on this issue, the community members did however raise concerns about the Project actually materialising: reportedly, several projects have been planned in the past with no follow through.

- Issues linked to demography and potential in-migration: in Lac Assal village, a potential demographic increase as a result of the various projects in the zone, is seen as an opportunity. The only concerns raised related to unplanned or chaotic urbanisation, and waste management. In Cité Moumina, the community members maintained that the presence of workers or jobseekers from other areas would be a concern for them, and thus the village elders should be updated continuously to manage any potential influx of people.

- Issues linked to the environment and the ecosystem: participants were given the opportunity to ask questions regarding windfarms, and noise pollution was the theme that raised most concerns.

- Issues around health and safety: there were no particular concerns related to health and safety during the construction phase, especially if local people were to be in charge of site safety. There were however questions related to the safety of the area once the turbines have been installed (lightening, and fears that the rotor blades may detach and fall). The EDD representative was able to reassure the participants by explaining the Project's security mechanisms.

- Cultural heritage: there were concerns that the cemeteries located just outside the project perimeter would be damaged by the Project. These fears were linked to prior bad experiences with other construction projects.

- It was noted that a good communication and information sharing system between the project and the local communities is essential. EDD noted that there are plans for weekly meetings with the community; this plan was welcomed by the community.

These issues have been considered in the ESIA, particularly in the Technical Annexes of *Volume II* (see *Annexes B, E, F and H*) and incorporated into this SEP. The minutes of the public meetings are presented in *Annex F.*

6.4 FUTURE ENGAGEMENT

6.4.1 Disclosure

Following the completion of the Final ESIA Report, the following Project documents will be disclosed in French:

- full Final ESIA Report;
- Non-Technical Summary (NTS); and
- Stakeholder Engagement Plan (SEP).

Additionally, the following activities will be undertaken:

- newspaper advertisements will announce the publication of the Final ESIA Report and detail the consultation period;
- the Community Liaison Officer will inform local residents that disclosure documents are available; and
- an announcement will be made on the Project website.

It is expected that disclosure of the Final ESIA Report will be in July 2018.

6.4.2 Post ESIA Engagement

Stakeholder engagement will continue following completion of the ESIA process. A project SEP will be developed and will include the following key elements:

- Pre-Construction Engagement: The project will ensure that there are sufficient community relations resources on the ground to manage grievances and undertake engagement regarding timeframes for construction activities. A series of meetings will be held in impacted areas, including along the transportation route with affected people.

- Construction Engagement: During this phase, the community relations team will respond to grievances and continue to hold meetings with stakeholders as required to address issues of concern. In addition, the team will monitor the implementation of the mitigation measures. The number of grievances and meetings is likely to be greatest during the construction period due to the nature and extent of predicted impacts.

- Operations Engagement: Ongoing engagement will be undertaken as required to manage community concerns and issues as well as to address grievances. Meeting frequency and grievances are expected to reduce over time as stakeholders adapt to the presence of the windfarm.

7 GRIEVANCE MECHANISM

7.1 INTRODUCTION

Stakeholder engagement is a two-way process. It is therefore important to ensure that there is a grievance mechanism to allow stakeholders affected by or interested in the Project to present their input (e.g. opinions, requests, suggestions, feedback and grievances) for consideration and, if required, seek redress. It should be noted that, even where not all feedback or grievances are deemed 'valid' or applicable to the context of the Project, the grievance mechanism needs to function in a non-judgemental manner and record all feedback received.

The grievance mechanism is the responsibility of the Project and will be designed to identify and manage issues throughout the entire Project lifecycle. A grievance mechanism will be developed and stakeholders will be informed of it during the draft ESIA engagement. The Project will appoint a representative (a Community Liaison Officer), who will be responsible for grievance management. Grievances will be passed through the Community Liaison Officer in the first instance, who will be responsible for passing the grievance on to the appropriate person in line with the Project grievance mechanism. During construction, this will be expected to report to the Chief Executive Officer of FMO (as the EHS Lead) and Project Manager. The grievance mechanism relevant for the construction phase of the Project is presented in *Appendix G1*.

7.2 OBJECTIVES OF THE GRIEVANCE MECHANISM

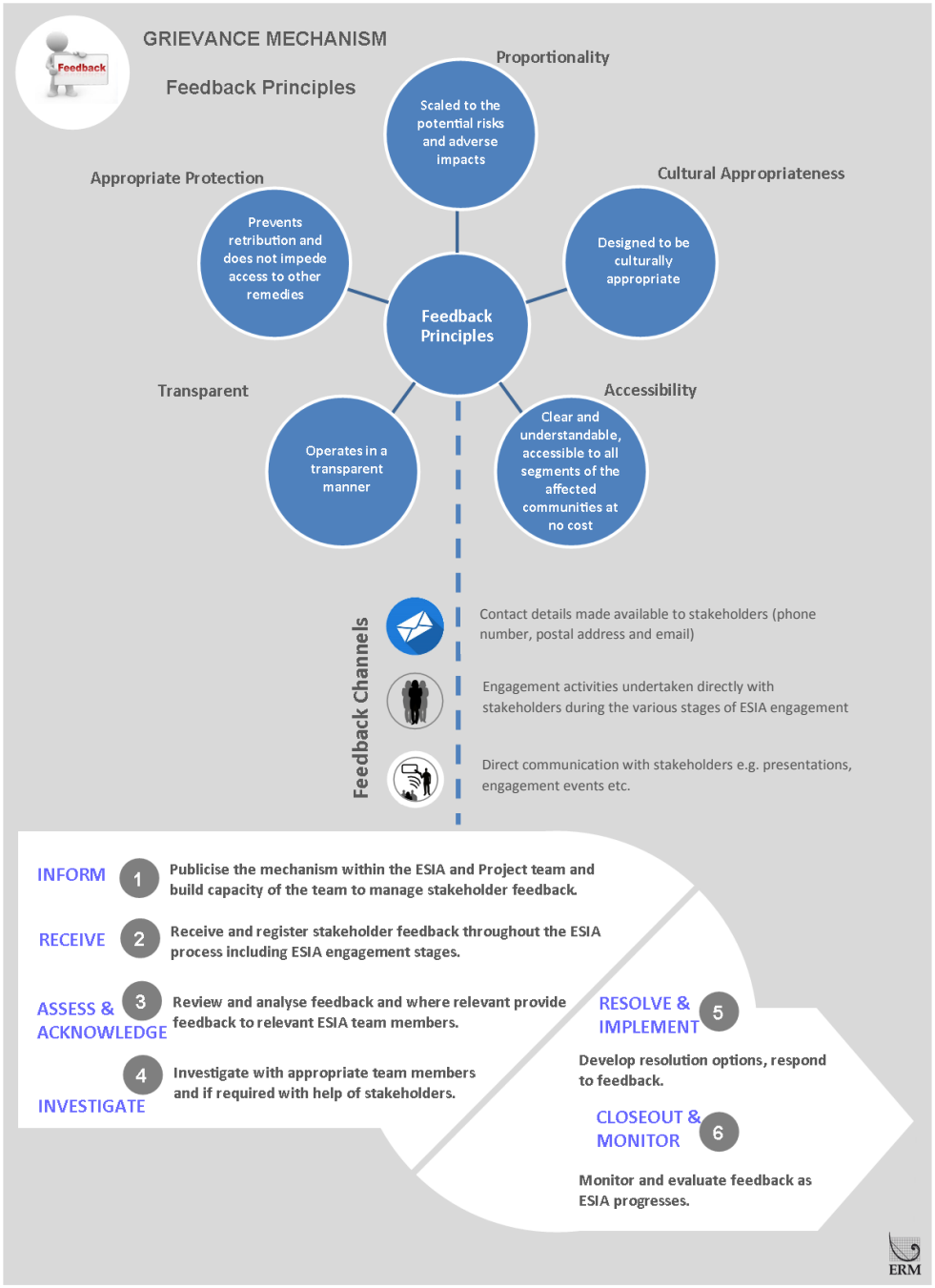
The grievance mechanism outlines the Project's approach to accepting, assessing, resolving and monitoring grievances from stakeholders regarding the Project and its activities (including all those of contractors). Timely redress or resolution of grievances is vital to ensure successful implementation of the Project. The Project grievance mechanism presented in *Appendix F1* specifies that a response will be provided within five days for minor grievances and within 15 days for more serious grievances.

Grievances can encompass minor concerns as well as serious or long-term issues. They might be felt and expressed by a variety of parties including individuals, groups, communities, entities, or other parties affected or likely to be affected by the social or environmental impacts of the Project. It is essential to have a robust and credible mechanism to systematically handle and resolve any complaints that might arise in order that they do not escalate and present a risk to operations or the reputation of the company (nationally or internationally). If well-handled, an effective grievance mechanism can help foster positive relationships and build trust with stakeholders.

7.3 KEY COMPONENTS OF A GRIEVANCE MECHANISM

The grievance management process shall include the components highlighted in Figure G7.1. These are described in more detail in *Appendix G1.*

Figure G7.1 ESIA Grievance Mechanism



Source: ERM (2018)

7.4 CONTACT DETAILS

The following feedback channels have been available to stakeholders throughout the ESIA process to allow them to submit any questions, concerns or grievances:

- Public meeting
- Focus group discussions and key informant interviews
- Telephone the Community Liaison Officer
- In writing to the Community Liaison Officer

These communication channels will continue throughout the Project.

8 MONITORING AND REPORTING

8.1 INTRODUCTION

To ensure that the desired outcomes are being achieved, stakeholder engagement has been monitored throughout the ESIA process.

8.2 MONITORING STAKEHOLDER ENGAGEMENT ACTIVITIES

It is important to monitor the on-going stakeholder engagement process to ensure that consultation and disclosure efforts are effective, and in particular that stakeholders have been meaningfully consulted throughout the process.

There are two key ways in which the stakeholder engagement process will be monitored:

1. Review of engagement activities in the field:

- During engagement with stakeholders the ESIA team will confirm whether the way in which messages are being conveyed is appropriate and the messages are clear.
- The approach to engagement and messages to be used will also be discussed with the Project management to gain their feedback.

2. The use of engagement tools developed through the ESIA engagement including the:

- stakeholder database;
- issues Log or Issues and Response table; and
- meeting records of all consultations held.

The issues and response table or issues log will be used to manage on-going Project issues.

8.3 REPORTING STAKEHOLDER ENGAGEMENT ACTIVITIES

Evaluation of performance will assess the extent to which the engagement activities and outputs meet those outlined in the SEP. In assessing performance the following will be considered:

- information and materials disseminated;
- place and time of formal engagement events and level of participation including by specific stakeholder groups;
- number of comments received assessing the topic, type of stakeholder and details of feedback provided;
- numbers and type of stakeholders who come into contact with the Project;

- comments received by government authorities, local leaders and other parties and passed to the Project; and
- numbers and types of feedback and / or grievances and the nature and timing of their resolution.

8.4 GRIEVANCE MANAGEMENT

The Project will nominate a Community Liaison Officer responsible for grievance management, who shall report directly to the Project Manager. The officer responsible for grievance will maintain a grievance log and determine the significance of the grievance in accordance with criteria set out in *Appendix G1* to this Annex.

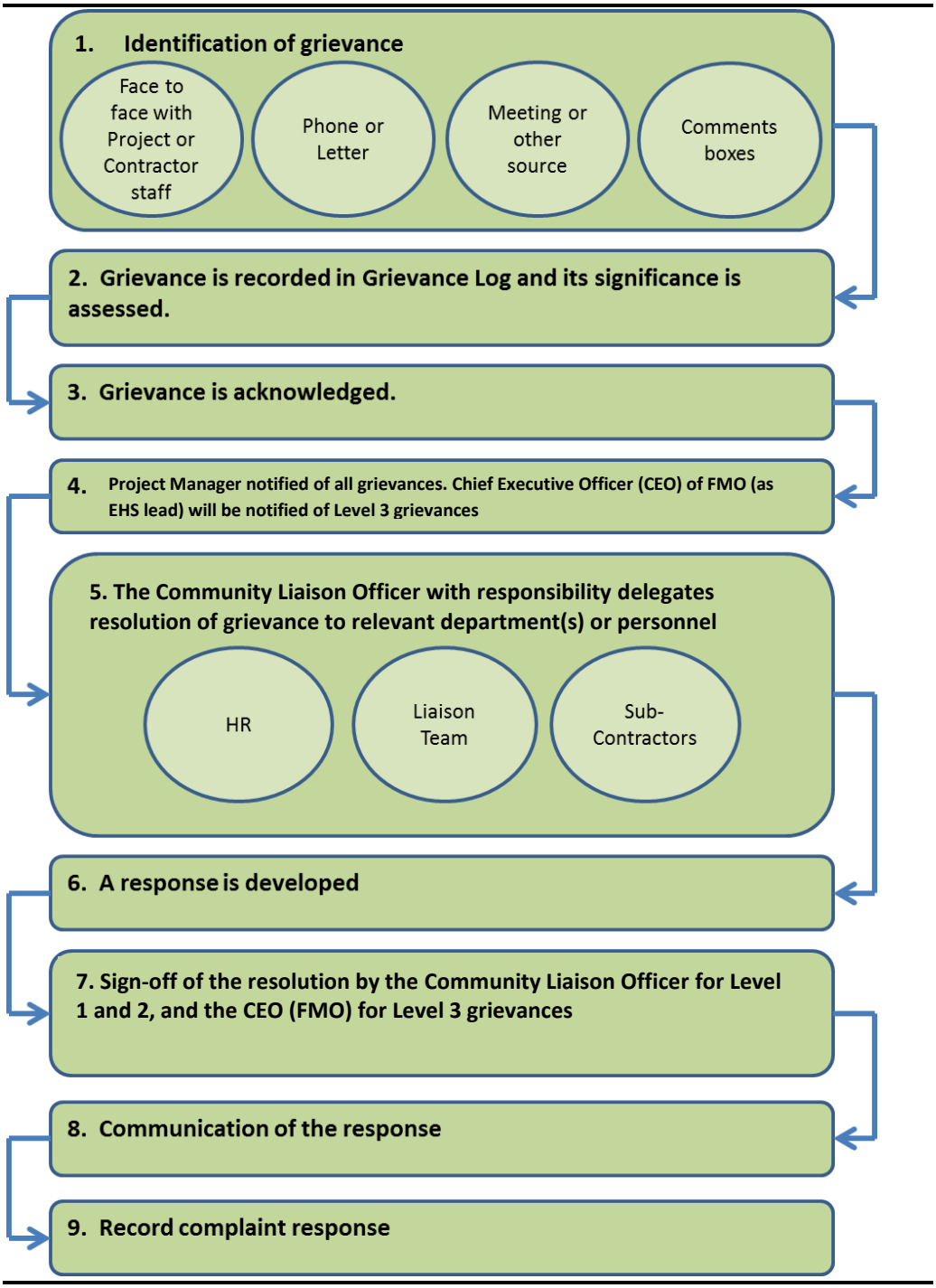
Grievances will be responded to within 5 days for smaller isolated issues (level 1 grievance) and within 15 days for more serious issues (level 2 or 3 grievance).

Appendix G1

Grievance Procedure

There are 10 steps that complete the formal grievance process. This process is also summarised in *Figure G1-1.1,* and each step is described below.

Figure G1-1.1 Grievance Procedure



Step 1: Identification of grievance through personal communication with Project or Contractor staff, phone, letter, during meeting, or other communication.

Step 2: Grievance is recorded in the 'Grievance Log' (written and electronic) within one day of identification. All grievances will be registered during construction and kept on file with the Project Manager. The Project will also nominate a person responsible

for grievances (Community Liaison Officer), who will also hold/own the grievance log. Once logged, the significance of the grievance will be assessed within five to seven days using the criteria outlined in *Box G1-1.1.*

Box G1-1.1 Significance Criteria

Level 1 Complaint: A complaint that is isolated or 'one-off' and essentially local in nature. These will largely include issues that do not require compensation and that can be resolved through a face-to-face meeting between the complainant and Project.

Note: Some one-off complaints may be significant enough to be assessed as a Level 3 complaint e.g., when a national or international law is broken (see Level 3).

Level 2 Complaint: A complaint which is widespread and repeated (e.g., dust from construction vehicles).

