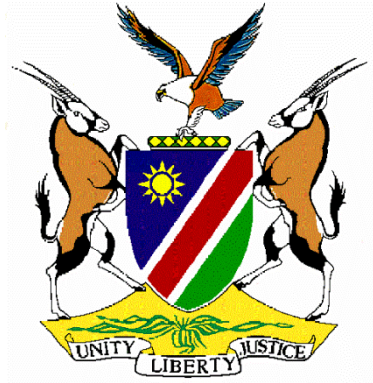


# **UPGRADING THE KRANZBERG TO TSUMEB, OTAVI TO GROOTFONTEIN RAILWAY LINES**

**A PROJECT BY THE MINISTRY OF WORKS AND TRANSPORT**






**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**Phase 1 - Kranzberg Station to Otjiwarongo Station**

**15 February 2023**

## PROJECT INFORMATION

<b>Study Phase</b>	<b>STATUTORY APPROVAL</b>
<b>Project Title</b>	Phase 1 – Upgrade of the Railway Line from Kranzberg Station to Otjiwarongo Station
<b>Project Location</b>	Erongo- and Otjozondjupa Regions
<b>Project Number</b>	2022/12/MWT
<b>Competent Authority</b>	Ministry of Environment, Forestry and Tourism (fauna & flora) Ministry of Agriculture, Water and Land Reform (fauna & flora & water; compensation) National Heritage Council (archaeology)
<b>Approving Authority</b>	Directorate of Environmental Affairs (Ministry of Environment, Forestry and Tourism)
<b>Proponent</b>	Ministry of Works and Transport (railway lines) Private Bag 13341 6719 Bell Street Windhoek
<b>Executing Agent</b>	Ministry of Works and Transport Private Bag 13341 6719 Bell Street Windhoek
<b>Financier</b>	Africa Development Bank Group 
<b>Consulting Engineers</b>	Windhoek Consulting Engineering (PTY) Ltd. 

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## LIST OF ACRONYMS

AfDB	African Development Bank
ARAP	Abbreviated Resettlement Action Plan
AU	African Union
BID	Background Information Document
°C	degrees Celsius



CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CCRA	Climate Change Risk Assessment
CIfA	Chartered Institute for Archaeologists
CMS	Convention on Migratory Species
DEA	Directorate of Environmental Affairs
DRC	Democratic Republic of Congo
DWA	Directorate Water Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EP	Equator Principles
EPRP	Occupational Health and Safety Plan (OHS) and an Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GBV	Gender-based Violence
GoN	Government of Namibia
Ha	Hectare
HPP	Harambee Prosperity Plan
I&AP	Interested and Affected Parties
IBA	Important Bird Area
i.e.	Example
IFC PS	International Finance Corporation Performance Standards
IUCN	International Union for Conservation of Nature
MAWLR	Ministry of Agriculture, Water and Land Reform (formerly)
MAW	Ministry of Agriculture & Water
MET	Ministry of Environment and Tourism (formerly)

MEFT	Ministry of Environment, Forestry and Tourism
MLR	Ministry of Lands and Resettlement
NamPower	Namibia Power Corporation (Pty) Ltd
NCCSAP	National Climate Change Strategy and Action Plan
NDP5	Namibia's 5 <sup>th</sup> National Development Plan
NEEEB	National Economic Empowerment Bill
NIRP	National Integrated Resource Plan
NSDF	National Spatial Development Framework
O&M	Operations and Maintenance
OECD	Organisation for Economic Co-operation and Development
PPA	Primary Project Area
PPP	Public Participation Process
RPA	Regional Project Area
SPA	Secondary Project Area
STI	Sexually Transmitted Infections
SACU	South African Customs Union
SADC	South African Development Community
SDG`s	Sustainable Development Goals
ToR	Terms of Reference
VEC	Valued Environmental Component
WCE	Windhoek Consulting Engineers

## GLOSSARY OF TERMS

**Adaptation** - defined as any adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploit beneficial opportunities (harness any beneficial opportunities).

**Alternatives** - A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The “no-go” alternative constitutes the ‘without project’ option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.

**Artificial Water Resource** - A natural source or occurrence of water, which is artificially confined.

**Assessment** - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

**Bulk Water Supply** - The wholesale supply of water on a business-orientated basis, in large quantities, whether in treated or untreated form, for any utilisation purpose to a customer for own use or for subsequent supply by the customer to consumers.

**Climate change risk** - is the actual change in climate predicted for an area and the specific risks these changes pose.

**Climate risk management (CRM)** - is an approach to climate-sensitive decision making. The approach seeks to promote sustainable development by reducing the vulnerability associated with climate risk. CRM aims to maximise the positive and minimise negative outcomes for communities and societies in climate-sensitive areas such as agriculture, food security, water resources and health.

**Climate change impacts** - are the consequences of climate change on natural systems.

**Climate change adaptation** - defined as a process by which strategies to moderate, cope with, and take advantage of the consequences of climatic events are enhanced, developed, and implemented.

**Competent Authority** - means a body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.

**Cumulative Impacts** - in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

**Environment** - As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".

**Environmental Impact Assessment (EIA)** - Process of assessment of the effects of a development on the environment.

**Environmental Management Plan (EMP)** - A working document on environmental and socioeconomic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.

**Evaluation** – means the process of ascertaining the relative importance or significance of information, the light of people's values, preference, and judgements in order to make a decision.

**Hazard** - Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.

**Interested and Affected Party (I&AP)** - any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.

**Mitigate** - The implementation of practical measures to reduce adverse impacts.

**Natural Water Resource** - A natural source or occurrence of water, which is not artificially confined.

**Preparedness** - is the state of being ready or prepared for action, which relates directly to adaptation.

**Proponent (Applicant)** - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment, Forestry & Tourism.

**Public** - Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

**Stakeholder Engagement / Public Consultation** - The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term “public participation”.

The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

**Sustainable Development** – Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations.

# **1 INTRODUCTION**

## **1.1 OVERVIEW**

The Environmental and Social Management Plan (ESMP) is a presentation of the required mitigation and monitoring measures for the impacts identified and assessed in Chapter 8 of the ESIA Report (March 2023), while indicating the implementation and supervision responsibilities for the both the mitigation and monitoring measures. The ESMP is applicable to the construction phase, but is applicable to any maintenance works that include construction activities during the Operational phase. The internal monitoring measures indicated in the ESMP tables refer to measures to be taken on a regular basis by the appointed contractor, independent environmental consultant, and the Proponent to ensure the correct implementation of impact mitigation measures.

As per the AfDB's ISS, mid-term and project completion E&S compliance and performance Audits should be conducted by the project management unit through a contracted independent environmental Consultant. As required, Projects which have been effectively implemented for at least one year is due for an Environmental and Social Compliance Audit in order to ensure that the projects are being implemented in compliance with the loan conditions/agreements; applicable national regulations and AfDB's Integrated Safeguard System operational safeguard policies and their requirements. As such the E&S Compliance and Performance Audits will have to be undertaken before the end of the second year and each following year afterwards.

This ESMP should be read along with the ESIA Report for this Project (February 2023).

## **1.2 OBJECTIVES OF THE ESMP**

The ESMP set-out the mitigation-, monitoring- and institutional measures to be taken by the Proponent and appointed consultants or sub-consultants to eliminate adverse impacts, offset them, or reduce impacts to acceptable levels.

The objectives of this ESMP can be highlighted as:

- Present all standards and specific mitigation measures applicable to the proposed Project, which should form part of the appointed Contractor's contract and construction procedures;
- States the financial responsibilities applicable to the implementation of the ESMP; and
- Indicate and describe monitoring activities that need to be implemented during and after construction activities to measure adequate implementation of mitigation measures and efficiency.

## **2 THE PROJECT, ENVIRONMENTAL & SOCIAL CONDITIONS**

### **2.1 THE PROJECT**

#### **2.1.1 Overview**

Namibia provides access to international shipping routes via the port of Walvis Bay to its land locked neighbours and other Southern African Development Community (SADC) countries. It is recognised that currently the transportation of export freight from neighbouring countries to Walvis Bay is done via road, and the heavy vehicle traffic has a significant impact on the quality and maintenance of road infrastructure in Namibia. In addition to the mentioned, the increased numbers of heavy vehicle transport have compromised general traffic safety, while known for other socio-economic impacts (i.e., HIV/AIDS infections). The current preferred method of transportation, i.e., road to rail, is contributing to higher levels of emissions, being counterproductive to Namibia's goal to reduce GHG emissions.

Namibia's railway infrastructure is deteriorating due to a combination of many contributing factors including but not limited to aging rail infrastructures, which reached its finite life. Weather, material degradation (track components), widespread fatigue and damage, but more especially maintenance and safety challenges are all contributing factors, as much of the railway system dates back from German period at the end of the 19th century, which was subsequently re-laid in the 1950's during the South African period.

The Government of Namibia (GoN) in its Vision 2030 sets to transform Namibia into a prosperous and an industrialized nation by the year 2030. One of the strategies in achieving the goal set for Vision 2030, aim at improving and expanding its regional transportation and trade links as expressed in national Development Plans (NDP4 and NDP5). Namibia's National Development Plan 4 propagated the vision of transforming Namibia as a whole nation into an international logistics hub for SADC region by 2025.

The Government of Namibia, represented by the Ministry of Works & Transport (MoWT) is engaged in a process towards the upgrade of the existing railway line extending from Walvis Bay – Kranzberg Station – Omaruru – Kalkfeld – Otjiwarongo – Otavi - Tsumeb, Otavi - Grootfontein and extension from Grootfontein - Rundu - Katima Mulilo to directly link the Namibian Railways with Zambia, while also facilitating connectivity with Angola, Botswana and the Southern Democratic Republic of Congo (DRC).

The proposed railway upgrade from Kranzberg Station – Tsumeb and Otavi - Grootfontein ties in with the proposed Trans-Zambezi Railway extension from Grootfontein to Katima Mulilo via Rundu in Namibia, for which a feasibility study has recently been completed. The result of the feasibility study indicates the favourability and importance of this multinational Project (M R Technofin Consultants, 2022). This railway extension is part of a cross-border railway between Namibia and Zambia, which aims to link mines in the Copperbelt region (Zambia and Democratic Republic of Congo (DRC)) with the port of Walvis Bay in Namibia.

The upgrade of the railway line in between Kranzberg Station to Tsumeb and Otavi to Grootfontein (Phase 1 – Railway Line between Kranzberg Station and Otjiwarongo Town), is in line with: (i) NDP5; (ii) the Harambee Prosperity Plan II 2021 – 2025 (a goal set out under Pillar 4: Infrastructure Development (Goal 3: Strengthening Namibia's Position as a Transport & Logistics Hub); (iii) the Sustainable Development Goals (SDGs) set out by the United Nations Development Programme (UNDP) (specifically Goal 9: Industry, Innovation and Infrastructure and Goal 11: Sustainable Cities and Communities); and (iv) Agenda 2063 of the African Union (AU).

The Master Plan for Development of an International Logistics Hub for SADC Countries includes the rehabilitation, development, and expansion of the Namibian railway network to further exploit the potential of becoming an international logistics hub for the SADC inland areas. Cargo volume along the main transportation routes in Namibia is expected to grow by 9.3% on average between 2013 and 2025 (GRN, 2015).

Financing for this Project has been sourced from the African Development Bank Group. The African Development Bank (AfDB) has actively supported various elements within the larger transportation sector drive within Namibia through inter-alia technical support (National Logistics Master Plan) and as lender (Walvis Bay Port Expansion and Walvis Bay to Kranzberg Station railway upgrade).

The Namibian Government through the Ministry of Works & Transport (MoWT) (herein referred to as the proponent) now intends to upgrade the section of existing railway line between Kranzberg Station near Karibib/Usakos to Tsumeb, Otavi to Grootfontein, as part of the proposed Trans-Zambezi Railway extension in line with the Master Plan for Development of an International Logistics Hub for SADC Countries. Such rehabilitation development takes place under the provisions of the National Transport Services Holdings Company Act, (No. 28 of 1998).

The AfDB categorised the Project as a Category 1 project, as per AfDB's Operational Safeguard System 1, requiring an Environmental and Social Impact Assessment (ESIA) inclusive of an Environmental and Social Management Plan (ESMP). To meet the requirements as set by the Namibian Environmental Management Act (No. 7 of 2007) and that of the Africa Development Bank Group, the Proponent initiated an Environmental and Social Impact Assessment (ESIA), as per The Act's Environmental Impact Assessment Regulations (GG. No. 30 of 2012) and African Development Bank (AfDB) Guidelines for the Environmental and Social Assessment procedures (ESAP) of 2015.

The proposed railway line covers a distance of about 500km with the new proposed deviations affecting a number of private farms in Erongo-, Otjozondjupa- and Oshikoto regions. Given the extent and scale of the Project, it has been divided into two phases, with Phase 1 being the section from Kranzberg Station to Otjiwarongo (content of this report) and Phase 2 the section between Otjiwarongo to Tsumeb and from Otavi to Grootfontein. Phase 1 has an approximate length of 392km extending from Kranzberg station through Omaruru, Kalkfeld settlement to the town of Otjiwarongo. Phase 1 has further been divided into section 1

extending from Kranzberg Station to Omaruru, and section 2 extending from Omaruru to Otjiwarongo, as presented in section 4.4 of Chapter 4 of the ESIA, February 2023.

The proposed railway line upgrade project will concentrate mainly on enlarging and or construction of a new railway embankment and bridges, replacement of existing old steel rails, metal sleepers and ballast to meet SADC requirements, as presented within section 4.6 of Chapter 4 of the ESIA Report (February 2023).

The proposed railway line alignment will follow the existing railway line for most of the length between Kranzberg Station and Otjiwarongo Station, with some deviations to ensure that rail curvature is in accordance with safety standards (taking into consideration the design speed and load). For the section in between Kranzberg Station to Omaruru, a total of 79 deviations are planned, with 16 of these deviations extending onto neighbouring portions of land (see Appendix E of the ESIA Report, March 2023). For the section in-between Omaruru and Otjiwarongo, a total of 88 deviations are planned, with 13 of these deviations extending onto neighbouring portions of land (see Appendix E of the ESIA Report, February 2023). The engineering drawings indicating the deviations onto adjacent portions of land are attached as Appendix F of the ESIA Report, March 2023. From the 167 proposed deviations 5 deviations are considered problematic for various reasons and alternative alignments were accordingly proposed and accepted.

Significant disturbances within the railway servitude are not anticipated since this area has already been disturbed from previous railway earthworks and related structures, as well as ongoing maintenance activities. Impact and mitigations identified relates to construction camp facilities; borrow pits and boreholes locations, and the new alignment of the railway loss (i.e., loss of land). Of concern is the limited underground water resource within the Project Area, which necessitates further investigation in identifying sustainable underground water pockets and alternative water sources that can be utilised.

Following the ESIA study of 2022, no resettlement is expected as a direct result of the loss of land for the purpose of new borrow pits, boreholes and new railway alignment. For this reason, an Abbreviated Resettlement Action Plan (content of this Report) has been drafted as a standalone document, as required by AfDB's Safeguards and Sustainability Series (November 2015).

### **2.1.2 Brief Project Description**

The Project stretches over a total distance of approximately 500km, from Kranzberg Station located approximately 11km east from Usakos within the Erongo Region, proceeding north-east wards towards Otjiwarongo in the Otjozondjupa Region, and onwards to Tsumeb in the Oshikoto Region. From Otavi the railway line branches off in an easterly direction turning north-east towards Grootfontein (see Figure 2.1.2-1 below).