Level 3 Complaint: A one-off complaint, or one which is widespread and/or repeated that, in addition, has resulted in a serious breach of the Project's policies or national law and/or has led to negative national/international media attention, or is judged to have the potential to generate negative comment from the media or other key stakeholders (e.g., creation of water shortage, significant damage to property, accidents causing significant injury to individuals or a fatality).

Step 3: Grievance is acknowledged through a personal meeting, phone call, or letter as appropriate, within a target of three working days after submission. If the grievance is not well understood or if additional information is required, clarification should be sought from the complainant during this step.

Step 4: The Project Manager is notified of all grievances while the Chief Executive Officer is notified of all Level 3 grievances. The EHS Manager will, as appropriate, support the Community Liaison Officer in deciding who should deal with the grievance, and determine whether additional support into the response is necessary.

Step 5: The Community Liaison Officer delegates the grievance within five to seven days via e-mail to relevant department(s)/ personnel to ensure an effective response is developed e.g., HR, Project or Contractor staff etc. for Level 2 and 3 grievances. For Level 1, the grievance will be delegated immediately upon acknowledgement.

Step 6: A response is developed by the delegated team and Community Liaison Officer within 15 days for Level 2 and 3 grievances, with input from senior management and others, as necessary. A response will be provided within 5 days for Level 1 grievances.

Step 7: The response is signed-off by the senior manager for Level 3 grievances, the Community Liaison Officer for Level 2 grievances within 15 days. In situations where the grievance requires more than seven working days for investigation, the complainant will receive an explanation of the situation in writing or in person. The sign-off may be a signature on the grievance log or an e-mail which indicates agreement, which should be filed by the Community Liaison Officer and referred to in the grievance log. Sign-off for Level 1 grievance by the Community Liaison Officer will be within 5 days.

Step 8: Communication of the response should be carefully coordinated. The Community Liaison Officer ensures that an approach to communicating the response is agreed and implemented.

Step 9: Record the response of the complainant to help assess whether the grievance is closed or whether further action is needed. The Community Liaison Officer should use appropriate communication channels, most likely telephone or face to face meeting, to confirm whether the complainant has understood and is satisfied with the response. The complainant's response should be recorded in the grievance log.

Step 10: Close the grievance with sign-off from the Community Liaison Officer, who assesses whether a grievance can be closed or whether further attention is required. If further attention is required the Community Liaison Officer should return to Step 2 to re-assess the grievance. Once the Community Liaison Officer has assessed whether the grievance can be closed, they will sign off or seek agreement from the Chief Executive Officer and Project Manager for level 3 grievances, to approve closure of the grievance. The agreement may be a signature on the grievance log or an equivalent e-mail, which should be filed by the Community Liaison Officer and referred to in the grievance log. It is expected that all Level 1 grievances will be closed within 7 days. The process may take longer for Level 2 and Level 3, depending on the response of the complainant.

A grievance that remains unresolved despite following all the available channels to solve it will be forwarded to Legal Counsel for further action. In such cases, the complainant has the right to refer such issues to; a local institution (if applicable); a formal organisation for dispute resolution; or to the courts.

Annex H

Livelihood Restoration Framework

INSUCO
Local understanding for sustainable solutions

ERM

avril 2018

Livelihood Restoration Framework for a Wind Farm Project in Ghoubet

Table of Contents

List of Tables

List of Figures :

List of Maps

1. Livelihood Restoration Framework (LRF)

1.1. Introduction

This section is an overview of the project and of the objectives of the Livelihood Restoration Framework.

1.1.1. Project Context

The Wind Farm Project is part of the national policy « Vision Djibouti 2035 », of which one of the aims is to make Djibouti the first African country to use 100% renewable energy by 2020. The Gulf of Ghoubet was identified as one of the most suitable areas in the country for a wind farm, due to its consistent high wind speeds throughout the year. Furthermore, the site is close to existing road infrastructure.

1.1.2. Purpose of the Livelihood Restoration Framework

As shown in the Social and Environmental Impact Assessment, the project land-take may affect the local population's economic activities. At first glance, the project should not cause any physical or economic displacement and does not warrant undertaking a livelihood restoration plan. The project will nevertheless impact the economic activities of the local population, it is therefore necessary to consider national law and international standards reference to evaluate what should be elaborated in order to take into account that impact. As it will be analysed further down, national laws or frameworks do not precise particular activities or safeguards for impact on people's economic activities, therefore the IFC performance standards will be considered.

Considering IFC PS 5 and considering the fact that the exact nature of the restriction on the land use or the magnitude of impact of the project on those pastoral activities is not yet well known, the client should develop and equip the project with a Livelihood Restoration Framework (LRF). The LRF should underline the principles that have to be looked at to ensure the compatibility of the project with the IFC PS5 and IFC PS1 when appropriate.

This LRF, through its different component will ensure to:

- Determine the project and persons affected by the project;
- Determine the legal framework within which the project should be developed: a gap analysis between the national framework and the international one will be done regarding physical and economic displacement;
- Ensure that consultation with the affected communities and definition of the socio-economic profile of the project area are done with respect to access to vital opportunities and services (socio-economic survey and analysis of findings). Those consultations are to be defined within the stakeholder engagement plan;
- Precise the existence and functioning of a grievance mechanism that should enable all stakeholders or citizen to have their grievance heard and considered;
- Establish the different actions that could be taken to balance the impacts on the economic activities.

If a resettlement action plan is to be implemented, through the application of all those steps, the standards will be carefully respected.

The purpose of the LRF is also to limit or even eliminate any negative effects on the local economy and to enable the local populations to take advantage of the project benefits. Based on the ESIA, the actions to be taken to balance the impacts should aim to the objective of the restoration and/or improvement of the livelihoods of the Project Affected Persons (PAP) and the safeguard of pastoral routes. This goal could be achieved if the following specific objectives are attained:

- Support and oversee pastoral practices in the project area;
- Launch micro-credit and Income Generating Activities (IGA) to support other sources of revenue for Project Affected Persons (handicrafts, fishing, trade);
- Provide skills development for the youth.

1.1.1. Document Structure

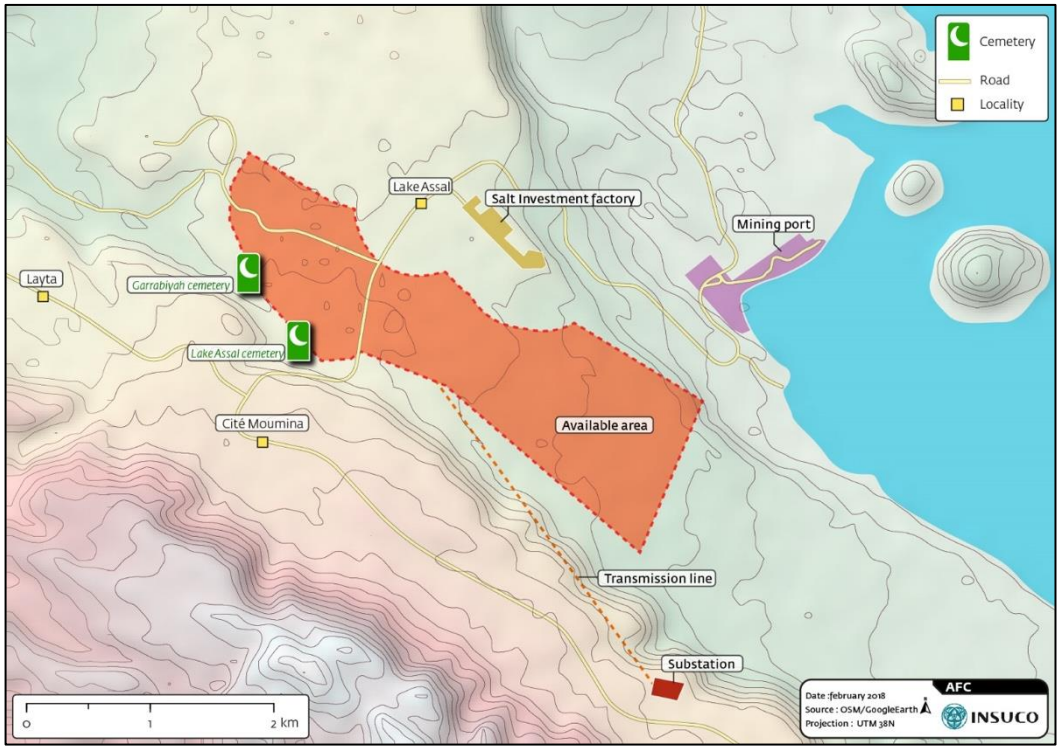
The document will follow the main point that should be addressed by the LRF:

- A brief description of the project and its context that can feed in the determination of the impacts;
- The examination of the legal and institutional frameworks that regulate compensation and livelihood restoration as well as a comparative analysis of the Djiboutian legal framework and international standards;
- The consideration of the stakeholders; it includes stakeholders engagement and mechanisms for managing grievances;
- A presentation of the socio-economic situation of the area based on the results of the social baseline studies that will feed in the definition of the social impacts of the Project;
- The identified compensation strategies;
- The presentation of the approaches and principles of compensation: this section will include elements of planning, the roles and responsibilities assigned to the various actors and the community investment programme;
- The last section is dedicated to monitoring and evaluation.

1.2. Project Description

The project consists in the construction of a wind farm with a total production capacity of 60MW by means of thirteen wind turbines of a capacity of 4.8MW each. The electricity produced will be injected into a substation through overhead cables. The substation will be connected by another overhead cable to the 230kV circuits in the EDD transformer situated 3.5 km from the Project.

The project covers a surface of 396 hectares situated approximately 1 kilometre from the Gulf of Ghoubet, near the intersection of national roads n° 9 and n°10. The project area is located at the limit of the Tadjoura and Arta administrative regions.



Map 1 : Project Area and cultural heritage zones in proximity to the project zone

The following villages are situated close to the project area:

- Cité Moumina, located just over 600 metres to the south of the project boundary. The village has a population of 641 inhabitants.
- Lac Assal village, located about 500 metres to the north of the project boundary. The village houses the Sub-prefecture and has a population of 139 inhabitants.
- Layta village, situated a kilometre from the western boundary is uninhabited since 2016 when most of the population moved to the newly constructed village of Cité Moumina.

National road n° 9 and the mining road that links Lac Assal to Ghoubet mining port both pass through the project affected area. No nomadic camps where detected in the area close to the project. Remnants of ancient facilities and burial sites close to the project boundary indicate that the zone was an area of pastoral activity in the past. Since the 1980's the worsening of climatic and agro-ecologic conditions appears to have driven the pastoralists towards other pastures or even other activities.

Currently, migrating herds only sporadically pass through the direct project footprint and adjacent areas.

There are several projects in the zone. As stated in the national strategy document « Vision Djibouti 2035 », the Lac Assal area has been identified as the industrial hub of an economic development pole. It already harbours a mining port and a salt plant for treating Lac Assal salt. In the future, the project of creating an Assal Special Industrial Zone[1] would integrate energy production and the development of geothermal resources.

[1] Vision Djibouti 2035, Republic of Djibouti.

1.3. Legal and Institutional Framework

1.3.1. Introduction

The Livelihood Restoration Framework takes place within the legal and institutional framework of the Republic of Djibouti and the constraints of the IFC performance standards.

1.3.2. Djiboutian Legislation

Name of law	Description
General	
Loi n°82/AN/004th L creation and organization of the Ministry of Housing, Town Planning, Environment and Land use planning	Creation and organisation of the Ministry
Loi n°73/AN/004th L creation and organisation of the Ministry of Housing, Town Planning and Environment Planning.	*Creation and organisation of the Ministry of Housing, Town Planning and Environment Planning. – This law is now replaced by the Loi n°82/AN/004 L*
Décret n°2004-0092/PR/MHUEAT Creation of a national commission for sustainable development.	Responsible for drawing up a National Action Plan for Sustainable Development and a Strategic Framework.
Décret n°2004-0230/PR/MHUEAT establishing a national council of regional planning (CNAT)	Creation of the National Council of Regional Planning for the development and monitoring of the land planning policy.
Loi n°129/AN/16/7ème L on the approval of the Master Plans for Urban Development of the administrative centres of Ali-Sabieh, Arta, Dikhil, Obock and Tadjoura.	Adoption and application of the Master Plans for Urban Development of Ali-Sabieh, Arta, Dikhil, Obock and Tadjoura under the technical supervision of the Ministry of Housing, Urbanism, Environment and Land Management.
Land tenure and construction laws	
Loi n°171/AN/91 establishing and organizing the public domain.	Establishes the basic regime of the natural and artificial public domain of the State and the relative easements to which land and buildings of private property are subject. The minister in charge of the domain grants by decree the authorizations to occupy the public domain and to build there.
Loi n°173/AN/91/2e organisation of the State's private domain.	Definition and organisation of the State's private urban and country domains and rules for the cession of State land.

Name of law	Description
Loi n° 172 / AN / 91 / 2 e L Regulating compulsory purchase order for public use.	This law regulates the expropriation for public utility, which is carried out by authority of justice and whose procedure comprises 4 phases: the declaration of public utility; the cessation order, the essential purpose of which is to determine the properties to be expropriated and to give interested persons the opportunity to assert their rights and produce their titles; the pronouncement of expropriation by authority of justice; fixing the expropriation indemnity by a clerk.
Loi n° 177 / AN / 91 / 2e L organization of land ownership.	Establishes a land conservation service, which is responsible for guaranteeing property owners the roles they have in these buildings by registering all the buildings with the land books and publishing them. Registration is mandatory and final.
Loi n° 178/AN/91/2nd L Property Law.	Regulates property law in Djibouti-town.
Arrêté n°2006-0515/PR/MHUEAT Obligation for the Ministerial Departments, the Public Establishments and the Project Units to resort to the assistance of the State Technical Services during the realization of works of urban development and construction and during building permit applications	Carries requirements for Ministerial Departments, Public Institutions and Project Units to seek the assistance of state technical services during implementation of urban development and construction and when requesting permission to build.
Arrêté n°2007-0645/pr/MHUEAT amending and supplementing Order No. 73-1580 / SG / CG of 31 October 1973 on the organization of the procedure for examining and issuing the building permit	No building can be built without an Ordinary Building Permit issued under the conditions indicated by this decree. These provisions apply to all constructions built with permanent materials on public land registered in the territory's land register. The building permit is required for work performed on existing constructions if the work would change their external appearance.
Arrêté n°2010-0061/PR/MHUEAT on the reorganization of the investigation procedure and issuance of the Building Permit	Regulates the procedure for the issuance of building permits.

1.3.3. International Finance Corporation (IFC) Performance Standard 5

The IFC performance standards are international standards that supply project holders with guidelines for the identification of risks and impacts. They are designed to help projects avoid, mitigate and manage risks and impacts so as to allow them to pursue their activities sustainably. Performance standard 5 acknowledges that land acquisition and restrictions to land use may have negative impacts on the people and communities that use these lands. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Unless properly managed, involuntary resettlement may result in long-term hardship and impoverishment for the affected communities and persons, as well as environmental damage and adverse socio-economic impacts in areas to which they have been displaced.

For these reasons, involuntary resettlement should be avoided whenever possible. To help avoid expropriation and eliminate the need to use governmental authority to enforce relocation, project holders should aim to:

- Avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs;
- To avoid forced eviction.
- To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation and the informed participation of those affected.
- To improve, or restore, the livelihoods and standards of living of displaced persons.
- To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

1.3.4. IFC 5: general requirements

Hereunder, we listed all general requirements of the IFC Performance Standards number 5 that addresses: “Land Acquisition and Involuntary Resettlement”. However, the project is not concerned by all the elements, however the complete table serves here as a reminder.