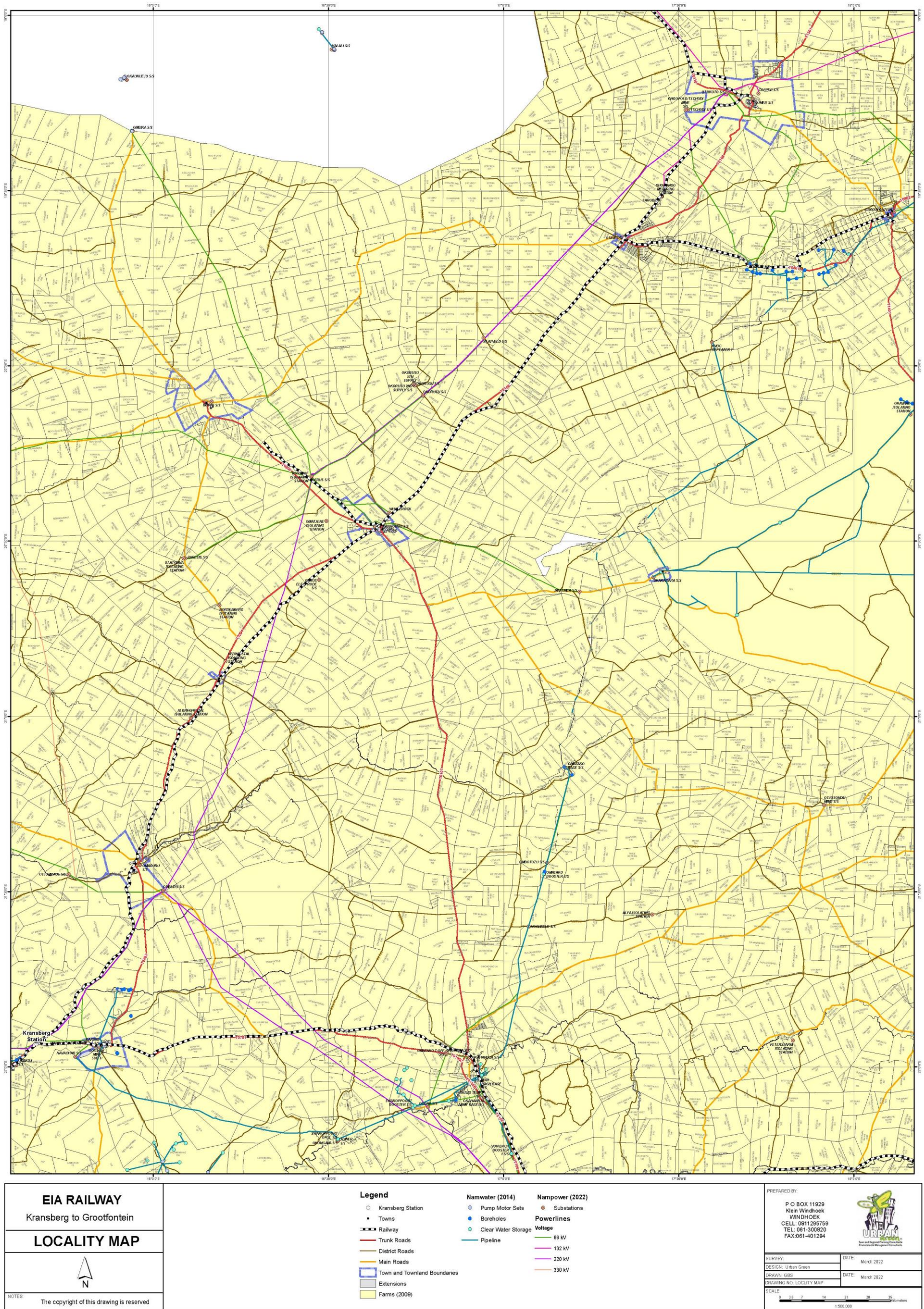


Figure 2.1.2-1: Locality Map – Railway Line from Kranzberg Station to Tsumeb & Otavi to Grootfontein



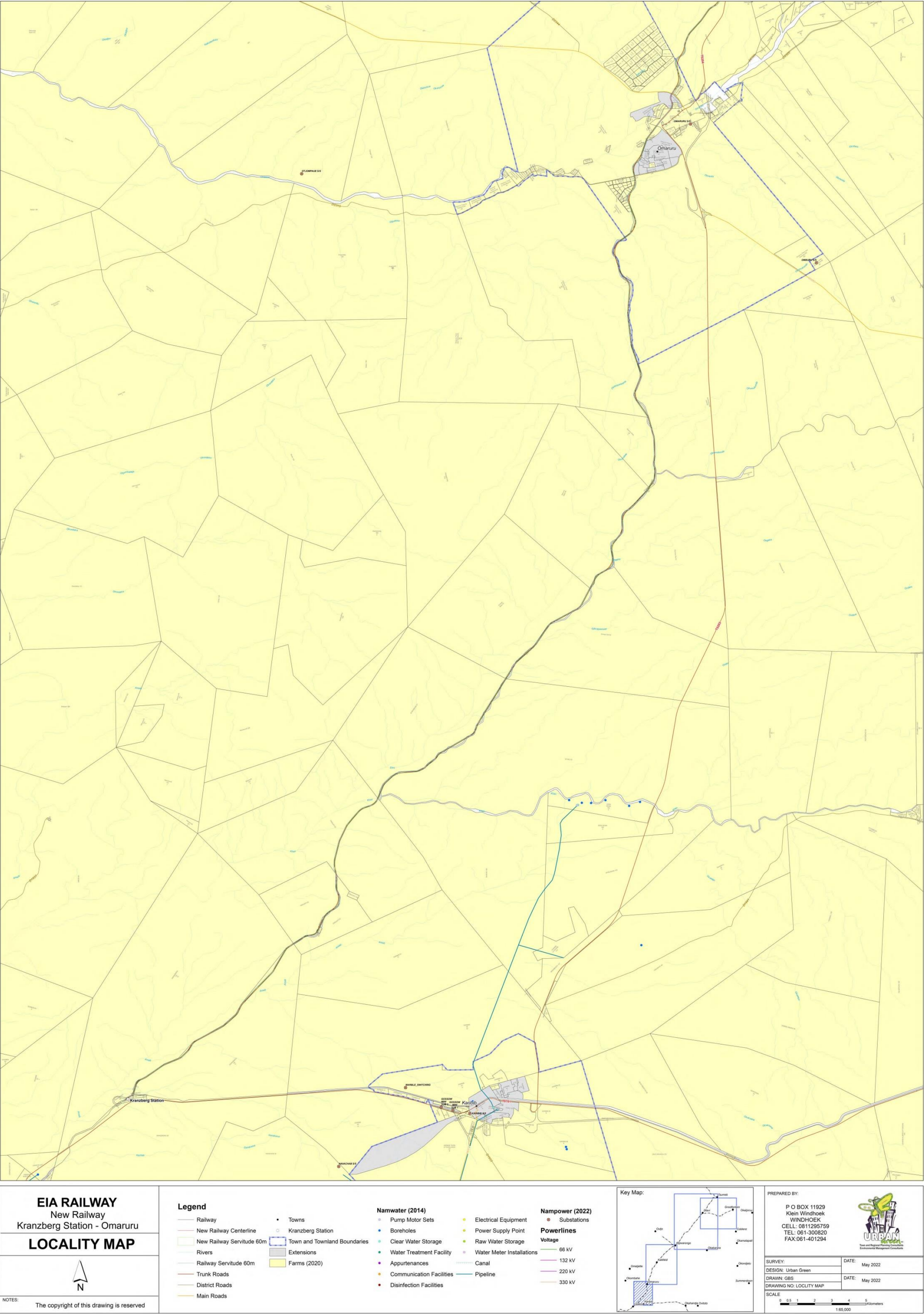


Figure 2.1.2-2: Locality Map – Railway Line from Kranzberg Station to Omaruru



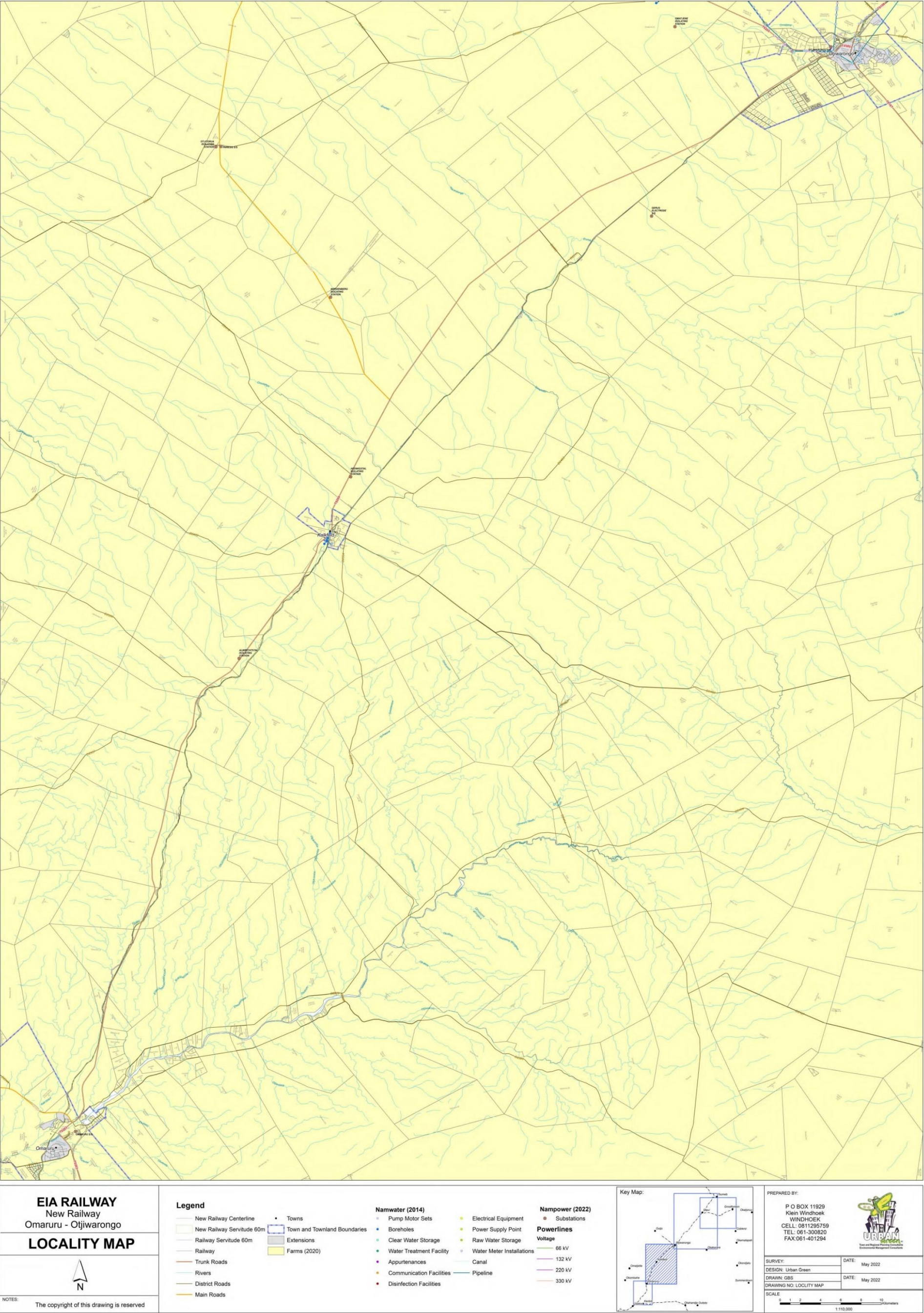


Figure 2.1.2-3: Locality Map – Railway Line from Omaruru to Otjiwarongo



The Kranzberg Station to Tsumeb Station section of the railway line to be upgraded has an approximate length of 392km and passes through the towns and settlement of: Omaruru, Kalkfeld, Otjiwarongo, Otavi and Tsumeb, while the Otavi Station to Grootfontein Station section has an approximate length of 91km, and passes through the towns and settlement of: Otavi, Kombat and Grootfontein.

The Phase 1 part of the Project, i.e., content of this ESIA, entails the upgrading of the railway section in between Kranzberg Station to Otjiwarongo Station, as presented by Figures 2.1.2-2 and 2.1.2-3, above.

The larger part of the railway line passes through predominantly commercial farmlands, with a few urban areas along the way, i.e., Omaruru, Kalkfeld and Otjiwarongo.

The upgraded railway line will follow the existing railway line for the entire length between Kranzberg Station and Otjiwarongo Station, with some deviations, leaving the railway servitude onto adjacent farms. The alignment through urban areas will remain as is, without any change or deviation.

### **2.1.3 Scope of Works**

The main Project features would be the construction of a new railway embankment within the existing servitude, construction of new bridges, the reuse of P2 concrete sleepers, reclaiming of ballast stone, relaying of track on to the new embankment, the procurement and placement of new 48 kg/m rails, and the procurement and placement of new ballast stone for full profile as specified.

The Project's scope of work includes the following activities –

- Clearing of vegetation where required for the railway line, borrow pits and quarries;
- Opening-up of areas for the abstraction (i.e., borrow pits & quarries) and transportation (i.e., roads) of material to the railway servitude;
- Sinking of new boreholes and abstraction of water or collecting water from existing water network for purpose of construction of new railway embankments;
- Transportation of material (i.e., concrete sleepers; railway tracks) to the new railway section and assembly of railway line on top of new embankments;
- Transportation of water for purpose of construction of bridges and stormwater drainage structures;
- Construction of new embankments, bridges, and stormwater drainage structures;
- Laying of concrete sleepers, railway tracks, and ballast stone;
- Removal of old railway sleepers, railway tracks and ballast stone (that which cannot be reused);
- Transportation of construction workers from nearby urban areas to the railway line;

- Temporary accommodation of construction personnel along the railway line within the rail reserve;
- Site clean-up, de-establishment, and rehabilitation of disturbed areas; and
- Discussions with affected farm owners affected by the deviations (i.e., loss of land) to obtain consent and discuss compensation.

No work will occur outside of the existing railway servitude; and only existing service and public roads will be used when transporting construction materials and vehicles to the railway servitude from appropriate material staging areas. Importantly, the works will be conducted in such a manner so as to not adversely affect the normal operational activities of the operator and the line must remain in commission during construction.

## **2.2 MAJOR ENVIRONMENTAL AND SOCIAL COMPONENTS**

The study area is predominantly confined to the 60m railway reserve with some deviations into adjacent commercial farmlands, of limited extent. Small pockets of land will be taken up by borrow pits. In addition, the railway line passes through the towns of Omaruru, Kalkveld and Otjiwarongo (Phase A). Land use along the larger part of the railway line is 'commercial agriculture', which includes cattle farming and game farming, as well as tourism and charcoal production.

With the entire Project located within the existing railway servitude located adjacent to commercial agricultural activities with small sections passing through urban areas, the entire Project area are already disturbed and considered of brownfields status.

### **2.2.1 Major Environmental Components**

Considering the nature of the Project and baseline character of the receiving natural environment, of major concern is the demand for construction water and the potential impact on already limited underground water resources within the Project area, and the potential of pollution of underground water resources.

Section 5.2.5 in Chapter 5 of the ESIA Report (February 2023) presents the hydrological and geohydrological baseline characteristics of the Project area.

Of importance to the Project is the hydrological and geohydrological characteristics of the project area, and in specific the need for water for construction purposes and the need to drill new boreholes within the larger study area. Caution towards pollution during the construction process is highlighted and require proper management.

The railroad in between Kranzberg Station to Otjiwarongo passes three major ephemeral west-flowing drainage systems. The first part winds through the *Khan River* drainage area from Kranzberg to Omaruru, then through the *Omaruru River* drainage area from Omaruru to Kalkfeld and extends into the *Ugab River* drainage area from Kalkfeld to Otjiwarongo.

The railroad consequently crosses the Khan River, a tributary thereof, the Kanona River, the Omaruru River, the Epaku River and the Erundu River. To accommodate west-flowing stormwater, the new railroad design incorporates 15 bridge constructions.

A few well-studied aquifers are present in the study area that either supplied water in the past, or are still supplying water, for bulk abstraction to supply in municipal water demands. These aquifers are shortly discussed in the Hydrogeological Report, attached as Appendix B1 to the ESIA Report (February 2023).

Considering the hydrogeological environment and more specifically the nature of the aquifers in the study area, there are three main types of areas that are prone to high pollution risk, namely, i.e., primary alluvial aquifers; secondary aquifers where high-transmissivity preferential flow paths have been created through fracturing; and secondary limestone (marble) aquifers with solution features.

The Hydrological Assessment (Appendix B1 to the ESIA Report, February 2023) concludes that of the four available aquifers, the Spes Bona Aquifer is unsustainable, the Kranzberg and Omaruru Aquifers are used to its maximum capacity, while the Otjiwarongo Aquifer may have potential for additional groundwater abstraction. All four of the mentioned aquifers are located within either proclaimed water protection areas, or exploit river alluvial, thus in public streams. According to the Water Act, permits are therefore required to 1) drill boreholes, and 2) abstract groundwater for any use other than domestic use. Permits should accordingly be applied for by the Proponent and/or appointed contractor.

## **2.2.2 Major Social Components**

Commercial agriculture, game farming, conservation and tourism, as well as charcoal production play a very important role within the area and larger Region's economy. The proposed Project may have effects on touristic activities during construction through the creation of nuisances. Poaching, theft and feld fires, either as a direct or indirect result of construction activities is currently of great concern and has been raised by the I&APs as an aspect of the Project to be effectively addressed and managed.

High unemployment and low-income levels, as well as low skill levels exists, which can be alleviated by the proposed Project. Exploitation of vulnerable groups is a concern, which is unfortunately associated when a sudden increase in income is experienced within poor communities.

The proposed Project, as per the alternative alignments, is not expected to result in any resettlement of people. The loss of agricultural land to provide for the railway line deviations will be discussed and compensation paid to the applicable landowners. The consultation with affected landowners and compensation discussion will follow the geotechnical studies during which time the borrow pits will also be discussed with the affected landowners. Compensation will be done by the MAWLR and is accordingly excluded from the scope of the ESIA.