Requirement	Description
Project Design (Paragraph 8)	Consider feasible alternative project designs to avoid or minimize physical and/or economic 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 (Paragraph 9)	The client will offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance. Compensation standards must be transparent and where livelihoods of displaced persons are land-based or where land is collectively owned the client will, where feasible, offer land-based compensation.”
Community engagement (Paragraph 10):	Disclosure of relevant information and participation of Affected Communities and persons will continue during planning, implementation, monitoring and evaluation of compensations payments, livelihood restoration activities and resettlement.
Grievance Mechanism (paragraph 11)	The client will establish a grievance mechanism to receive and address specific concerns about compensation and relocation that are raised by displaced persons or members of host communities.
Resettlement and livelihood restauration planning and implementation (paragraphs 12-16)	Where involuntary resettlement is unavoidable, the client will carry out a census with appropriate socio-economic baseline date to identify the persons who will be displaced by the project, to determine who will be eligible for compensation and assistance, and to discourage inflow of people who are ineligible for these benefits. 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 client will develop a Resettlement and/or Livelihood Restoration Framework outlining general principles compatible with this Performance Standard. Once the individual project components are defined and the necessary information becomes available, such a framework will be expanded into a specific Resettlement Action Plan or Livelihood Restoration Plan
Physical displacement (paragraphs 19-24)	If people living in the project area must move to another location, the client will: (i) offer displaced persons choices among feasible resettlement options, including adequate replacement housing or cash compensation where appropriate; and (ii) provide relocation assistance suited to the needs of each group of displaced persons, with particular attention paid to the needs of the poor and the vulnerable.
Economic Displacement (Paragraphs 25-29)	When the project will result in economic displacement, displaced persons will also be provided opportunities to improve, or at least restore their means of income-earning capacity, production levels and standards of living: • For persons whose livelihoods are land-based, replacement land that has a combination of productive potential, locational advantages and other factors at least equivalent to that being lost should be offered. • For persons whose livelihoods are natural resource-based measures will be made to either allow continued access or provide access to alternative resources. • If circumstances prevent the client from providing land or similar resources as described above, alternative income earning opportunities may be provided, such as credit facilities, training, cash, or employment opportunities; Cash compensation alone, however, is frequently insufficient to restore livelihoods. Transitional support should be provided as necessary to all economically displaced persons, based on a reasonable estimate of time required to restore their income-earning capacity, production levels and standards of living.

Requirement	Description
	Security of tenure should be provided to all affected households in the event that alternative land is provided as a compensation measure. Security of tenure means that resettled individuals or communities are resettled to a site that they can legally occupy and where they are protected from the risk of eviction.
Private Sector Responsibilities Under Government-Managed Resettlement (paragraphs 30-32)	In the case of acquisition of land rights or access to land through compulsory means or negotiated settlements involving physical displacement, the client will identify and describe government resettlement measures. If these measures do not meet the relevant requirements of this Performance Standard, the client will prepare a Supplemental Resettlement Plan that, together with the documents prepared by the responsible government agency, will address the relevant requirements of this Performance Standard. In the case of projects involving economic displacement only, the client will identify and describe the measures that the responsible government agency plans to use to compensate Affected Communities and persons. If these measures do not meet the relevant requirements of this Performance Standard, the client will develop an Environmental and Social Action Plan to complement government action.

1.3.5. Comparative Analysis

IFC PS 5 requirements	Djiboutian legislation Law n°172/AN/91/2th ruling expropriation for public utility	Met	Partially met	Not met
Project Design	Art 1: The expropriation for public utility is operated by authority of law. Art 2: An administrative investigation always precede the law ruling expropriation for public utility.		An administrative investigation has to be realized but no project alternatives are analyzed.	
Compensation and Benefits for Displaced Persons	Art.24: Expropriated people directly notify to the expropriating administration the sums they ask as eviction compensations. Art.42: Indemnities are set according to the state and the value of goods, at the date of the expropriation prescription.		Expropriated people only have 8 days to submit their proposal of indemnities.	
Community engagement	Art.4-12: Engineers in charge of the execution of works will produce a plot plan of the land for which the expropriation is necessary. The plot plan will remain for 8 days in the office of the Republic of Djibouti's commissioner in the district in which takes place the project. During these 8 days, interested parties can read the plot plan, that is also published in the official journal. The commission receives the owners' observation. At the end of the 8 days, the commission will issue an opinion about the properties to expropriate.			Owners of land cannot be members of the commission. They are just informed that the expropriation will take place and can only give their observations.
Grievance mechanism	Art.19: Actions for cancellation and demand or other actions cannot stop the expropriation process.			No grievance mechanism is implemented.

	Art.21: The expropriation order cannot be disputed by common remedies at law but can be cancelled by the Court of Justice of Djibouti, only for incompetence, abuse of power and defect in form.			
Resettlement Planning and Implementation	No resettlement planning and implementation are mentioned.			X
Physical Displacement	No displacement alternatives nor assistance nor particular attention to the most vulnerable are proposed.			X
Economic Displacement	No strategies are made to compensate economically displaced people for loss of assets or access to assets.			X
Private Sector Responsibilities Under Government-Managed Resettlement	Nothing related to private sector responsibilities under government managed resettlement is mentioned in the Djiboutian law.			X

1.3.1. Recommendations to meet the IFC 5

Project design	The Djiboutian legislation does not mention any alternative project designs to avoid or minimize physical and/or economic displacements. Therefore, in order to meet the international standards, the client will have to consider feasible alternative project designs to avoid or minimize physical and/or economic 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 people	The Djiboutian legislation mentions that the displaced people only have 8 days to ask for indemnities in case of expropriation in the public interest and does not provide any opportunities to displaced communities to derive benefit from the project. Therefore, the client will have to 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.
Community engagement	The Djiboutian legislation does not mention any community engagement or participation of affected communities. Therefore, the client will engage a stakeholder engagement, disclosure of relevant information and participation of affected communities.
Grievance mechanism	The Djiboutian legislation does not mention any grievance mechanism implementation. Therefore, the client will establish a grievance mechanism as early as possible in the project development phase. This will allow the client to receive and address specific concerns about compensation and relocation raised by displaced persons or members of host communities in a timely fashion, including a recourse mechanism designed to resolve disputes in an impartial manner.

Resettlement and Livelihood Restoration Planning and Implementation	The Djiboutian legislation does not mention any resettlement and livelihood restoration planning and implementation. Therefore, where involuntary resettlement is unavoidable, the client will carry out a census and collect appropriate socioeconomic baseline data to identify the persons who will be displaced by the project, determine who will be eligible for compensation and assistance, and discourage ineligible persons, such as opportunistic settlers, from claiming benefits. The client will establish procedures to monitor and evaluate the implementation of a Resettlement Action Plan or Livelihood Restoration Plan and take corrective action as necessary **As for this project, because the exact nature of the restriction on the land use or the magnitude of impact of the project on those pastoral activities is not yet well known, a Livelihood Restoration Framework only will be done.**
Physical displacements	The Djiboutian legislation does not mention any measures to take in case of physical displacements. Therefore, the client will develop a Resettlement Action Plan. This will include compensation at full replacement cost for land and other assets lost. The Plan will be designed to mitigate the negative impacts of displacement; identify development opportunities; develop a resettlement budget and schedule; and establish the entitlements of all categories of affected persons (including host communities). Particular attention will be paid to the needs of the poor and the vulnerable. The client will document all transactions to acquire land rights, as well as compensation measures and relocation activities.
Economic displacements	The Djiboutian legislation does not mention any measures to take in case of economic displacements. Therefore, the client will develop a Livelihood Restoration Plan to compensate affected persons and/or communities. The Livelihood Restoration Plan will establish the entitlements of affected persons and/or communities and will ensure that these are provided in a transparent, consistent, and equitable manner. The mitigation of economic displacement will be considered complete when affected persons or communities have received compensation and other assistance according to the requirements of the Livelihood Restoration Plan, and are deemed to have been provided with adequate opportunity to reestablish their livelihoods.
Private Sector Responsibilities Under Government-Managed Resettlement	The Djiboutian legislation does not mention any measures related to private sector responsibilities under government managed resettlement. Therefore, the client will prepare a Supplemental Resettlement Plan will address the relevant requirements for Physical Displacement and Economic Displacement above. The client will need to include in its Supplemental Resettlement Plan, at a minimum (i) identification of affected people and impacts; (ii) a description of regulated activities, including the entitlements of displaced persons provided under applicable national laws and regulations; (iii) the supplemental measures to achieve the requirements for Physical Displacement and Economic Displacement above and (iv) the financial and implementation responsibilities of the client in the execution of its Supplemental Resettlement Plan.

Again, the project will not cause physical displacement, and the magnitude of the impacts are yet to be defined, therefore with this LRF and through the elaboration and implementation of the project the client will have to consider the IPC 5 standards and action for the aspects of:

- Project Design
- Community Engagement

- Grievance mechanism
- Livelihood restoration Framework
- Economic displacement

1.4. Stakeholder Engagement

This section covers the key principles of stakeholder engagement that need to be addressed in the process of livelihood restoration.

As indicated in paragraph 10 of IFC 5, Community engagement has to be very carefully looked at: "the client will engage with affected communities through the process of stakeholder engagement as described in IFC PS1. 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 Performance Standard."
This aspect underlines the need for a great deal of communication and flow of information about the strategies adopted by the project concerning its impacts: essentially the disruption of pastoral activities on the site where infrastructure and equipment will be installed

Also, as found in the text, "Decision-making processes related to resettlement and livelihood restoration should include options and alternatives, where applicable", it will be important in the next steps of the LRF, its disclosure and its implementation, to keep in mind the need for options and alternatives to be presented to the affected communities".

This section will address the identification of stakeholders, engagement activities already carried out and the grievance mechanisms.

1.4.1. Identification of Stakeholders

The identification of stakeholders helps understand which are the organisations, groups and individuals that are likely to be directly or indirectly involved in the process of livelihood restoration and to grasp their needs and expectations. For the process to be truly inclusive, an essential condition for its success, the stakeholders' analysis must be particularly attentive to certain criticalities: such as cases of vulnerable groups/persons (e.g. women) and the potential risk of their marginalisation.

A list of stakeholders likely to be involved in the Livelihood Restoration Framework, are presented below (Table 1). Please note that identifying stakeholders is an on-going process – as are the issues that define people's positions and their room for manoeuvre – so as the situation evolves the stakeholders list needs to be constantly updated.

Stakeholder	Relevance/Importance within the LRF
Government Level Authorities	
The Ministry in charge of Investments under the Presidency	The Ministry oversees the administrative aspects of public and private investments, guarantees the coordination of the government strategies with the other Ministries.
Ministry of Housing, Town Planning and Environment Planning	The Ministry is in charge of planning development actions. It guarantees the coherence between development actions and government policies.
The Land and Property Rights Directorate within the Ministry of Economy and Finance	The Directorate is in charge of all expropriation operations within the country and land registration or regularisation in the case of small-scale compensation projects.
Ministry of Agriculture, Water, Fishing, Livestock and Fishery Resources	In charge of questions linked to pastoralism, it is involved in evaluating losses in terms of grazing land and associated with the drafting of proposals for livelihood restoration that include pastoral/agricultural and/or fishing components.

Other Directorates and Ministries	To be identified, depending on the nature of the projects and priorities considered for livelihood restoration: - Ministry of Women and Families; - State Secretariat for Social Affairs; - Ministry of Health; - Ministry of Education. They will be associated on an ad-hoc basis depending on the relevance of the projects.
District Level Authorities	
The Prefectures of Arta and of Tadjoura	The Prefectures are in charge of planning and implementing regional Development Plans (RDP). They ensure the coherence of activities and are associated with their monitoring.
The Sub-Prefects of Karta and Lac Assal	The Sub-Prefects guarantee and facilitate links within the administration.
Community Level Authorities	
Okal General	The Okal General is the highest customary authority of the Debné confederation in the project area, he lives in Cité Moumina. He must be included in any activity undertaken in the village or in the neighbouring territory. He is a man of influence who can mobilise people to either support or block the smooth running of a project. His consent is a guarantee of the social viability of any action undertaken.
The tribal representatives (Cité Moumina)	The tribal representatives of the Lac Assal area (the *Makaban*) are a very important component of the customary authorities in the Cité Moumina area. They must be associated with all important decisions that concern the village, as their role is to ensure the fair distribution of opportunities and responsibilities between the people and families of the different tribes. The tribal representatives convene in an association called the Cité Moumina Organisation and Management Committee.
Village chief (Lac Assal)	The Lac Assal village chief manages the village's current affairs, he also plays an important role in the Salt Investment Company that is based in the village. He is an essential person in any initiative taken within the village. He has a strong mobilising influence.
NGO's, Associations, Individuals	
Association "Difu"	The association operates in lac Assal Village. Its members promote hygiene and village cleanliness. The association is an important resource for an active civil society.
Association du Ghoubet	The association is active in Lac Assal village. Its members took part in the public consultations.
Ghoubet Women's Association	The Association is active in Lac Assal village. Its members took part in the public consultations. It unites women who are likely to propose relevant activities for the LRF.

Youth Association	The association is active in Lac Assal village. Its members took part in the public consultations.
Lac Assal Women's Association	The association is based in Cité Moumina but is active in the whole area (including Lac Assal village). It unites women who are likely to propose relevant activities for the LRF.
Local community residents	Some of the residents of the two villages close to the project may be affected in as much as they possess livestock and their pastoral activities may be affected during the construction phase, although in truth, the herds are very small. They will need to be consulted about the measures to be included in the LRF.
Herders in outlying camps distant from the villages	Near the Project area, herder's camps are rare. Camps tend to be temporary as herders follow pasture land based on agro-ecological conditions and rainfall. The principle that guides them is that of mobility. However, the point of view of herders whose main and only revenue comes from pastoralism will need to be integrated.

Table 1 : Stakeholders and their importance within the LRF process

1.4.2. Engagements already initiated

Stakeholders engagement has already taken place during different stages of the ESIA: during the scoping phase and report, during the social baseline study and at the occasion of the disclosure of the draft of the ESIA. Further disclosure of the ESIA may be done with the final ESIA, moreover constant flow of communication should be looked at. Various plans may be added along the development of the project, all of those would need to be actively shared with the stakeholders and enable them to express their opinion on those plans.

During the 2017 scoping assignment, the team in charge of the Environment and Social Impact Assessment (ESIA), accompanied by EDD agents organised the first meetings. The purpose of these meetings was to:

- Introduce the Project and the ESIA and propose stakeholders engagement procedures;
- Obtain initial information on the Project area and acquire documents relevant to the ESIA;
- Get some initial feedback on the local perceptions and expectations around the Project.

During the social baseline survey, in February 2018, several meetings were organised. The objectives of these meetings were to:

- Introduce the Project
- Present the Project to the stakeholders, inform them about the Project and the ESIA process;
- Discuss the initial conclusions of the scoping report;
- Discuss the potential environmental and social impacts linked to the Project and potential management and mitigation measures;
- Identify the main issues linked to the project and discuss them,
- Provide stakeholders with the opportunity to ask questions and exchange information and points of view.

Discussions and consultations – private and public – took place with regional and sub-prefectural administrative authorities, with customary authorities and with community representatives and local associations.

Focus group discussions were arranged, in addition to key informant interviews to gain a thorough understanding of the project area and to ensure that all stakeholders had an opportunity to send a representative. At all of the meetings, details of the Project were presented, and stakeholders were invited to ask questions and comment on potential impacts and mitigation measures.

In May 2018, the disclosure of the draft of the ESIA was done at the ministry level and at the community level. The first one gave the occasion to the Director of the Directorate of Environment and Sustainable development to express his views on the project and the identified impacts. In a similar way, the meeting,

held at Village Lac Assal, was the occasion, to get back to the communities about the findings of the social survey and of the environmental and social impact assessments. The occasion was given to the stakeholders to express their views on those findings, on the project itself and its potential interactions with the communities.

The list of engagement activities undertaken during the scoping mission and the social baseline survey appear in Table 2 and Table 3.