### **3 BENEFICIAL AND ADVERSE IMPACTS**

#### **3.1 BENEFICIAL**

- **Reduced Travel/Transport Times:** Improved railway conditions and standards will reduce travelling and transportation time, which again has economic benefit to both the transporter and client. Reduced traveling times has the benefit of less fuels being consumed, which has a positive environmental impact (i.e., combating Climate Change).
- **Improved Safety/Reliability:** The existing railway line network is known for frequent derailments, which is primarily because of the current state of the rail infrastructure, which the Project will mitigate. The proposed Project includes provision of a new railway embankment, bridges, and culverts. Other proposed measures such as major and minor junction improvements, enhancement of sight distances and signage for safe intersections, vehicles, cattle, wildlife and pedestrian overpass and underpass crossings will help in increasing safety and reliable service.
- **Reduced Hazardous Liquids Spills and Pollution:** Improved railway conditions and standards will drastically reduce the possibility of incident and accidents, which will reduce the frequency and volumes of pollution caused by hazardous liquids.
- **Economic Impacts for Travellers:** Savings are anticipated in passenger transportation cost in comparison to ever increasing fuel prices of road transport.
- **Economic Impacts for Road Maintenance:** Transportation of freight, animals and goods via rail will result in reduced road transportation, which again place less of a burden on roads and resulting maintenance frequency and/or reconstruction of roads.
- **Economic Impacts for Regional and Country Wide Development:** Improved rail transport will result in reduced transaction costs in transportation and create more certainty in using the Project rail for transport, given the elevated standard. Furthermore, availability of reliable transport infrastructure and efficient transportation services is an essential requirement for achieving goals of any development plan. The proposed railway improvement will facilitate efficient and reliable transportation of freight to and from Walvis Bay harbour throughout Namibia and neighbouring SADC countries.
- **Employment Generation:** Infrastructure projects of this nature and scale provide direct and indirect employment opportunities to skilled, as well as unskilled labourers. The Project is expected to employ  $\pm 150$  people as labourers for the duration of the construction period, while the specialised work force will be  $\pm 50$  people. The enhanced income of the local skilled and unskilled work force will have a positive impact on other sectors of the economy.
- **Local Content:** The Project will source 100% of labour by value and 80% of materials by value (excluding petroleum and petroleum products) for construction sourced in Namibia.

- Reduced GHG Emissions: Improved railway conditions and standards will result in the reduction of goods being transported via road, which would directly contribute to reduced GHG emissions from road transport. The same apply to passenger transported via rail, which will reduce the use of road transport and lesser GHG emissions.

### **3.2 ADVERSE**

- An overview of the yields of those boreholes assessed as part of the Hydrological Assessment Report (Appendix B1 to the ESIA Report, February 2023) gives an indication of the generally low groundwater potential to supply in construction water, where high yielding boreholes are required to supply in large volumes of water on a daily basis.
- The hydrogeological characteristics of these environments are a) usually high transmissivities and b) high storability, i.e., in laymen's term, groundwater flows at a high rate through these aquifers, and the percentage of the rock volume available to store water in is high respectively.
- Concern exists for the vulnerable part of the communities, i.e., woman, children and the elderly, that might be exploited during the course of the Project construction phase. With high unemployment rates and especially amongst woman, sexual exploitation for money is considered a high risk, which require proper management.
- The proposed Project may have effects on touristic activities during construction through the creation of nuisances, i.e., noise, delayed traveling times; etc.).
- Poaching, theft and feld fires, either as a direct or indirect result of construction activities is currently of great concern requiring effective managed.



## **4 SUMMARY OF IMPACTS AND MITIGATION MEASURES**

The various impacts and mitigation measures identified as applicable to the Project is summarised in Table 4-1 below, which provides a tool to facilitate the contractors' ESMP.

Table 4-1 presents six columns based on the initial identified VECs for the construction activities of the Project:

- Column 1 lists the identified VECs (see Table 2.5-1 within the ESIA Report);
- Column 2 list the sources of impact relating to the VECs;
- Column 3 list the potential impacts to the VECs;
- Column 4 presents the proposed mitigation measures; and
- Columns 5 and 6 list the responsibility for implementing the mitigation measures and monitoring of compliance.

**Table 4-1** – Environmental and Social Management Plan (Summary of Impacts and Mitigations)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Hydrology – Water Resource Quantity	Extraction of groundwater for construction requirements.	Depletion of scarce water resource.	<p>Prepare and implement a Construction <u>Water Demand Management Plan</u>, considering the findings of the Hydrogeological Assessment (Appendix B1), which should include the use of semi-purified wastewater collected from nearby urban areas' wastewater treatment facilities, as well as NAMWATER supply.</p> <p>Other available sources within the larger region should be considered as part of the Construction Water Demand Management Plan.</p> <p>Limit groundwater use to essential needs and aim at continually improve efficiency in the use of groundwater to minimise effect on local availability.</p> <p>Regularly inspect all installations associated with groundwater extraction and distribution to eliminate leaks which are wasting the resource.</p> <p>Regularly maintain the equipment used to spray water for dust abatement to eliminate leaks and minimise losses.</p> <p>Consider the installation of systems to collect and store rainwater to minimise dependency on groundwater within the work sites.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Hydrology – Water Resource Quality	Temporary construction facilities, transportation of hazardous liquids and materials, site preparation, borrow pit activities, drainage and stormwater management, structural work, waste and hazardous material management, operation and routine maintenance.	<p>Use of contaminants &amp; hazardous materials &amp; construction waste &amp; solid waste from toilets (suspended solids and others).</p> <p>Potential contamination of ground- and surface water through accidental spills and leaks during construction activities.</p>	<p>Prepare and implement a <u>Hazardous Waste and Materials Management Plan</u>, a <u>Wastewater Management and Disposal Plan</u>, and a <u>Waste Management Plan</u> which include arrangements for managing solid and liquid hazardous and non-hazardous waste (to be approved by the supervising consultant and the environmental department before the start of the construction).</p> <p>Ensure the development of a strong Environmental Management Plan, including but not limited to, strong measures to improve efficiency in the use of water, a <u>Spill Prevention and Response Plan</u> and a <u>Waste Management Plan</u> that should consider the following recommendations:</p> <ul style="list-style-type: none"> <li>▪ Hazardous waste and hazardous material (including cement bags) storage facilities should be built on an impermeable surface offering confinement capacity in the event of a spill or release. These storage facilities should offer protection against weather conditions, have access control, and secured.</li> <li>▪ Store all waste in distinct closed containers to allow for some segregation (recyclables and waste) and adequate confinement.</li> <li>▪ The fuel trucks that will ensure fuelling of machinery at the work sites should carry a spill kit. Except for fixed water works equipment that cannot be moved, all machinery should be moved away from water side before fuelling (at least 30 m). All fuel storage tanks should be equipped with adequate and required confinement capacity.</li> <li>▪ Ensure some of the personnel trained are available to intervene in the event of accidental spills or leaks.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<ul style="list-style-type: none"> <li>▪ Contacts of firms (names and phone numbers) specialized in spill intervention must be kept on-site in the event of a spill or leak that cannot be handled with on-site spill kits alone.</li> <li>▪ Ensure material used for construction comes from known clean sources to avoid chemical contamination. If soils from a non-certified site are accepted, characterization prior to use is recommended.</li> </ul> <p>Waste minimisation and prevention hierarchy.</p> <p>Identification of the types and dimensions of storage means at source for hazardous and non-hazardous wastes.</p> <p>Design and construct a central waste storage area for non-hazardous wastes which accommodate for the received segregated streams/or any alternative solution proposed by the contractor.</p> <p>Identify the nearest landfill for the disposal of the non-recycled items.</p> <p>Identify a recycling contractor preferably from the nearby villages.</p> <p>Waste contractors' certifications and compliance assurance. All waste streams should be transported and disposed of by certified service providers and disposed of in licensed landfills/dump sites.</p> <p>Training for workers on sound environmental practices to manage solid wastes.</p> <p>Storage used oils in sealed drums sheltered from the sun and rain until collection.</p> <p>Record keeping (waste inventory, waste disposal registers and consignment notes).</p> <p>Complete prohibition dumping of solid and liquid waste in any river, stream, and drainage line or water body.</p> <p>When using diesel generators, place the generator on an impermeable protective base layer or drip tray.</p> <p>Ensure vehicles, equipment and machinery is in good working order to minimize the leak of contaminants.</p> <p>Ensure dedicating a specific area for the cleaning of concrete trucks. Capture the resulting wastewater and proceed to adequate treatment or disposal.</p> <p>Install terrestrial silt screens, where practically possible, between work areas and water's edge to limit transport of fines in water run-off.</p> <p>In case of accidental spills of hydrocarbons, isolate and collect the contaminated soil and store as hazardous waste to be disposed of in hazardous waste landfills.</p> <p>For the contractors' temporary offices, use intact septic tanks, free of any leaks and to be regularly emptied before reaching its maximum capacity or on-site wastewater treatment to be done to achieve general standards.</p>		

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Hydrology – Water Resource Quality (continue)	Temporary construction facilities, transportation of hazardous liquids and materials, site preparation, borrow pit activities, drainage and stormwater management, structural work, waste and hazardous material management, operation and routine maintenance. (continue)	Use of contaminants & hazardous materials & construction waste & solid waste from toilets (suspended solids and others).  Potential contamination of ground- and surface water through accidental spills and leaks during construction activities. (continue)	Development and implementation of a <u>Hazardous Substances' Management procedure</u> . The procedure should at minimum address the following aspects: operational procedures, procurement, prohibited substances, inventory, risk assessments, labelling, storage, Safety Data Sheets and control measures. The procedure should mention specific measures for the control of risks associated with the use of the diesel fuel for power generation. The management plans and procedures can be standalone documents or part of an overall construction environmental, health and safety management plan. This shall also include a note on accidental spills of hydrocarbons, and methods of isolation and collection of the contaminated soil and storage as hazardous waste to be disposed of in hazardous waste landfills.  Inspection of the site for existing contamination from previous work/activities. Where inspection results were positive, carefully collect and isolate all the contaminated soil in sealed bags to be disposed in the nearest hazardous waste landfill/treatment facility.	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Hydrology – Water Flow & Flooding	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, operational activities and maintenance.	Temporary obstruction of surface water flow during construction and maintenance activities.	The following mitigations should be presented in a <u>Water Run-off and Flooding Management Plan</u> .  Define vehicle and machinery movement routes within the work site and ensure they are respected to limit the creation of erosion.  Where possible, run-off water from the work area and adjacent lands should be captured through ditches and redirected appropriately.  As much as possible, conduct work that may impact local hydrology during the dry seasons (from June to November) to minimize the risks associated with watercourse obstruction or encroachment.  Avoid construction activities within rivers, water courses and drainage lines during rain seasons (from December to May).  Except where specifically required (i.e., for bridge construction), avoid storage of granular or any other material within, on the shore of or near (less than 30 m) a water course to limit the risks of such material impeding water flow.  Continues monitoring of up-stream conditions to detect any flow in advance.  Installation of infrastructure should provide for the necessary design and avoidance measures to protect infrastructure from flood damages.  Conduct regular inspection and cleaning of culverts to remove encumbrances and maintain the efficiency of the drainage system.	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Flora (Habitat)	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural	Loss of vegetation cover through site clearing for variety of purposes (i.e., new embankment; construction site & laydown areas, storage areas, etc.) and temporary roads.	During the planning phase of the construction period, the appointed contractor should identify areas for lay down areas and construction vehicle sites within areas that are already cleared or disturbed, to be captured in a <u>Pre-Construction Site Assessment &amp; Laydown Plan</u> .	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
	works, waste and hazardous material management, operational activities, and maintenance.		Only prominent gravel tracks should be utilised during the construction phase, to avoid track proliferation. Off-road driving should be strictly prohibited.  Permits should be obtained for protected plant species that unavoidably need to be removed.		Consultant (3 monthly)
		Spreading of invasive species and alteration of local vegetation conditions.	<p>The below mentioned should be included into the <u>Pre-Construction Site Assessment &amp; Laydown Plan</u>.</p> <p>Prevent and discourage the collecting of firewood, as dead wood has an important ecological role. Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g., chopping down of live and/or protected tree species such as <i>Acacia erioloba</i> which is a good quality wood.</p> <p>Avoid the removal and damage of bigger trees (especially protected species – i.e., <i>Acacia erioloba</i> [camel thorn], <i>Faidherbia albida</i> [Anna tree], <i>Tamarisk usneoides</i> [wild tamarisk] and <i>Acanthosicyos horridus</i> [Inara] plants [See Tables 5 and 6; Forest Act No. 12 of 2001]) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna.</p> <p>Implement a policy of “no tolerance” towards the existing invasive alien plant species (i.e., <i>Argemone ochroleuca</i>, <i>Datura</i> spp., <i>Eucalyptus</i> spp., <i>Nicotiana glauca</i>, <i>Prosopis</i> spp. and <i>Ricinus communis</i>) in the area. This should include the removal and destruction of these species throughout the proposed development areas. Such activity would be beneficial to the overall ecology of the area, especially the Kuiseb River area where most of these aliens currently occur.</p> <p>Rehabilitation of the disturbed areas – i.e., initial development access route “scars” and associated tracks, as well as temporary construction sites. Workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g., wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies’ environmental integrity, but also show true local commitment to the environment.</p> <p>Educate/inform contractors on protected species to avoid and the consequences of damaging such species. Liaise with DRFN and/or MET to provide this service.</p> <p>Investigate the idea of employing a qualified environmental officer (EO) during the construction phase to ensure appropriate conduct by contractor(s).</p> <p>Avoid the use of herbicides for plant/weed control along the pipeline/power line route(s).</p> <p>Employ an ecologist for advice on the best route(s) prior to construction – i.e., assist with the final alignment.</p> <p>Avoid unnecessary clearance of vegetation and keep to the minimum required.</p>	Proponent / MET	Contractor’s E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Preserve existing vegetation where no construction activity is planned and mark areas as no-go areas. These areas must be designated as sensitive, and staff and contractors must be formally made aware that these areas are not to be destroyed.</p> <p>Remove and keep topsoil to be reused in the same area for revegetation needs. Revegetate temporally disturbed areas once the work is completed with indigenous flora species.</p> <p>In order to limit the spread and propagation of invasive species, all such invasive species within the corridor of impact and/or right of way should be removed/cleared.</p> <p>Inspect construction vehicles and heavy machinery before first mobilization on site to ensure they are free of soil or viable segments of invasive alien species.</p> <p>Do not use soils potentially contaminated with invasive alien species as a covering material on site or elsewhere.</p> <p>Rehabilitate burrow pits using indigenous vegetation when works are completed, or in accordance with landowner agreement.</p> <p>Implement a construction closure plan in which rehabilitation measures are defined and budgeted.</p> <p>All construction material and waste must be removed from the construction sites and the area rehabilitated once works are completed.</p> <p>Avoid project activities (e.g., camps, laydown yards, topsoil storage etc.) within remaining natural habitats, which should be placed within already disturbed areas.</p> <p>Undertake a pre-construction walkover survey within the railway reserve, quarry sites and other temporary construction facilities to identify the areas of natural habitat and priority plant species. Mark and leave undisturbed to the extent feasible, or relocate if feasible.</p>		
Fauna	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, operational activities and maintenance.	<p>Habitat loss, degradation, or modification through construction work.</p> <p>Increase in mortality from poaching and killing. Behaviour disturbances because of construction noise.</p>	<p>The below-mentioned mitigations should be presented in a <u>Pre-Construction Site Survey and No-go Plan</u>.</p> <p>Implement and maintain track discipline limited to existing tracks and/or certain tracks with maximum speed limits (e.g., 30 km/h) as this would result in fewer faunal road mortalities and associated dust pollution problems.</p> <p>Avoid off road driving. Nocturnal driving should also be avoided as this result in the destruction of slow-moving fauna – e.g., various reptiles and other nocturnal species.</p> <p>Restore shores and riverbeds to their pre-existing condition once works are completed.</p> <p>Ensure culvert and drainage structures' dimensions allows for connectivity of aquatic habitat.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Avoid and/or limit the use of lights during nocturnal activities as this influence and/or affects various nocturnal species – e.g., bats and owls, etc. and contribute to “light pollution”. Use focused lighting for least effect.</p> <p>Prevent overnight activities during the construction phase(s). This could result in pollution; killing of perceived dangerous nocturnal species (e.g., snakes, bats, etc.); illegal collection of species for the pet industry (e.g., chameleon), etc.</p> <p>Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g., ostrich eggs, etc.), indiscriminate killing of perceived dangerous species (e.g., snakes, etc.), and the collection of wood as this would diminish and negatively affect the local fauna – especially during the construction phase(s).</p> <p>No hunting by the contractor’s workers shall be allowed. Possession, transport, collection, fishing, hunting or purchase of IUCN Red-listed species, CITES listed species, and any species protected by national law by the contractor’s workers will not be permitted.</p> <p>Initiate a suitable and appropriate refuse removal policy during the construction phase(s) as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g., black-backed jackal, crows, etc.</p> <p>Avoid the removal and damage of bigger trees (especially protected species – i.e., <i>Acacia erioloba</i> (camel thorn), <i>Faidherbia albida</i> (Anna tree) and <i>Tamarix usneoides</i> (wild tamarisk) plants [See Tables 5 and 6; Forest Act No. 12 of 2001]) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna.</p> <p>Rehabilitation of the disturbed areas – i.e., initial development access route “scars” and associated tracks, as well as temporary construction sites. Preferably workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g., wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies’ environmental integrity, but also show true local commitment to the environment.</p> <p>Prevent (do not allow) domestic pets – e.g., cats and dogs – accompanying the workers during the construction phase as pets can cause considerable damage to the local fauna. Cats also interbreed and transmit diseases to the indigenous African wildcat found in the area. The indiscriminate and wanton killing of the local fauna (including domestic stock) by such pets should be avoided at all costs.</p> <p>Initiate a policy of capture and removal of fauna (e.g., slow moving species such as chameleon, snakes, etc.) encountered serendipitously within the construction areas. Such fauna should be removed to other areas of similar habitat in the area.</p> <p>Ensure that mobile ablution facilities are used and frequently serviced on site during the construction phase(s) to avoid pollution in the area.</p>		