Date	***Stakeholder***	***Participants***		
		Male	*Female*	*Total*
Government meetings				
12 Dec 2018 17-19 Feb 2018 3 May 2018	Electricté de Djibouti (EDD)	1		1
11 Feb 2018	Ministry of Agriculture	1		1
26 Feb 2018	Ministry of Habitat, Urban Planning, Environment and Town Planning (MHUE)	1		1
2 May 2018	Environment and Sustainable Development Directorate (part of MHUE)	2		2
	Total	*5*		*5*

Table 2: Local consultations with stakeholders (government meetings)

Date	***Stakeholder***	***Participants***		
		Male	*Female*	*Total*
Local level meetings				
8 Feb 2018	Arta Prefecture, meeting with Prefect	1		1
10 Feb 2018	Cité Moumina, Focus Group discussion with customary authorities	2		2
10 Feb 2018	Karta authority	1		1
11 Feb 2018	Tadjourah Prefecture, meeting with Prefect	1		1
14 Feb 2018	Public consultation in Lac Assal village. Attendees included: Sub-prefect and Village Chief of Lac Assal, members of local associations (including the Women's and Youth associations)	11	2	13
17 Feb 2018	Meeting with Okal, customary authority	1		1
17 Feb 2018	Public consultation in Cité Moumina community. Attendees included customary authorities and village elders.	6		6
19 Feb 2018	Focus Group discussion, Cité Moumina / Lac Assal Women's Assocation		2	2
18-19 Feb 2018	Individual interviews with Key informants (such as livestock breeders, fishermen, manager of the tourist resort) during the social baseline engagement.	7		7
15-19 Feb 2018	Household surveys were completed with 40 households in the project area during the social baseline engagement.			40
3 May 2018	Public consultation on draft ESIA in Lac Assal village's Community Building. Attendees included: Sub-prefect and Chief of Lac Assal village, Lac Assal Women's Association, General Okal, Imam of Cité Moumina Mosque, Makaban (customary authorities representing the Debné tribes) and community members.	14	2	
	Total	*30*	*6*	*74*

Table 3: Local consultations with stakeholders (local level meetings)

1.4.3. Grievance Mechanism

Stakeholder's engagement is a two-way process. It is therefore important to plan a grievance mechanism that allows the stakeholders to express themselves and bring their viewpoints to the attention of the Project: requests, advices, reactions, grievances and complaints. The Project needs to be in measure to systematically take these views into account and treat them as appropriate.

The paragraph 11 of IFC 5 stipulates the following: « The client will establish a grievance mechanism consistent with Performance Standard 1 as early as possible in the project development phase. This will allow the client to receive and address specific concerns about compensation and relocation raised by displaced persons or members of host communities in a timely fashion, including a recourse mechanism designed to resolve disputes in an impartial manner.

The Grievance mechanism is the responsibility of the Project and it should be structured so as to be able to identify and manage the flux of communication and of grievances during all the cycles of the project. For this reason, a grievance committee will have to be established in order to ensure and follow the aspects of transparency and accessibility of the process. This committee may choose to have a representative that will be designated by the project to act as liaison officer and to be responsible for managing the grievance system. This existence of a grievance committee composed of different voluntary stakeholders facilitates the access to the grievance mechanism for more vulnerable people.

The community liaison officer, identified by the client, will be the first person from the project team to receive the grievances and it will be his responsibility to transfer the grievance to the most relevant person or service, depending on the provisions of the grievance mechanism.

During the implementation of the LRF, the stakeholders will need to bring up their opinions, concerns and complaints by following the Project's grievance mechanism procedure. The procedure can be composed of 10 steps as illustrated in Figure 1. This procedure can still be discussed and subject to change with the grievance committee before being shared to the stakeholders and potential affected groups or persons. The committee has not been established yet however the stakeholders are well aware of the existence of that mechanism and were really interested in it. As soon as some further steps are taken by the project, the establishment of the committee should be done.

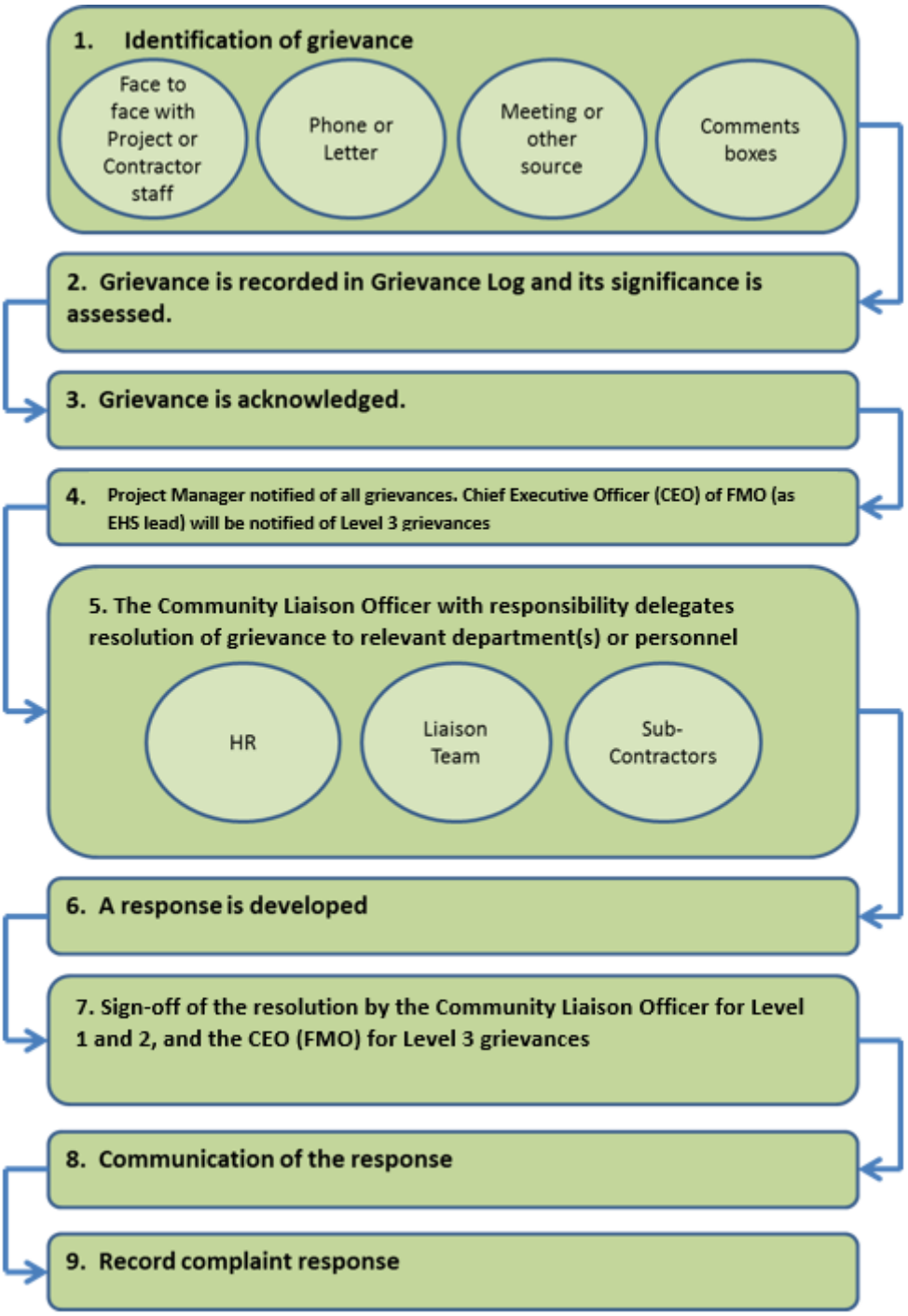


Figure 1. Grievance mechanism procedure.

1.5. Socio-Economic Study

1.5.1. Economy and Livelihoods

The economy of the area is based first and foremost on the salt extraction company “Salt Investment”, which furnishes most salaried and daily work job opportunities in the zone. This differs from the situation at the national level, where the tertiary sector represents almost 80% of the GDP, this implies a high level of dependency of the project area population of the area on Salt Investment.

Salaried work (30% of households and 45% of household revenue) and daily work (47% of households and 13% of revenue) are the main sources of income for the surveyed households.

About 30% of the households surveyed were involved in some form of trade which accounted for 17% of the average revenue. Most trade activities are managed by women, except for the sale of *khat* that is a male occupation. Monthly revenue varies from 500 to 30 000 DJF depending on the type of trade (sale of chewing tobacco, running of the 4 small shops that furnish the two villages in basic products, cafés).

The sale of handicrafts is widely practised (42% of households) but not very profitable (7% average household income). With the exception of limestone sculptures, women produce most of the handicrafts. These consist essentially of weaving various household objects using the leaves of the local palm tree (called *anga* in vernacular). These objects serve mainly to furnish the household with mats (*fidima* to sleep on, and *gourouf* for sitting on), with milking baskets (*aissena*, *guissa* and *kaounta*, which are three different sized baskets used respectively for milking camels, cows and goats/ewes), and storing food (*gabedo* for flat teff bread and *amourou* for milk. In the past ten years, production has also moved towards selling crafts to passing tourists. New, smaller and more colourful models have been developed for this market. Other products such as pearl decorations were introduced through support from the National Union of Djibouti Women (known as UNEF in French). The local women's association in Cité Moumina acts both as a workshop and a showcase for the craftswomen of the two villages. In January 2018, the UNFD also financed sewing machines and a nine-month training course for young girls that are members of the women's association.

Only 7.5% of the households practised fishing at sea, which is thus a minor activity. It contributes an average of 6% of revenue. Fish are preserved for household consumption during the cold period when productivity is low. Warm season surplus is sold to the resident workers of Salt Investment. Sales of fire-wood and charcoal represent 5% of household income and concern 20% and 5% of households respectively. Artisanal extraction of salt occupied 7.5% of the households. The salt is sold in 50kg bags on the edge of the road. This activity, along with the collection of *anga* leaves accounts for about 2% of average household income.

Finally, livestock breeding still concerns a large part of the population (67%) even though it has an annual cost of 18,525 DJF per year (for the surveyed households). This is due to the poor availability of pasture land in the area which implies that people have to purchase concentrated feed for a portion, or even all of the year. Working hands are less easily available than in pastoral areas and it is sometimes necessary to hire a herdsman, which entails an extra cost. Goats are better adapted to the arid local conditions and they are the main animals kept, with an average of almost 8 goats per household (Table 3). Goats are kept mainly for their milk.

	Number of heads in the village per household	Number of heads in the bush per household	Total number of heads per household
Goat	3.1	4.5	7.6
Sheep	0.3	0.0	0.3
Cattle	0.0	0.1	0.1
Camel	0.1	0.2	0.3
Total	3.5	4.8	8.3

Table 4 : Average size of herd per household in the projects zone of influence.

Sheep and cattle breeding is very rare in the study zone. A single attempt to rear chickens, started in 2017 by a resident of Lac Assal, with 10 laying hens was recorded. The lack of access to veterinary care (vaccines) and the poor local availability of chicken feed appear to have been the main factors explaining the failure of his endeavour.

About 10% of households still own a camel or two that they use for transporting local goods, mainly salt, or for organising caravans. The traditional activity of caravaneer seems to have almost disappeared, with a single instance recorded in the forty surveys. It was a herder who exchanged salt for corn to feed his herd of goats.

1.5.2. Revenues

The average income, calculated on the basis of forty households surveyed, is 355 027 DJF/year, namely 127 182 DJF per consumption unit and per year or 105 250 DJF per adult equivalent per year. This income is 99% monetary, the in-kind share provided through fishing and livestock rearing is minimal.

About a third of the surveyed households (28%) contracted some credit during the 12 months preceding the study, always with a trader and at zero interest rate. The average borrowed sum was 70 875 DJF. Most debts were contracted in order to purchase essential goods (9 out of 11 cases). Schooling and the purchase of raw materials for artisanal production where the two other motives for borrowing that were mentioned. The payback period generally extended over the course of a month, rarely over more than a year (2 cases out of 11).

Cash savings are inexistent but can take the form of livestock being kept by relatives in the bush. However, this traditional strategy is becoming riskier as the probability of drought increases. The average household income is just above the food poverty line but below the threshold for extreme poverty as defined by the Republic of Djibouti (Table 4).

Half the surveyed households (53%) had an estimated income that was below the food poverty threshold and about two third of the households (68%) were below the extreme poverty threshold. Only one household in five (23%) lives above the overall poverty threshold.

	Threshold for food poverty(DJF/EA.year)	Threshold for extreme poverty(DJF/EA.year)	Overall poverty threshold(DJF/EA.year)
Djibouti City	79579	112179	172981
The rest of the country	83074	111425	147622
Djibouti (whole country)	79925	111607	167266

Table 5 : Poverty thresholds as defined by the Republic of Djibouti (DISED, 2013[1]), updated by taking into account inflation (WB, 2017[2])

[1] DISED, 2013. *Présentation de nouveaux seuils de pauvreté calculés sur la base de l'enquête budget consommation de 2013* (Presentation of new poverty thresholds calculated on the basis of the consumption budget survey). DISED, République de Djibouti, 2013.

[2] World Bank, 2018. World Bank World Data Indicator. Accessible online: https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG

1.5.3. Access to Land

1.5.3.1. Customary Principles of Land Management

Lands within the project perimeter are ruled essentially by customary law and principles which determine rights and obligations around access to land and natural resources.

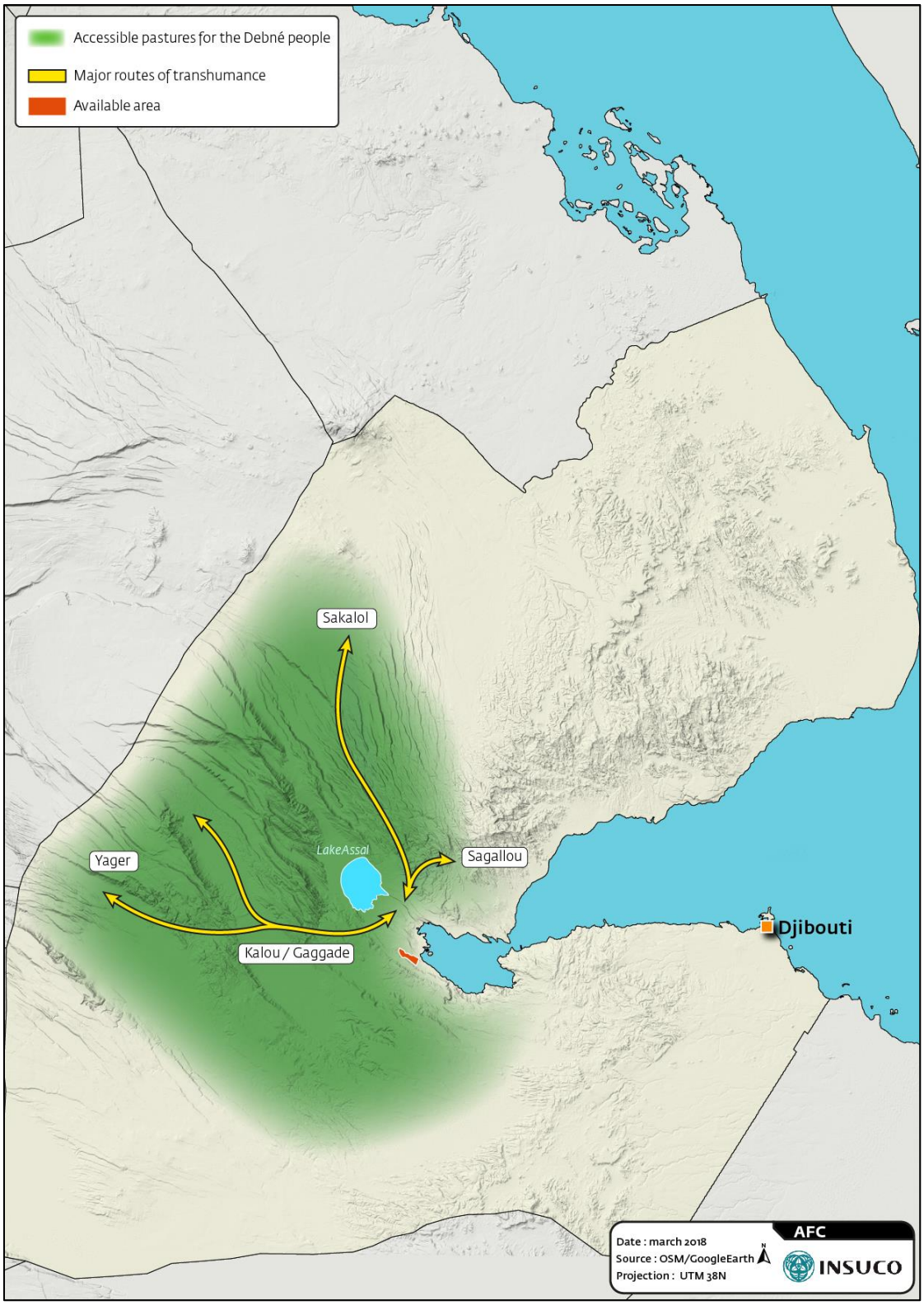
The area is part of the vast territory of the Debné confederation. Despite the fact that it is not possible to draw precise boundaries for this territory, its overall limits are: Sagallou to the northeast, the Ethiopian border to the north, Galafi to the West, Dikhil and the grand Bara to the south, and at last the village known as “kilometre 51 to the east (see Map 2). It is a vast expanse in common management where all members of the Debné confederation tribes enjoy a wide range of rights including:

- Free circulation of people and herds;
- Free access to pasture land over the territory
- The right to settle and to put up temporary camps anywhere on the territory
- Free access to water holes (nevertheless with the moral obligation to inform the closest customary authorities of one’s intention to water the animals);

The principle is that of a common resource (*common*). There are important differences with pastoral land management systems in other Afar regions of the country.

However, free access to resources does not mean that there is no regulation whatsoever, and the local customary authorities ensure that basic principles of resource management are respected. In practice, they intervene in two types of situation: if there is a conflict linked to the use of pastoral resources (in which case they may decide on sanctions), and when “foreigners” access the territory. People that are considered “foreigners”; are members of tribes that do not belong to the Debné confederation. They may have access to the territory, but this access is conditioned by a verbal agreement given by an authority representing the confederation: the overall *Okal*, or one of the local elders who will refer to the overall *Okal*. When a member of non-Debné tribe marries a Debné woman, he acquires the same rights as the members of the confederation.

This system of free circulation and access to resources over the entire territory offers livestock breeders plenty of freedom of movement between different areas in order to find the best pastures. Choices are based on agro-ecological conditions and the distribution of rains, with whatever information is available. The spread of mobile phones has greatly facilitated decision making for people moving with their herds.



Map 2: Stretch of pasture land available to members of the Debné group, and main migration pathways around Ghoubet and Lac Assal

1.5.3.2. Land Use

The inhabitants of the area consider the land within the project perimeter as unsuitable for any type of productive activity. Lack of water is a major issue and the land is considered unfit for pasture.

No agricultural activity was ever undertaken in the zone.

If the zone is considered unfit for pastoral activity, it still remains an area that is crossed by herds migrating between the various pasture zones of the Debné confederation.

The baseline provides us with the following elements[1]: "The Debné confederation and its use of pasture land is articulated around a common resource point of view that implies for instance free circulation of people and herds, free access to pasture lands over the territory, free access to water holes…This principle of common resources is quite different from what we find in other Afar systems."

On top of the Debné confederation and system, we can consider two other level of analysis for the access to the land: first, the tribes that compose the Debné confederation that may claim different demands especially with the arrival of external actors, second the historical powers linked with the salt extraction activities.

Therefore, it is important to recognize that the project area is embedded within a territorial system, in which multiple claims on customary land rights co-exist and can be called upon: resources common to all Debné, resources common to a limited number of localised tribes, resources common to the entire Afar population. The analysis of pastoral practices indicate that the first claim is the most pertinent. However, in the face of major economic stakes –the multiplication of projects planned for the area between lac Assal and the Golf of Ghoubet – other territorial claims may be mobilised as arguments for actors on the three different levels to be able to position themselves as best as possible in the race to appropriate benefits. Good attention will have to be given to that.

However, it is important to note also that the tracks that cross the project zone take the shortest route. The pastoral calendar is highly variable, and the passage of herds may occur at any time of the year: it fluctuates depending on information communicated via the mobile phone network. Therefore, a certain flexibility exist and during the various stakeholders meeting, the participants were underlining that a change in the course of the herds on that zone should not represent any problem. But would need to be discussed with the community.

1.6. Types of Economic Displacement

If the project proves to lead to economic displacement, different measures " to improve, or at least restore their means of income earning capacity, production levels and standards of living", as indicated in the IFC PS 5 would have to be considered. It would apply here in the case of

- For persons whose livelihoods are natural resource-based measures will be made to either allow continued access or provide access to alternative resources.
- For persons whose livelihoods are natural resource-based measures will be made to either allow continued access or provide access to alternative resources.
- If circumstances prevent the client from providing land or similar resources as described above, alternative income earning opportunities may be provided, such as credit facilities, training, cash, or employment opportunities; Cash compensation alone, however, is frequently insufficient to restore livelihoods.

Essentially two types of impacts were identified during the Environmental and Social Impact Assessment:

- Impacts on pastoral routes.
- Impacts linked to loss of livestock.

[1] Chapter on Customary principles of land management in the Social Field Survey Report- Annex F

The impacts on cultural heritage were considered as low or inexistent in the ESIA: “The cemeteries are located out with the Project site therefore direct impacts to them will be avoided. A suitable buffer has also been included in the turbine layout design[1].
Only 2 Cultural heritage resources have been identified within the project site. Using the cultural heritage definitions set out in the IFC’s Performance Standards 8, those two assets have been categorized as “Replicable Cultural Heritage” which equates to a low sensitivity[2].

During the construction phase, site preparation activities, grading and fencing of the site have the potential to disrupt, reduce or modify access to pastoral routes.

The Project site is used by the local communities only during for the passage of herds. Currently 67% of the households possess livestock (goats) even though it constitutes a cost for the families. This is due to the poor availability of pasture land in the area which implies that people have to purchase concentrated feed for a portion, or even all of the year. Working hands are less easily available than in pastoral areas and it is sometimes necessary to hire a herdsman, which entails an extra cost.

Currently livestock owners have free access to the Project area which is situated in the communal lands traditionally controlled by the confederation of Debné tribes. However, the local population considers that the part of the territory that is within the Project footprint, is of no interest for subsistence activities due to its poor quality. The area is thus exclusively a zone of passage which is part of the migratory routes that criss-cross the Confederation’s territory. The site is traversed by paths that link richer pastures on either side of lac Assal and towards the Ethiopian border. The land itself is not used for either agricultural production or pasture.

Consequently, the populations living near the Project site are considered to have a low level of vulnerability to livelihoods and land use impacts. The project activities may disturb migratory pathways in the short term. There is also a risk of livestock being accidentally killed or wounded on the road or the construction site.

The impact is thus:

- Very localised;
- Are short term (only during the construction phase);
- Limited in as much as herd circulation may be perturbed but not completely supressed;
- Loss of livestock due to accidents during the construction phase will not be common;
- Probable as the disturbance of migratory pathways is foreseeable. In the absence of mitigation measures, accidents involving livestock are to be expected;
- Of low magnitude during the construction phase.

In order to mitigate the impact, the Project will plan the construction and installation of the wind turbines so that at any given time only 25% of the area is inaccessible. This option aligns with the IFC PS 5: economic displacement: (para 28) For persons whose livelihoods are natural resource-based means, (measures) will be made to either allow continued access or provide access to alternative resources.

Moreover, the stakeholder engagement plan (SEP), the grievance management, the system for concerting with local customary authorities in order to identify alternate pastoral routes and the Framework for Livelihood Restoration (FLR) will be able to guarantee impact mitigation.

By applying these measures, one can be assured that the impact will remain low.

[1] Ghoubet 60 MW Onshore Windfarm ESIA Report, p5-

[2] Ghoubet 60 MW Onshore Windfarm ESIA Report, p7-74

1.7. Compensation Strategy

In this section, we will categorise Project Affected People (PAP) by the type of impact incurred from the Project and propose mitigation measures.

1.7.1. Identification and Determination of Eligible Groups

Due to the fact that the Project will impact the livelihoods of the local population we are planning on categorising PAP based on the type of constraint they will face. Based on the results of the social baseline study we thus categorise the PAP in the following manner:

- Local livestock breeders;
- Migrating herders;
- People in the crafts sector, small traders and women doing basket weaving
- Village chiefs and customary leadership who will deal with the customary aspects and rights to the land.

1.7.2. Compensation Matrix

The potential constraints and impacts of the Project on local people's livelihoods and the actions and priority measures to put in place in order to attenuate these impacts appear in Table 5.

Type of PAP	Potential Project Impacts	Priority Measures
Local Livestock breeders	- Reduced access to certain pastoral routes; - Risk of accidents for the animals;	- Set up a centre for the promotion of pastoralism and livestock breeding with veterinary services, information on market prices, administrative support to breeders, information on the state of the pastures, etc. - Support to animal breeding with seasonal fattening of small ruminants (e.g. goats) - Creation of an animal feed shop with some working capital in favour of livestock breeder groups in the area.
Migrant herders	- Reduced access to existing pastoral routes; - Blocked access to pastoral routes;	- Identification of passage routes and protection of these corridors during construction.
PAP (especially women engaged in handicraft work and/or small trade (selling salt, tobacco, coffee, etc.)	- Reduction in raw matter for the manufacture of handicrafts such as local palm leaves (*anga* in vernacular)	- Set up a micro-credit system and income generating activities for the women (e.g. for those doing basket-weaving) - Facilitate access to credit by setting up a "discreet" guarantee fund for the micro-finance.

Village chiefs and Customary Leadership	- Claims and critics on their responsibility to deal sustainably with the project: on land and socio-economic aspects	- Have the Community Liaison Office working quite closely with the local authorities and chiefs of the villages

Table 6: Potential Project Impacts and measures to restore livelihoods of the local communities.

1.8. Principles and Approach to Compensation

1.8.1. Introduction

Principles of compensation should align on the IPC PS5 since the djiboutian legislation is not specific on that aspect. It is also relevant to Corporate Social Responsibility of the promotor (Wind Farm project). The vison is that the Project must be an opportunity for sustainable development of the local communities. To attain this vision, there are a few challenges to be met:

- Ensure the security of pastoral routes;
- Contribute to the restoration of the local population's livelihoods:
- Reinforce people's capacities and skills through professional training (human capital development) to enable people to better face the new issues and to transform the project installation into a business opportunity (especially for women through the sale of handicrafts and food) and into an opportunity for long-term employment for community members (especially the unqualified youth).

Compensation must be approached in a participatory manner taking into account the specific needs of each category of PAP.

The project shall identify and implement compensation measures using the following approach:

- Include local communities in identifying compensation measures to be implemented;
- Strong participation of all categories of PAP in the implementation of the activities proposed;
- Supporting PAP through training, micro-credit or income generating activities (IGR) with the involvement of a third party that gradually reduces its presence (e.g. a private partner specialised in the specific field);
- Use consistent criteria, based both on the proposed framework and criteria proposed by the community, in order to designate compensation beneficiaries;
- The Project is entirely responsible for the costs, follow up and monitoring of activities and priority measures that are part of the LRF.

1.8.2. Compensation Activities and Eligibility

Results	Measure	PAP Category	Number of beneficiaries
AIM 1: SUPPORT TO LIVESTOCK BREEDING		--	---
Result 1: Livestock breeding is maintained	1.1. Set up a centre for the promotion of pastoralism and livestock breeding that offers: veterinary services, a livestock-feed shop, a revolving fund for local breeder's groups, information on the state of pastures and migration routes, etc.	----	-----
	1.2. Identify and ensure the safety of provisional passages routes for livestock during the construction phase and long-term routes during operation.	--	---
	1.3. Support livestock activities with fattening up of small ruminants.	----	----
AIM 2: SUPPORT AND PROMOTE HANDICRAFTS AND SMALL TRADE		--	---
Result 2: Support for handicrafts and trade have improved the global annual revenue of PAPs	2.1. Set up a micro-credit and income generating activities scheme for women 2.2 Identify and ensure the safety of provisional passages routes for livestock during the construction phase and long-term routes during operation 2.3. Build water retention reservoirs for watering the livestock	--	--
AIM 3: PROFESSIONNAL TRAINING AND SKILLS DEVELOPMENT		--	---
Result 3: professional training and skills development have helped PAPs with their socio-professional integration and raised awareness of sustainable development	3.1. Professional training in the fields of photovoltaic energy, electricity, construction, welding, mechanics, etc.	---	---
	3.2. Donation of tool kits to newly trained youth to help with their socio-professional integration.	--	---

1.8.3. Roles and Responsibilities

The success of a LRF depends both on its planning and its implementation. The planning approach having been participative, the implementation should also enjoy the strong participation of the various stakeholders right up to the end of the program. Protocols and collaboration agreements will be signed with each of the specialists intervening in the implementation of the framework.

The Wind Farm Project, as the project promotor, is responsible for implementing the LRF. However, a Pilot Committee for the livelihood restoration projects will bet set up. It will be directed by the person responsible for Social and Environmental Management Programme (SEMP), and it will include representatives of the PAP as well as of community and administrative authorities.

The Pilot Committee is in charge of signing the protocols and agreements with:

- The state technical services responsible for local development;
- State and non-state projects offering the selected activities;
- Partners and service-providers (private and public companies, consultancy offices and individual consultants);
- Research institutes.

1.8.4. Stakeholders Engagement and Community Participation

The Wind Farm project which is the structure responsible for implementing the LRF will be supported by representatives of the aforementioned communities in the carrying out all the framework objectives. The success of the LRF will depend on the degree of implication of the local community in the various projects to be implemented.

The local communities (population and opinion leaders), as well as administrative and political authorities will be informed and continuously involved through meetings and exchange forums and participatory follow up of the activities.

All these meetings must be recorded in reports or meeting minutes to facilitate the evaluation and monitoring of the framework.

1.8.5. Community Investment Programme

Results	Measure	P.U	Year 1	Year 2	Year 3	Total
AIM 1: SUPPORT TO LIVESTOCK BREEDING		--	--	--	--	---
Result 1: Livestock breeding is maintained	1.1. Set up a centre for the promotion of pastoralism and livestock breeding that offers: veterinary services, a livestock-feed shop, a revolving fund for local breeder's groups, information on the state of pastures and migration routes, etc.	-----	-----	----	----	-----
	1.2. Identify and ensure the safety of provisional passages routes for livestock during the construction phase and long-term routes during operation.	---	---	--	--	---
	1.3. Support livestock activities with fattening up of small ruminants.	-----	---	---	----	----
AIM 2: SUPPORT AND PROMOTE HANDICRAFTS AND SMALL TRADE		-	---	---	--	---
Result 2: Support for handicrafts and trade have improved the global annual revenue of PAPs	2.1. Set up a micro-credit and income generating activities scheme for women	--	--	--	--	--
	2.2. Suggest livestock related activities such as fattening up of small ruminants, experiment chicken breeding or small vegetable gardens	--				

Results	Measure	P.U	Year 1	Year 2	Year 3	Total
	2.3. Build water retention reservoirs for watering the livestock	---	----	----	-----	----
AIM 3: PROFESSIONAL TRAINING AND SKILLS DEVELOPMENT		--	--	--	--	---
Result 3: professional training and skills development have helped PAPs with their socio-professional integration and raised awareness of sustainable development	3.1. Professional training in the fields of photovoltaic energy, electricity, construction, welding, mechanics, etc.	--	--	--	---	---
	3.2. Donation of tool kits to newly trained youth to help with their socio-professional integration.	---	--	--	--	---

- **Implementation Framework**

The LRP will present a detailed schedule for the implementation of the livelihood restoration activities in line with the proposed Project planning. Careful and realistic planning of the timings associated with the implementation of the Project's livelihood restoration process will be key to its success. The implementation schedule will include key activities, responsibilities and a timeframe.

1.9. Monitoring and Evaluation

This section would state the objectives of monitoring and evaluation, the monitoring process, and example monitoring indicators, evaluation process, and responsible persons.

The monitoring and evaluation of the LRF will be done in three phases as follows:

- Define the targets for each activity and maintain a regular follow up of the implementing actors;
- Mid-term evaluation (half-way through the implementation)
- Final evaluation or audit at closure (at the end of the LRF);

The implementation of the LRF needs to be well documented so as to facilitate the closing audit that will determine its closure or its extension. The following documents will be considered for the final evaluation:

- Project sheets;
- Monthly follow up sheets;
- Assessment sheets;
- Book of visits;
- Meeting minutes;
- Protocols, contracts and conventions.

The LRF will have to be evaluated on two dimensions: whether the LRF has been properly followed and whether the community investment program has brought up the expected results and mitigated the impacts on pasture lands and animals. Therefore, measures should follow:

On one side:

- The stakeholder engagement process: communication, disclosure of plans and information concerning the project and its activities;
- The grievance mechanism functioning: establishment of a committee, how well the stakeholders are informed about it and how it is used;
- The good definition of the impacted stakeholders;
- The good definition of the community plan, by its development notably.

Those elements should be monitored to follow-up on the good alignment of the project with international performance standards.

On the other side:

- The development of the technical support given to the pastoralist and the increase in their skills;
- The safety of the pasture roads;
- The quality of the livestock support
- The investment done by women thanks to the microcredit activities;
- The development of economic activities
- The increase in local skills and employment rate.

Those type of elements should be followed to assess the quality of the Community Investment Plan and the real mitigation effect those activities bring to the project.
Those actions may however evolve if any other plans or activities were to be developed along the development of the project and its different phase.