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Educate/inform contractors on dangerous and protected species to avoid and the consequences of illegal collection of such species. Liaise with DRFN and/or MET to provide this service.</p> <p>Undertake a pre-construction walkover survey within the railway reserve, burrow pit sites and other temporary construction sites to identify any active nests. If a threatened bird species is nesting, consult a local avifauna specialist for guidance on actions to be taken.</p> <p>Investigate the idea of employing a qualified environmental officer (EO) during the construction phase to ensure appropriate conduct by contractor(s).</p>		



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Air Quality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, structural works, base & embankment preparation, routine maintenance of servitude.	Release of dust and atmospheric contaminants (GHG emissions).	<p>The below mitigations should be presented within a <u>Construction Pollution Prevention Plan</u>.</p> <p>Avoid leaving mechanical equipment, machinery, trucks, and vehicles idling unnecessarily.</p> <p>Ensure all vehicles; equipment and machinery are in good working order.</p> <p>Limit vehicle and machinery speed within the work site to minimize dust generation. Authorized speeds on the work site should be specified and enforced by the contractor.</p> <p>Use water bowzers as dust abatement to limit excessive dust emissions from granular material handling and piling, and vehicle movements.</p> <p>All vehicles used by the contractor to deliver construction materials and/or collect waste materials to and from the site should be completely covered to avoid material spillage.</p> <p>Drop granular material as close to the ground possible to reduce the generation of airborne particles.</p> <p>Implement an Eco-driving attitude program that will help better manage heavy equipment and fuel consumption.</p> <p>All construction vehicles used on-site should be within a perfect state and not result in higher CO<sup>2</sup> emissions than what the particular vehicle's allowable CO<sup>2</sup> emissions levels.</p> <p>When practically possible, use alternative technologies, energy sources and materials.</p> <p>All vehicles used by the contractor to deliver construction materials and/or collect waste materials to and from the site should be completely covered to avoid material spillage.</p> <p>Regular maintenance and inspection of equipment and vehicles used on site.</p> <p>Promote the purchase of low-sulphur diesel.</p> <p>As much as practically possible, construction material and waste should be transported to and from construction sites using cargo trains.</p> <p>Vehicles uploading material should maintain the lowest possible fall height to reduce noise and dust generation.</p> <p>Apply dust suppression making use of semi-purified wastewater.</p> <p>Avoid construction activities during times of strong winds.</p> <p>Farm owners and nearby residents should be informed of the construction activities and period, and requested to avoid the particular area during this time.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Soil and Sediment – Soil stability/erosion	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, structural works, and base & embankment preparation.	Soil erosion and loss of topsoil.	<p>Develop and implement an appropriate <u>Soil Stability Management Plan</u>, including but not limited to, site assessment requirements prior to disturbances and availability of soil erosion protection systems.</p> <p>Slope stability assessments should be done where required for in areas of cut and or fill operations within the final route alignment.</p> <p>Final designs are to include suitable mitigation measures based on the findings of such studies. Soil stability and erosion should be monitored prior to the installation of such final mitigation measures.</p> <p>Areas disturbed indirectly as part of construction activities (e.g., temporary access routes, temporary vegetation clearing) should be protected from erosion and rehabilitated to a protected state after disturbing activity are done.</p> <p>Temporary run-off and erosion control management should be included into the Soil Stability and Management Plan and implemented during construction phases. This should identify construction stages during which assessments and measures should be applied for each section of road as well as all temporary construction areas.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Soil and Sediment – Soil & sediment quality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, operational activities and maintenance.	Contamination of surface soils through accidental leaks or spills of contaminants during construction and maintenance activities.	<p>Ensure all vehicles; equipment and machinery are in good working order with a particular attention to fuel/oil pipes, tanks and sumps, hydraulic hoses, etc.</p> <p>Keep spill kits at the work site to accelerate intervention in the event of a spill or leak.</p> <p>Ensure the development of a strong Environmental Management Plan, including but not limited to, a <u>Spill Prevention and Response Plan</u> and a <u>Waste Management Plan</u> that should consider the following recommendations:</p> <ul style="list-style-type: none"> <li>▪ Hazardous waste and hazardous material storage facilities should be built on an impermeable surface offering confinement capacity in the event of a spill or release. These storage facilities should offer protection against weather conditions, have controlled access and be secured.</li> <li>▪ Store all waste in distinct closed containers to allow for segregation (recyclables and waste) and adequate confinement.</li> <li>▪ The fuel trucks that will ensure fuelling of machinery at the work sites should carry a spill kit. All fuel storage tanks should be equipped with adequate and required confinement capacity.</li> <li>▪ Ensure personnel trained are available to intervene in the event of accidental spills or leaks are available.</li> <li>▪ Contacts of firms (names and phone numbers) specialised in spill intervention must be kept on-site in the event of a spill or leak that cannot be handled with on-site spill kits alone.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<ul style="list-style-type: none"> <li>Ensure material used for construction comes from known clean sources to avoid chemical contamination. If soils from a non-certified site are accepted, characterisation prior to use is recommended.</li> </ul> <p>All waste should be properly disposed off-site by certified companies.</p>		
Local Livelihood and Economic Activities – Land-Based Livelihood Activities	Land acquisition for railway, resettlement, and compensation. Use of borrow pits and access to land.	<p>Temporary (borrow pits) or permanent (railway) loss of land.</p> <p>Reduction of agricultural production by loss of land. Potential loss of economic activities for the same reasons.</p>	<p>Prepare a Stakeholder Engagement Plan, which should include the below mentioned mitigations and procedures.</p> <p>Ensure that agreements are in place to access private land and for compensation of land according to market related values. Relocation and compensation guided by applicable Namibian legislation.</p> <p>Develop compensation strategy and after use rehabilitation plan for disturbed areas, as per the applicable Policies.</p> <p>Apply all herein mentioned mitigation measures applying to fauna and flora, as well as social health and safety for the duration of the construction and operational phases.</p> <p>Avoid locating borrow pits on valuable agricultural lands and in forested areas and respect the official agreement with the landowner with regards to site rehabilitation once work is completed.</p> <p>Land accommodating agricultural infrastructure (i.e., pens, windmills, gravel dams, etc.) should be excluded from being used for borrow pits and/or railway realignment.</p> <p>Project to apply and maintain their avoidance strategy for any land with any uses as a priority action. All efforts must be made to allow for harvesting of crops prior to any land-related impacts, if applicable.</p> <p>Involve relevant authorities and stakeholders where conflicts could occur, not only in the urban areas, but also on commercial land.</p> <p>A robust and multi-channels project level Grievance Redress Mechanism to be developed and used.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Local Livelihood and Economic Activities – Self-Employed and Business Based Livelihood	Land acquisition for railway, resettlement, and compensation for loss of land, temporary construction activities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, base & embankment, waste and hazardous materials management, purchase of materials, goods and services, presence of workers and influx of job seekers, operation and routine maintenance.	Restriction and/or reduction of business activities as a result of dust, particles, and pollution and by restriction of access to business. Effect on supply and distribution of goods and delivery of services. Effect on supply and distribution of goods.	<p>Ensure the development and implementation of a <u>Construction Traffic Management Plan</u> that considers the distinctive features of the Project area in order to provide maximum traffic flow and accessibility during the construction phase.</p> <p>To maximize the project's positive impacts on the creation of jobs, the following enhancement measures are recommended:</p> <ul style="list-style-type: none"> <li>▪ Apply human resource policies favouring local labour.</li> <li>▪ Implement training programs to build local capacity.</li> <li>▪ Disclose information on newly created business opportunities.</li> </ul> <p>Ensure to include self-employed and business-based livelihood as part of the stakeholder engagement plan, namely those having a direct interaction with the railway line.</p> <p>If diversion of traffic is necessary, which might result in restricted access to local businesses, consider effective alternatives and reduce the time of access restriction.</p> <p>Ensure as far as possible continued access to industries/business located along the railway. If diversion of traffic is necessary, take into account the location of industries/business and their access to suppliers and economic outlets in planning alternate routes.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Local Livelihood and Economic Activities – Tourism & Conservation Activities	Land acquisition for railway, resettlement, and compensation for loss of land, temporary construction activities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, base & embankment, waste and hazardous materials management, purchase of materials, goods and services, presence of workers and influx of job seekers, operation and routine maintenance.	<p>Potential loss of ecological components that form part of the attraction for tourists.</p> <p>Effect on transport efficiency of tourists.