Annex I

Impact Assessment Topic-Specific Methodologies

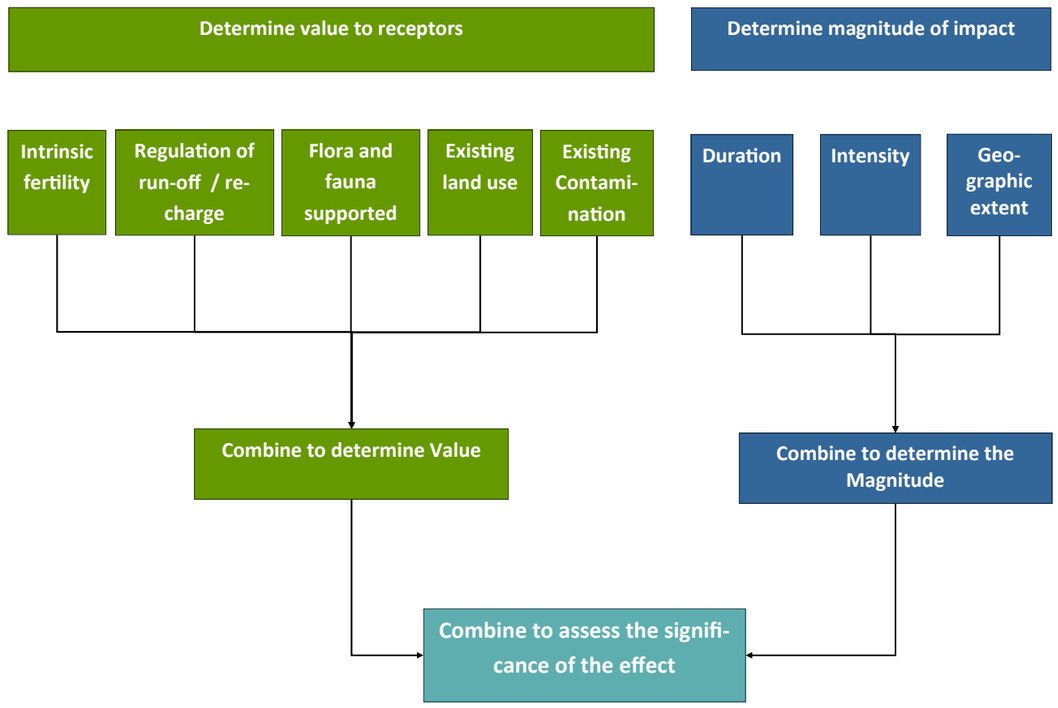
Step 1

Evaluate the characteristics of the proposed development and the surrounding environment

- Identify sensitive receptors (i.e. high value soils, or dependant humans or fauna)
- Determine baseline soil quality and land capability for surrounding environment
- Determine likely and potential physical and chemical quality impacts from construction and operation
- Determine constraints on Project design from seismicity, natural radiation, geotechnical factors or geological resources

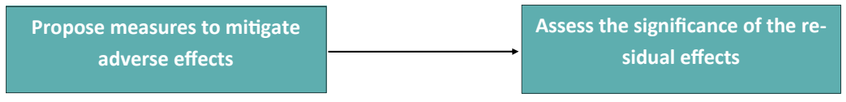
Step 2

Assess the impacts



Step 3

Apply mitigation and assess residual effects



Receptor Value

In the context of soil receptors, four main criteria are considered in determining overall *value* which includes consideration of both receptor sensitivity and vulnerability:

- *Soil quality, structure and sensitivity*, e.g. whether it has intrinsic agricultural fertility, presence of historical or natural contaminants, degree of anthropogenic disturbance e.g. compaction;
- *Soil ecosystem function as a supporting service* to flora and fauna; e.g. a particular soil type, such as peats, supporting a specific habitat or vulnerable species;
- *Soil ecosystem function as regulating service* for water; e.g. the extent to which whether the soil helps partition rainfall into surface water run-off, evapo-transpiration and groundwater recharge, as well as water retention capacity in the unsaturated zone; and
- *Soil resource* importance in terms of 'provisioning', e.g. the extent to which the soil is utilised as an agricultural resource.

Value	Definition / Examples
High	Intensively farmed, highly fertile soils, wetland soils, soils which host shallow aquifers relied upon for abstraction or essential for river baseflow, soils of specific characteristics (e.g. pH, carbon content, mineralogy) that support specific significant or high-value flora or faunal habitats.
Medium	Typical agricultural land, soils supporting specific habitats (e.g. forests), soils on residential sites.
Low	Low soil fertility not used for agriculture, contaminated made-ground soils at brownfield sites, soils not supporting any particularly sensitive or important habitats.

Magnitude of Change

The magnitude of impacts to soils will be determined by the considering the intensity (or scale), spatial coverage and longevity of an impact. The magnitude assigned will also use professional judgement to take into consideration the application of statutory standards and non-statutory standards under international or external guidelines.

Magnitude	Definition / Examples
Large	Change is likely to cause a direct adverse permanent or long-term (i.e. > 10 years) effect on the quality/value of the soil over a large area (i.e. >100 ha)
Medium	Change over a moderate (i.e. 1 - 100 ha) to large area, likely to adversely affect the quality/value of the soil but recovery is predicted in the medium term (i.e. 5 -10 years) and there is predicted to be no permanent impact to its integrity. Conversely, change over a small area (i.e. <1 ha) with direct adverse permanent or long-term effects.
Small	Change likely to adversely affect the quality/value of the soil but recovery is expected in the short term (i.e. 1 - 4 years). Changes are over a small to moderate area. Impacts beyond levels of natural variation that do not exceed assessment criteria (i.e. low intensity), for any duration or geographic extent.
Negligible	Change well within the bounds of normal natural variation. No effect detectable or recovery within a very short timescale (<1 year). Could occur over any size of area.

Step 1

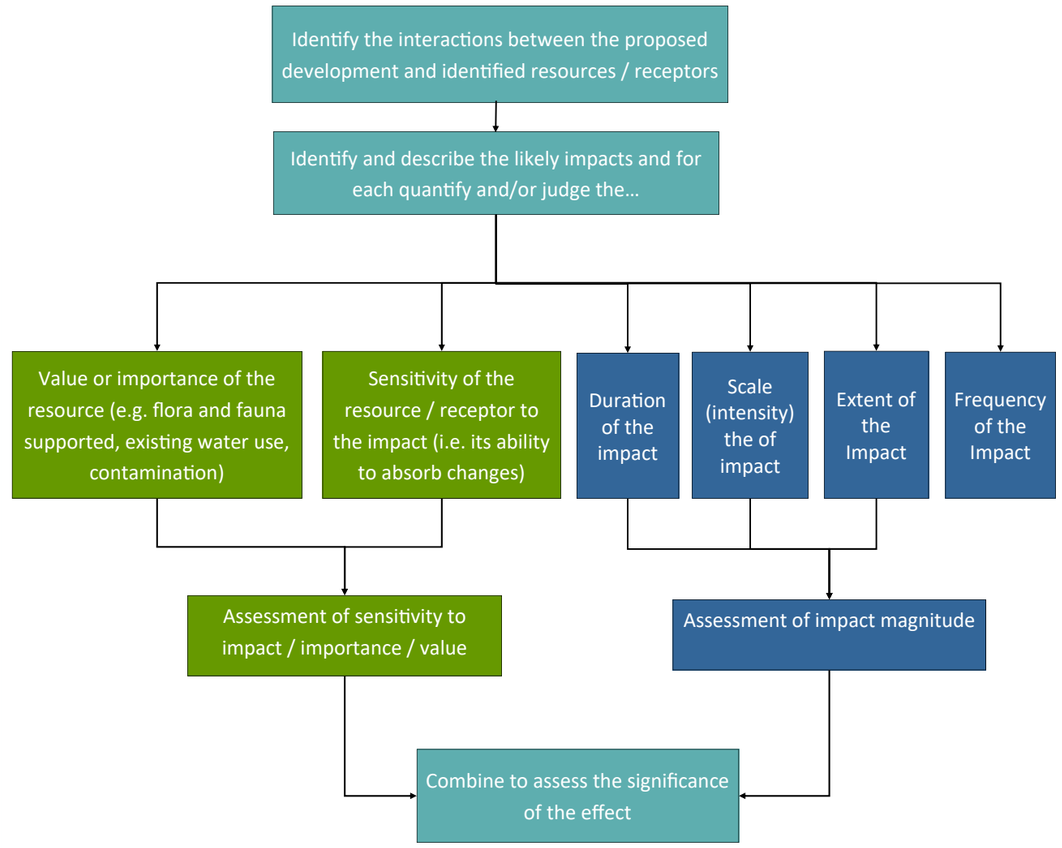
Evaluate the characteristics of the proposed development and the surrounding environment

- Define the preliminary scope of integrated water management impact assessment and study area
- Identify sensitive resources and receptors

  Establish the existing baseline conditions, including water quality, resource capacity, existing users and the dependency of communities, businesses and ecology on the resource.
- Determine likely and potential physical and chemical quality impacts from construction and operation

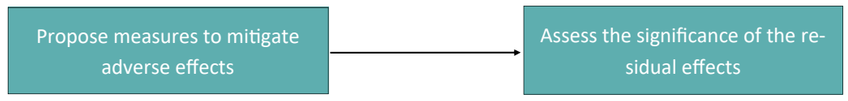
Step 2

Assess the impacts



Step 3

Apply mitigation and assess residual effects



Importance / Value / Sensitivity

Criteria	Low	Medium	High
Supporting role in maintaining soils	Resource has little to no role in maintenance.	Resource plays some role in maintenance (e.g. periodic flooding)	Resource is critical to maintenance of soil structure and quality.
Regulating role in hydrological cycle	Resource has little to no role as a regulating service.	Resource has local role in terms of storage, flows and flood alleviation.	Resource has a regional role in terms of storage, flows and flood alleviation, and may have transboundary influence.
Provisioning role to communities, or its importance in terms of national resource protection objectives, targets and legislation	Resource is not currently used, but is of sufficient quality and yield to be used in the future.	Resource is an important supply and is currently used, but there is capacity and / or opportunity for alternative sources of comparable quality.	Resource is wholly relied upon locally with no suitable alternatives, or is important at a regional or transboundary level for water supply or contribution to groundwater dependent ecosystems.
Supporting role in terms of biodiversity	Resource used, but does not support diverse habitat or populations.	Resource supports diverse or susceptible habitat or populations.	Resource supports important or unique species or provides essential habitat to sustain such species.
Provision of cultural services	Resource has little to no role in terms of amenity or recreational use.	Resource has small or occasional role in terms of amenity or recreational use.	Resource is important to amenity and recreational on an ongoing basis.

Magnitude of Change

Magnitude Criteria	Negligible	Small	Medium	Large
Water quality / reduced value to users	Change is within natural variation	Change is 75% of standard/guideline levels.	Occasional exceedances of ambient / seasonal range or standard / guideline levels; localised and / or limited duration.	Repeated exceedances of ambient / seasonal range or standard / guideline levels; not localised and / or occurring over a prolonged duration.
Quantity / scarcity	Change is within natural variation for the time of year	Short-term consumption that does not restrict other users consumption.	Long-term consumption. Project consumption is <25% of the resource available at the time of use.	Long-term consumption. Project consumption is >25% of the resource available at the time of use.
Surface water Run-off	No alteration to existing drainage regimes and characteristics	Some alteration to existing drainage regimes and characteristics but not material.	Significant alteration to existing drainage regimes and patterns over a short-term period or localised area.	Significant alteration to existing drainage regimes and patterns over a long-term period for a localized area or a short-term period for a large area.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Receptor Value

In the context of soil receptors, four main criteria are considered in determining overall *value* which includes consideration of both receptor sensitivity and vulnerability:

- *Soil quality, structure and sensitivity*, e.g. whether it has intrinsic agricultural fertility, presence of historical or natural contaminants, degree of anthropogenic disturbance e.g. compaction;
- *Soil ecosystem function as a supporting service* to flora and fauna; e.g. a particular soil type, such as peats, supporting a specific habitat or vulnerable species;
- *Soil ecosystem function as regulating service* for water; e.g. the extent to which whether the soil helps partition rainfall into surface water run-off, evapo-transpiration and groundwater recharge, as well as water retention capacity in the unsaturated zone; and
- *Soil resource* importance in terms of 'provisioning', e.g. the extent to which the soil is utilised as an agricultural resource.

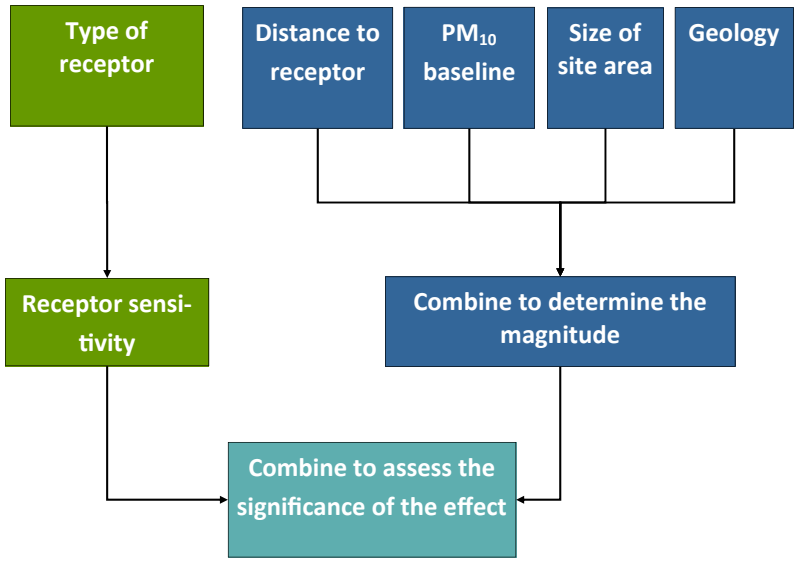
Step 1

Evaluate the characteristics of the proposed development and the surrounding environment

Identify sensitive receptors (i.e. human health / nuisance).

Step 2

Assess the impacts



Step 3

Apply mitigation and assess residual effects

Propose measures to mitigate adverse effects → **Assess the significance of the residual effects**

Receptor Sensitivity and Vulnerability

The sensitivity of the area takes account the specific sensitivities of receptors in the area.

Table 1 Receptor Sensitivity

Sensitivity	Human
Low	N/A
Medium	General population
High	Particularly vulnerable individuals, e.g. a hospital with intensive care ward

Magnitude of Change

The dust emission magnitude is based on the scale of the anticipated works and can be classified as Negligible, Small, Medium, or Large. This methodology applies to earthworks within 500 m. Professional judgement must be applied when classifying the relative importance of parameters contributing to magnitude.

Table 2 Dust Emission Magnitude (Human Health / Nuisance Impacts)

Description	Magnitude	
	Undegraded Airshed	Degraded Airshed
No perceptible impact. Total site area <2,500 m², soil type with large grain size (eg. sand), total material moved <10,000 tonnes, and/or earthworks during wetter months.	Negligible	Negligible
Total site area <2,500 m², soil type with large grain size (e.g. sand), formation of bunds <4 m in height, total material moved <20,000 tonnes, and/or earthworks during wetter months.	Small	Medium
Total site area 2,500 m² – 10,000 m², moderately dusty soil type (e.g. silt), formation of bunds 4 m - 8 m in height, and/or total	Medium	Large
Total site area >10,000 m², potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), formation of bunds >8 m in height, total material moved >100,000 tonnes, and/or dust generating activities for >12 months.	Large	Large

Step 1

Evaluate the characteristics of the proposed development and the surrounding environment

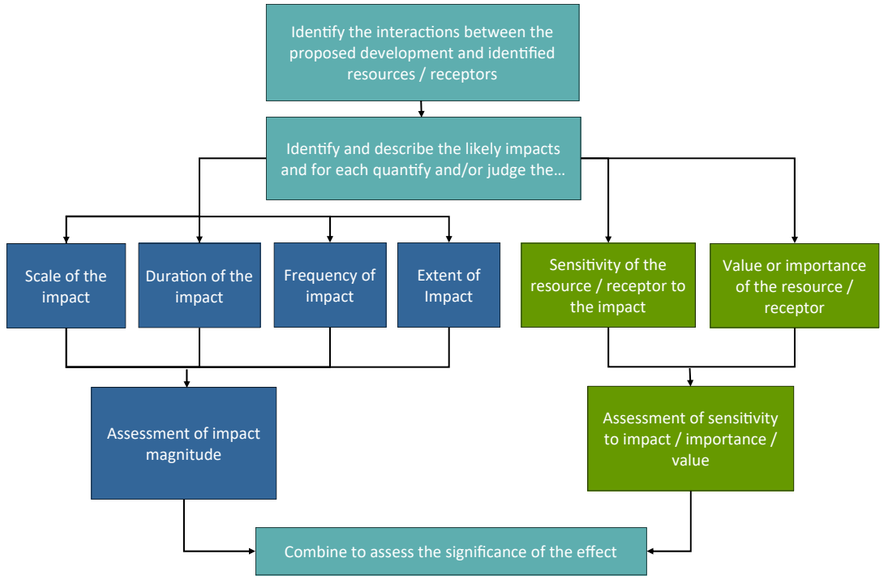
Define the preliminary scope of the biodiversity impact assessment and determine the study area. Both direct and indirect impacts should be considered.

Identify ecological resources and receptors

Establish the existing baseline conditions with particular reference to distribution of habitats and species, their uniqueness in the affected area, and their value / importance

Step 2

For each impact...



Step 3

Apply mitigation and assess residual effects

Propose measures to mitigate adverse effects

Assess the significance of the residual effect

Critical, Natural and Modified Habitat Assessment

Identify presence of Natural Habitat or Modified Habitat (IFC PS6)

Define Discrete Management Unit (DMU) within Study Area

Assess DMU for presence of...

- Criterion 1—globally, regionally or nationally important populations of CR or EN species
- Criterion 2—globally, regionally or national important populations of endemic or restricted range species
- Criterion 3—internationally or regionally important populations of regularly occurring migratory or congregatory species
- Criterion 4—threatened or unique ecosystems or those of high conservation value
- Criterion 5—landscape features that have influenced (or may influence) key evolutionary behaviours

If Critical Habitat is identified...

Cross reference to IA and apply mitigation hierarchy (defined in PS6). Determine significant residual effects on Critical Habitat trigger features

Produce Biodiversity Action Plan (BAP) that identifies measures designed to deliver net biodiversity gain for Critical Habitat features

If Natural Habitat or Modified Habitat with significant biodiversity interest is identified...

Cross reference to IA and apply mitigation hierarchy (defined in PS6). Where necessary develop offsets to deliver no net loss of biodiversity

Capture biodiversity commitments made in IA in Biodiversity Management Plan (BMP)

Magnitude of Change

Ranking	Habitat	Environmental factors e.g. presence, ambient air quality, noise
Negligible	Immeasurable, undetectable or within the range of normal natural variation change to the extend and condition of a habitat.	Change is within the normal range of natural variation.
Small	Minimal disturbance and/or loss of habitat, such that there is no loss of viability or function of the habitat.	Slight change expected over a limited area and returning to background levels within a few metres or tens of metres. No exceedances of benchmark limits. A temporary and localised physical change / source of disturbance.
Medium	Localised disturbance and/or loss of a habitat that does not threaten the long term viability or function of the habitat	Temporary or localised change and/or occasional exceedance of benchmark limits. A physical change in the medium term over a relatively large area.
Large	Widespread and/or permeant disturbance or loss of a habitat, threatening the long term viability or function of the habitat.	Change over a large area that lasts over the medium to long term, likely to cause secondary effects on ecology and/or routine exceedance of benchmark limits. A long term physical change that affects a large area or introduces a permanent physical barrier to migration

Sensitivity

Sensitivity is not an inherent characteristic of a receptor or resource. Receptor or resource sensitivity is the degree to which it is tolerant of, adaptable to and able to recover from a change in its environment. Therefore in addition to considering the importance/quality/value of the affected receptor or resource, its response (or sensitivity) to a particular impact is also considered. This is typically informed by literature review and the evidence base.

Ranking	Tolerance	Adaptability	Recoverability
High	Receptor unable to tolerate effect resulting in permanent change in its abundance or quality.	Receptor unable to avoid impact.	Receptor unable to recover resulting in permanent or long term change (e.g. >10 years).
Medium	Receptor has some ability to tolerate this effect but a detectable change (e.g. a change in distribution) will occur.	Receptor has some ability to avoid the most negative consequences of the impact or can partially adapt to it (e.g. by moving to other suitable areas).	Receptor recovers to an acceptable status over the short term to medium term (e.g. 1-10 years).
Low	receptor unaffected or positively affected.	Receptor can completely avoid the impact or adapt to it with no detectable changes.	Receptor recovers fully within e.g. 1 year.

Value / Importance

Ranking	Habitats	Species
Low	Habitats with no, or only a local designation / recognition. Habitats of significance for species listed as of Least Concern (LC) on IUCN Red List. Marine habitats which are common and widespread within the region, or with low conservation interest.	Species that are abundant, common or widely distributed and are generally adaptable to changing environments. Species are not endangered or protected, but may be listed as LC.
Medium	Habitats within nationally designated or recognised areas. Habitats of importance to globally Vulnerable (VU), Near Threatened (NT) or Data Deficient (DD) species, and species with nationally restricted ranges. Habitats supporting nationally significant concentrations of migratory species (more than 1% of national population) and / or congregatory species, and habitats used by species of medium value.	Species listed as VU, NT or DD. Species that have low abundance, restricted ranges, are currently under pressure or are slow to adapt to changing environments. Species are valued locally / regionally and may be endemic, endangered or protected. Species that do not meet criteria for High Value linked to IFC critical habitats.
High	Habitats within internationally designated or recognised areas. Habitats of importance to globally Critically Endangered (CR) or Endangered (EN) species, endemic and/or globally restricted-range. Habitats supporting globally significant concentrations of migratory species and / or congregatory species, highly threatened and/or unique ecosystems, areas associated with key evolutionary species, and low or medium value habitats used by high value species.	Species listed as CR or EN. Range restricted or endemic as defined in IFC criteria for Tier 1 or Tier 2 assessment (Guidance notes 81-83) Species that are valued nationally /globally and are listed as endangered or protected.

(1) The integrity of a site is assessed in terms of: the extent and distribution of the habitats of the qualifying features; the structure and function of the habitats of the qualifying features; the supporting processes on which the habitats of the qualifying features rely; the population of each of the qualifying features, and the distribution of the qualifying features within the site.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Assessing Biodiversity Impacts

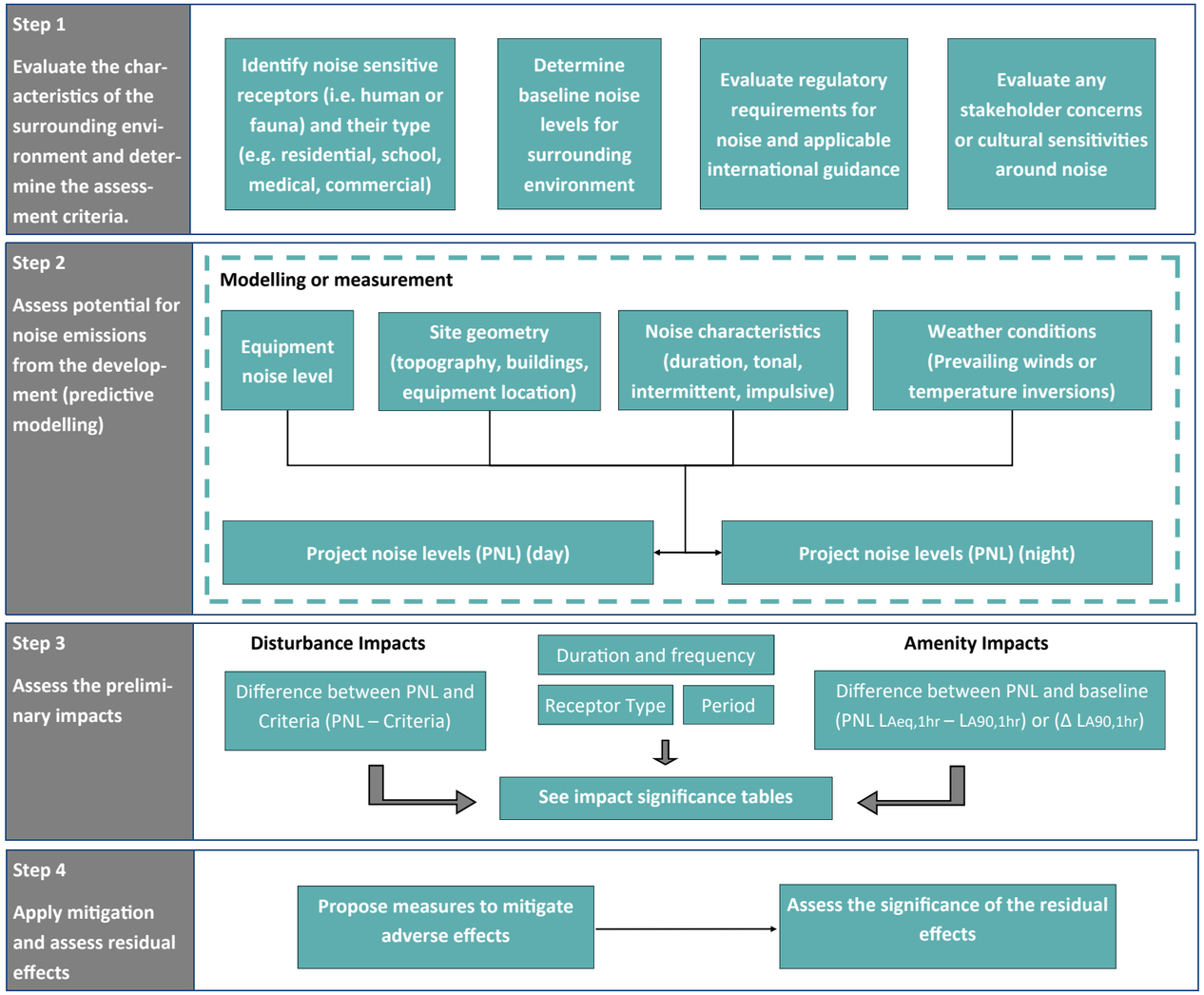
Overview

When assessing effects on humans from noise impacts, impact significance is not determined in the same way that it is for most other technical disciplines, i.e. using a matrix of impact magnitude and receptor sensitivity. Consideration of receptor sensitivity is instead made at the start of the assessment, and impacts are only assessed where sensitive receptors are identified. Receptor sensitivity is represented by impact thresholds/ criteria determined by reference to appropriate standards or guidelines. Impact significance is determined by comparing the acceptable receptor thresholds/ criteria with project noise emissions. The process followed to assess noise impacts on humans is presented below.

IFC Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts) includes objectives which are key to this Project, including to avoid, minimise, mitigate or compensate adverse impacts.

The IFC/World Bank EHS Guidelines describe assessing project noise levels against two metrics: allowable noise level criteria at the nearest noise receptors (noise impact thresholds) **or**, where pre-existing background noise levels exceed these noise impact thresholds, to not increase background noise levels by more than 3 dB.

Hence, there are two types of noise impacts that should be considered:



Disturbance impacts: for example sleep disturbance or annoyance, are possible when PNL are above noise impact threshold levels or, where pre-existing background noise levels exceed these noise impact thresholds, when PNL increase background noise levels by more than 3 dB.

Amenity impacts are more likely when existing noise levels (baseline) are relatively low, typically when background levels are less than 35 dB $L_{A90,1hr}$.

Determining Noise Impact Significance

Project Noise Levels (PNL) are compared to criteria to determine and evaluate impact magnitudes. The tables below present the impact significance fro both disturbance and amenity impacts.

Construction Phase: Noise impacts are usually determined by evaluating the likelihood of disturbance impacts, recognising that the IFC Guidance does not specifically give guidance on this.

Operational Phase: Noise impacts are usually determined by evaluating the likelihood of disturbance impacts and amenity Impacts. Where there is a difference in impact significance between the two types, the higher rating should be taken.

Impact Significance—Disturbance Impacts

Duration / Frequency	Noise Receptor Type	Period	Project Noise Level (dBA)			
			Not Significant	Minor	Moderate	Major
Permanent / Constant	Residential, institutional, educational	Daytime	<50	50-55	>55-60	>60
		Night time	<40	40-45	>45-50	>50
	Industrial, commercial	Daytime & Night time	<65	65-70	>70-75	>75
Temporary, long-term / Often	Residential, institutional, educational	Daytime	<55	55-60	>60-65	>65
		Night time	<45	45-50	>50-55	>55
	Industrial, commercial	Daytime & Night time	<70	70-75	>75-80	>80
Temporary, medium-term / Occasional	Residential, institutional, educational	Daytime	<65	65-70	>70-75	>75
		Night time	<45	45-50	>50-55	>55
	Industrial, commercial	Daytime & Night time	<70	70-75	>75-80	>80
Temporary, short-term / Rare	Residential, institutional, educational	Daytime	<70	70-75	>75-80	>80
		Night time	<55	55-60	>60-65	>65
	Industrial, commercial	Daytime & Night time	<70	70-75	>75-80	>80

Impact Significance—Amenity Impacts

Duration / Frequency	Noise Receptor Type	Period	PNL L_{Aeq1hr} - $L_{A90,1hr}$ (for background noise above L_{A90} 30 dB)			
			Negligible	Minor	Moderate	Major
Permanent / Constant	Residential	All	<5	5-10	>10-15	>15

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Step 1

Evaluate the characteristics of the proposed development and the surrounding environment

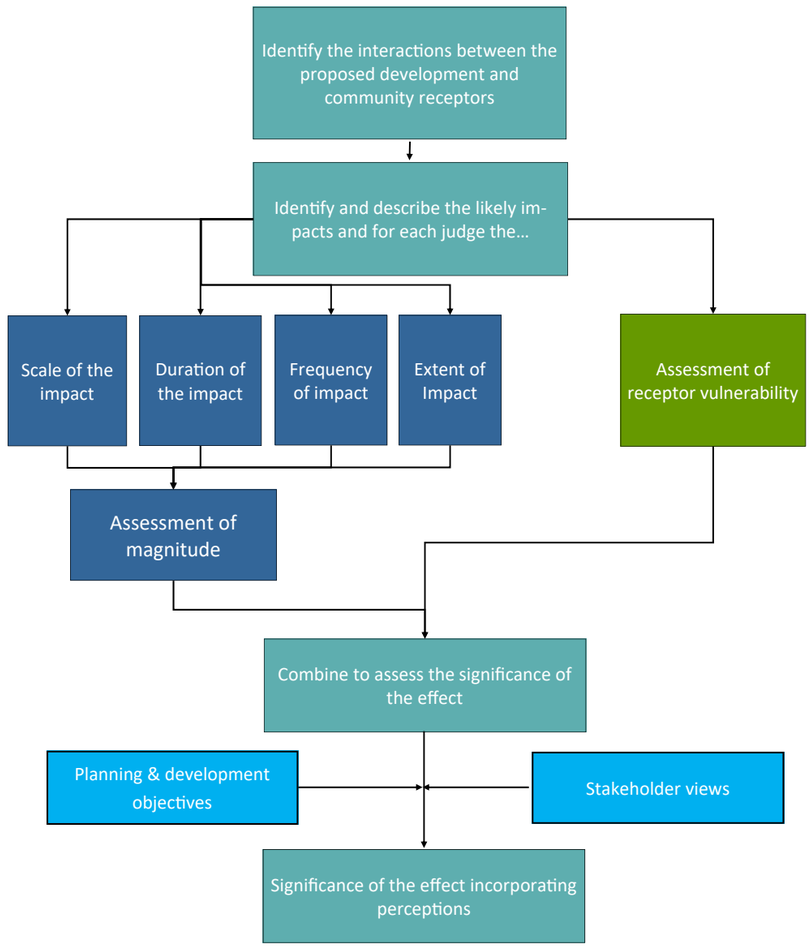
Define the preliminary scope of the social and health impact assessment and determine the study area

Identify receptors to social and health impacts.

Establish the existing baseline that does not rely on people's perceptions. Common techniques include desktop review, household survey, focus group discussions, participatory data collection and key informant interviews.