</p> <p>Release of dust and atmospheric contaminants.</p> <p>Increased noise levels as a result of construction activities.</p>	<p>Implement the following aforementioned mitigation measures to reduce pollution and environmental degradation of touristic natural areas:</p> <ul style="list-style-type: none"> <li>▪ Flora &amp; fauna.</li> <li>▪ Soil management (dust reduction and contamination).</li> <li>▪ Atmospheric environment (dust reduction and contamination).</li> <li>▪ Surface and groundwater quality mitigation measures.</li> </ul> <p>Ensure the development of a strong <u>Environmental Management Plan</u>, including but not limited to, site assessment requirements prior to disturbances, a spill prevention and response plan and a waste management plan.</p> <p>Ensure the development of a Traffic Management Plan that considers the distinctive features of the Project area in order to provide maximum traffic flow and that includes, among others, the following measures:</p> <ul style="list-style-type: none"> <li>▪ Control access to work areas to ensure that only necessary personnel and machinery is present.</li> <li>▪ Optimize transport routes to reduce travel distances by vehicles and machinery and avoid tourist routes.</li> </ul> <p>If diversion of traffic is necessary, take into account key location of major tourists' sites in planning of alternate route.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Local Livelihood and Economic Activities – Tourism & Conservation Activities ( <i>continue</i> )	Land acquisition for railway, resettlement, and compensation for loss of land, temporary construction activities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, base & embankment, waste and hazardous materials management, purchase of materials, goods and services, presence of workers and influx of job seekers, operation, and routine maintenance. ( <i>continue</i> )	Potential loss of ecological components that form part of the attraction for tourists.  Effect on transport efficiency of tourists.  Release of dust and atmospheric contaminants.  Increased noise levels as a result of construction activities. ( <i>continue</i> )	Develop and implement a noise management procedure as a standalone document or as a part of an occupational health and social plan.	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
Noise levels & vibrations	Temporary construction facilities, transportation goods and materials, site preparation, borrow pit activities, structural works, base & embankment preparation, routine maintenance of servitude.	Release of dust and atmospheric contaminants.	Develop and implement a <u>Noise Management Procedure Plan</u> as a standalone document or as a part of an occupational health and social plan. The following measures as a minimum should be covered:  Optimise the use of equipment and turn off any equipment when not in use.  Use of modern, well-maintained equipment fitted with abatement devices (e.g., mufflers, noise enclosures).  Control exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure.  Stop all noisy work at night (before 6 am after 6pm)  Maintain equipment and machinery including brakes, mufflers, catalysers and silencers in good running condition, clean (power washed), free of leaks, excess oil and grease.  Prohibit idling of vehicles on the site or near sensitive receptors. Generators and machinery should be shut down when not in use.  Inform drivers to limit speed in sensitive areas and to limit noise from the rear panel of dumpster truck. Drivers should be sensitized on noise reduction measures through an Eco-driving attitude program.  Equip the compressors and generators used on site with an acoustic enclosure, a noise barrier or placing them in a soundproof box. This is particularly important in areas with sensitive receptors.  If blasting is required, ensure noise and vibration mapping has been realized, limit load of explosives accordingly and advise local population in advance to prevent nuisances.	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Community Health, Safety and Security (including traffic and accessibility)	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Increased crime in surrounding communities with associated safety and security risks.  Increased risk of health problems due to influx of job seekers and construction workers.	<p>As required by IFC Performance 1 and P5 of the Equator Principle, develop and implement a <u>Stakeholder Engagement Plan (SEP)</u> to keep communities informed of work site evolution, planned activities and any potential risk that may arise from the work site. The SEP should include, among others, the following components:</p> <ul style="list-style-type: none"> <li>▪ A list of Project stakeholders derived from the present ESIA, the RAP, information from RAP implementation as well as any other relevant information.</li> <li>▪ Analysis of stakeholder engagement to date.</li> <li>▪ Identification of methods of communication and information disclosure for specific groups; and</li> <li>▪ Action plan for stakeholder information and engagement during project construction.</li> </ul> <p>Plan and conduct at least one yearly stakeholder engagement session to inform, in one session, all interested and influential stakeholders on the construction activities. Subjects to be covered include a summary of activities held during the last year, upcoming projects, ESMP implementation results, HSE aspects, and a discussion pertaining to the main grievances received and how to resolve them. Sometime should be allowed for questions and exchanges.</p> <p>Inform community members and crime response units of construction activities within their vicinity and provide effective means of communication.</p> <p>Clearly placed signs should be displayed at strategic localities stating the objective of the project, duration of the work and the phone number to receive grievances for both the contractor and community.</p> <p>Draft a <u>Construction Safety &amp; Security Conduct Plan</u> to be enforced on-site by the contractor towards all appointed construction staff.</p> <p>Prominent signs at the contractor's office and construction site should be displayed warning not to cross the fence boundaries onto adjacent farmlands. Construction workers should also be informed and continuously reminded not to access adjacent farms for any reason. Trespassers will be prosecuted, and heavy fines applied to the contractor.</p> <p>All construction workers should be issued with identifiable clothing to ensure easy identification of unauthorised people within the workforce.</p> <p>Public awareness and sensitization campaign should be undertaken. This should include railway safety.</p> <p>Implement a health management system for the construction workforce, to ensure through medical check-ups and that they will not introduce disease into local communities.</p> <p>Instruct all vehicles drivers contracted by the project on safe driving guidelines.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Implement an <u>Emergency Response Plan</u> to manage major incidents if they should occur in the vicinity of the construction site.</p> <p>Prepare and implement a project and workers Grievance Redress Mechanism (GRM).</p> <p>Ongoing identification, evaluation and monitoring of potential community health and safety risks. Establish partnerships with social and health services at project level.</p> <p>Storage of track units or construction material should not affect traffic or pose any risk to communities adjacent to the railway reserve.</p> <p>Develop and implement a strong <u>Contractor Code of Conduct</u> detailing the guidelines on expected engagement with local communities and penalties for failure to adhere to regulations, and closely monitor its application and effectiveness. The Code of Conduct should include among others:</p> <ul style="list-style-type: none"> <li>▪ A strict prohibition of GBV (including harassment, exploitation, and abuse) and sexual intercourse with partners younger than 18 years of age (underage sex).</li> <li>▪ The requirement to immediately report any suspected case of GBV or underage sex to construction supervising engineer.</li> <li>▪ Train all workers on GBV risks and related sanctions. Ensure that management and security staff are adequately trained to identify and eradicate all forms pertaining to GBV and gender-based discrimination. Introduction of strict sanctions (e.g., dismissal) for workers involved in any form of abuse, inappropriate behaviour or GBV.</li> <li>▪ A strict prohibition for engaging in illicit or criminal activities.</li> <li>▪ Migrant workers must undergo a pre-hiring and annual medical check-up and should be treated if sick. They should be trained on disease prevention and recognition to avoid spreading. Organize education campaigns, including a STI and HIV/AIDS prevention program, for the workers and surrounding communities to facilitate interactions between workers and communities.</li> </ul> <p>The contractor to avoid hiring “at the gate” to discourage spontaneous influx of job seekers.</p> <p>Ensure the development of a <u>Traffic Management Plan</u> that considers the distinctive features of the Project area in order to provide maximum safety and traffic flow and that includes, among others, the following measures:</p> <ul style="list-style-type: none"> <li>▪ Control access to work areas to ensure that only necessary personnel and machinery is present.</li> <li>▪ Develop and implement specific access routes to and within the work site that are optimized to reduce travel distances by vehicles and machinery and ensure all drivers working for the project are aware of the established routes.</li> <li>▪ Verify with the Ministry of Works and Transport the existing authorized load limits on the various sections of the road network to be used, if any, and enforce compliance.</li> </ul>		

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<ul style="list-style-type: none"> <li>▪ Provide safe and convenient pedestrian paths and crossing points along the road alignment and construction areas, including under and over passes.</li> <li>▪ Ensure installation and maintenance of speed control and traffic control systems at pedestrian crossing areas.</li> <li>▪ Ensure installation and maintenance of appropriate road signs, signals, markings, and other traffic regulation devices related to pedestrian facilities and vehicular traffic.</li> <li>▪ Ensure implementing the Traffic Management Plan for the transportation of material from borrow pits to the work site. This Plan should include a map highlighting sensitive receptors in relation with access routes to be used. The map should be updated regularly with access route changes.</li> <li>▪ Provide Project drivers with awareness sessions on the Traffic Management Plan and keep records of the trainings.</li> <li>▪ Conduct a regular mandatory drug and alcohol testing for drivers working on the construction sites.</li> </ul> <p>Ensure all drivers working for the project have a valid driver's license, are certified for driving the vehicle they