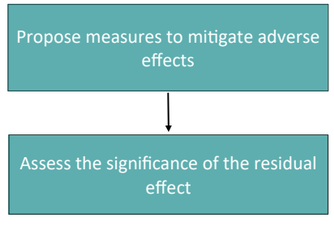
Step 2

Assess the impacts



Step 3

Apply mitigation and assess residual effects



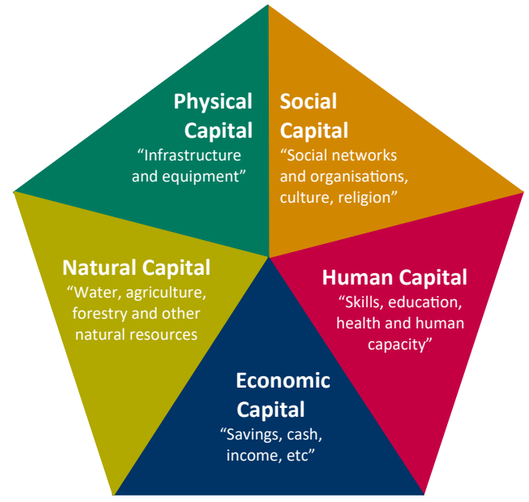
Magnitude of Change

The approach for designating magnitude for social or community health impacts takes a "best fit" approach whereby the various characteristics contributing to magnitude (scale, duration, extent, frequency) are considered in together, and the appropriate description is selected based on the overall combination of characteristic values using the judgement of the practitioner.

Magnitude	Community Receptors
Negligible	Change remains within the range commonly experienced within the household or community.
Small	Perceptible difference from baseline conditions. Tendency is that impact is local, rare and affects a small proportion of receptors and is of a short duration.
Medium	Clearly evident difference from baseline conditions. Tendency is that impact affects a substantial area or number of people and/or is of medium duration. Frequency may be occasional and impact may potentially be regional in scale.
Large	Change dominates over baseline conditions. Affects the majority of the area or population in the area of influence and/or persists over many years. The impact may beexperienced over a regional or national area.
Positive	In the case of positive impacts, it is generally recommended that no magnitude be assigned, unless there is ample data to support a more robust characterisation. It is usually sufficient to indicate that there will be a positive impact, without characterising the exact degree of positive change likely to occur.

Determining Vulnerability

Vulnerability describes the sensitivity of the receiving environment (i.e. societies, communities and households) that will experience impacts. A vulnerable individual or group is one that could experience adverse impacts more severely than others, based on his/her vulnerable or disadvantaged status. Vulnerability is a pre-existing status that is independent of the project under consideration. It is important to understand the vulnerability context as it will affect the ability of social receptors to adapt to socio-economic/cultural or bio-physical changes. A higher level of vulnerability can result in increased susceptibility to negative impacts or a limited ability to take advantage of positive impacts. More vulnerable receptors will tend to lack one or more livelihoods assets that could help them to respond to, or manage, change (see figure—right). The characteristics that underpin vulnerability will be specific to each social setting, however, the following general definitions can apply.



Vulnerability	Community Receptors
Low	Minimal areas of vulnerabilities; consequently with a high ability to adapt to changes brought by the Project
Medium	Some but few areas of vulnerability; but still retaining an ability to at least in part adapt to change brought by the Project
High	Profound or multiple levels of vulnerability that undermine the ability to adapt to changes brought by the Project

Integrating Stakeholders, Policy and Planning Perceptions

Impacts should be considered within the context of the local setting as set out in policy or development objectives and / or the view and perceptions of the local people. These priorities and views should be integrated into the assessment when evaluating the effect significance, ideally after an initial significance has been rated.

It is possible that the community will have a different perception of an impact than that expected; this is commonly referred to as a perceived impact. The effects of a perceived impact can be just as 'real' as those from other impacts and should be captured, but should be clearly differentiated. Failure to adequately address perceived impacts and the effects they cause is just as likely to result in project delays as other impacts assessed.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Step 1

Evaluate characteristics of the proposed development and the existing transportation system

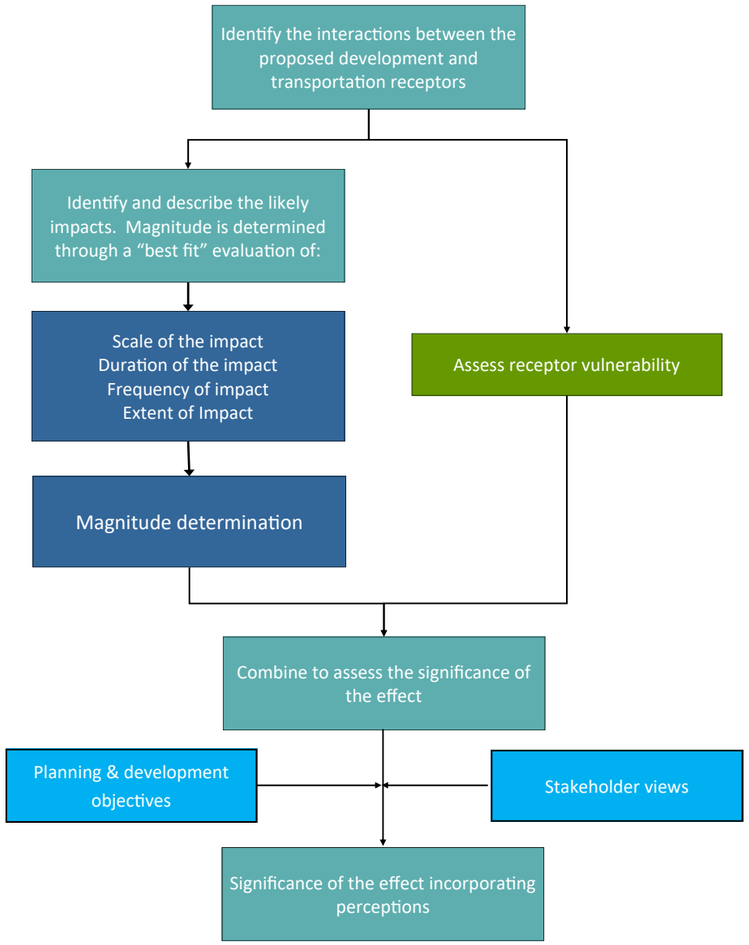
Define the preliminary scope of the transportation impact assessment and determine the study area.

Include any new transportation infrastructure added by the project

Identify receptors to transportation impacts, including all users (drivers, passengers, pedestrians, cyclists) of existing transportation infrastructure (road, rail). Establish the existing baseline through desktop review, interviews with community stakeholders and government transportation officials, and new traffic data collection

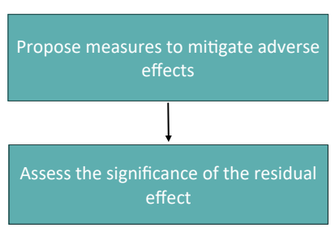
Step 2

Assess the impacts



Step 3

Apply mitigation and assess residual effects



This methodology applied only to planned activities, and therefore does not include the assessment of traffic accidents. Traffic accidents are assessed separately following the unplanned events methodology.

Magnitude of Change

The approach for designating magnitude for transportation impacts takes a "best fit" approach whereby the various characteristics contributing to magnitude (scale, duration, extent, frequency) are considered in together, and the appropriate description is selected based on the overall combination of characteristic values using the judgement of the practitioner. Positive impacts can occur simultaneously with negative impacts (i.e. an improved road surface would be a positive impact, even if it results in traffic congestion). Positive and negative impacts are described separately, rather than being merged into a single "net" impact.

Magnitude	Community Receptors
Negligible	Changes in traffic congestion and traffic volumes cause minimal or no delay (or no change occurs). No degradation of transportation infrastructure.
Small	Increase in traffic congestion and/or traffic volumes that cause measurable delay or degradation of transportation infrastructure conditions that do not require a change in daily travel patterns.
Medium	Increase in traffic congestion and/or volumes, or a degradation of transportation infrastructure conditions that cause delay and require a change in daily travel patterns.
Large	Increase in traffic congestion and/or traffic volumes, or a degradation of transportation infrastructure conditions, to the point where daily travel patterns are substantially altered, or where typical daily travel cannot occur.
Positive	In the case of positive impacts, it is generally recommended that no magnitude be assigned, unless there is ample data to support a more robust characterisation. It is usually sufficient to indicate that there will be a positive impact, without characterising the exact degree of positive change likely to occur.

Determining Vulnerability

Vulnerability describes the sensitivity of the receiving environment (i.e. non-project users of the transportation system) that will experience impacts. A vulnerable individual or group is one that could experience adverse impacts more severely than others, based on his/her vulnerable or disadvantaged status. Vulnerability is a pre-existing status that is independent of the project under consideration. The vulnerability context affects the ability of receptors to adapt to changes in transportation conditions.

A higher level of vulnerability can result in increased susceptibility to negative impacts or a limited ability to take advantage of positive impacts. The characteristics that underpin vulnerability will be specific to each setting, however, the following general definitions apply.

Vulnerability	Community Receptors
Low	Receptors (typically non-project drivers, cyclists, or pedestrians) are readily able to adapt to project-related changes in traffic patterns, and/or are not vulnerable to reductions in transportation safety.
Medium	Receptors can adapt to some but not all project-related changes in traffic patterns and transportation infrastructure degradation. Some receptors (e.g. those who must walk along public roads to reach markets or schools) are especially sensitive to degraded traffic safety conditions.
High	Receptors are unable to adapt to changes in traffic patterns and transportation safety without notable threats to livelihood, health, and/or safety. Substantial portions of the population are isolated or otherwise vulnerable to degraded traffic safety conditions.

Integrating Stakeholders, Policy and Planning Perceptions

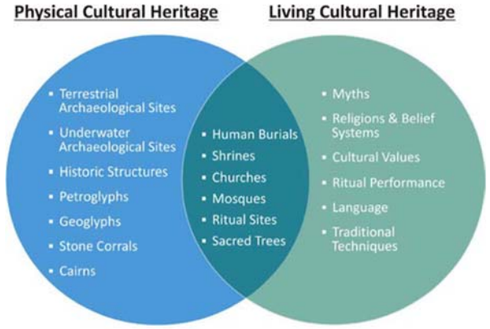
Impacts should be considered within the context of the local setting, as set out in policy or development objectives and/or the view and perceptions of the local people. These priorities and views should be integrated into the assessment when evaluating the effect significance, ideally after an initial significance has been rated. It is possible that the community will have a different perception of an impact than that expected. For example, travel behaviours that may appear to be "unsafe" (i.e. crowded taxis, vehicles in poor repair) may be "typical" for residents. This "perceived impact" should be identified, but should be clearly differentiated. Failure to adequately address perceived impacts and the effects they cause is just as likely to result in project delays as other impacts assessed.

Cultural Heritage

Definitions—what does it involve?

Cultural Heritage - the tangible and intangible legacy we inherit from previous generations and comes in a vast array of concepts and terminology.

It includes buried assets (such as archaeology and unmarked human burials), above ground assets (such as buildings and monuments), marine sites and assets, landscapes and Intangible heritage (such as language, belief systems and folklore).



Step 1

Evaluate the characteristics of the proposed development and the surrounding environment

Collect and collate a baseline of heritage to understand the existing situation

Define the preliminary scope of the cultural heritage impact assessment and determine the study area:

- Review potential presence of known/likely cultural heritage resources.
- Identify sources of existing information.
- Take account of degree of previous research – absence of known cultural heritage does not necessarily mean that none exists.
- Assess which techniques are likely to be needed in order to identify the presence of cultural heritage.
- Depending on which standards apply (national legislation or international standards) assess level of effort required.

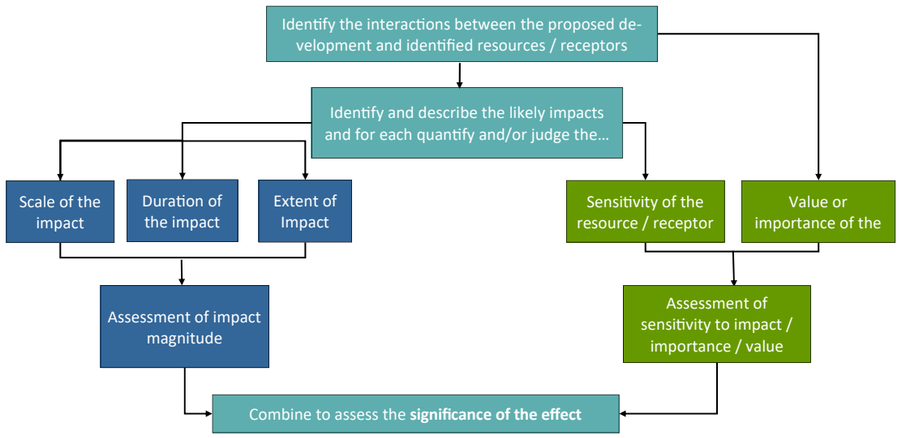
Identify cultural heritage resources and receptors. Establish the existing baseline conditions with particular reference to distribution of tangible and intangible heritage resources, their uniqueness in the affected area, and their value / importance.

The known information about an affected area represents a starting point. Addition data collection allows a fuller picture of the potential presence of unidentified remains to be developed. Additional information is gathered through:

- site reconnaissance;
- intrusive fieldwork ;
- non-intrusive fieldwork; and
- stakeholder consultation.

Step 2

For each impact...



Step 4 - Mitigation

Apply mitigation and assess residual effects

Propose measures to mitigate adverse effects of identified impacts on cultural heritage. These measures can be included within a combined Environmental and Social Management Plan (ESMP) or within a stand alone management plan .

Assess the significance of the residual effect.

Magnitude of Change

Ranking	Tangible/Intangible Cultural Heritage	Relevant factors (e.g. presence)
Negligible	No discernible change in the physical condition, archaeological potential, setting or accessibility and enjoyment of the site/ feature. No perceived change to an intangible resource/asset.	Change is insufficient to affect the value of the site or resource.
Small	Small part of the site is lost or damaged resulting in a loss of scientific or cultural value or archaeological potential: the setting undergoes a temporary or permanent change that has a limited effect on the site's perceived value to stakeholders. Public and expert access to the site/resource may be temporarily restricted.	Slight change expected over a limited area and duration. A temporary and localised physical change / source of disturbance not leading to a permanent reduction in value/importance to stakeholders.
Medium	A majority of the site is damaged or lost resulting in a loss of scientific or cultural value and perceived/actual value to stakeholders. The setting undergoes permanent change that diminishes the site's value. Access to the site is permanently reduced or restricted.	A physical and/or perceived change that alters the physical ,scientific and community value of a site or resource.
Large	The entire site or resource is damaged or lost resulting in a loss of all scientific or cultural value or archaeological potential. The setting of the site or resource is impacted to such a degree as to cause almost complete loss of value to stakeholders and loss of access to the site or resource.	A long term physical or cultural change that affects the value of a site or resource on a permanent basis.

Sensitivity

Sensitivity is not an inherent characteristic of a receptor or resource. Receptor or resource sensitivity is the degree to which it is tolerant of, adaptable to and able to recover from a change in its environment. Therefore in addition to considering the importance/ quality/value of the affected receptor or resource, its response (or sensitivity) to a particular impact is also considered. This is typically informed by literature review and the evidence base.

Ranking	Characteristics
High	A site is considered to be of high sensitivity if: • it is protected by local, national, and international laws or treaties; • the site cannot be moved or replaced without major loss of cultural value; • the legal status specifically prohibits direct impacts or encroachment on site and/or protection zone; • the site has substantial value to local, national, and international stakeholders; and/or • the site has exceptional scientific value and similar site types are rare or non-existent (equivalent of IFC Performance Standard (PS) 8 Critical Cultural Heritage).
Medium	A site is considered to be of medium sensitivity if: • it is specifically or generically protected by local or national laws but laws allow for mitigated impacts; • the site can be moved or replaced, or data and artefacts recovered in consultation with stakeholders; • The site has considerable cultural value for local and/or national stakeholders; and/or • the site has substantial scientific value but similar information can be obtained at a limited number of other sites (equivalent of IFC PS8 Non-Replicable Cultural Heritage).
Low	A site is considered to be of low sensitivity if: • it is not specifically protected under local, national, or international laws or treaties; • the site can be moved to another location or replaced by a similar site, or is of a type that is common in surrounding region; • the site has limited or no cultural value to local, national, or international stakeholders; and/or • the site has limited scientific value or similar information can be obtained at numerous sites (equivalent of IFC PS8 Replicable Cultural Heritage).

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA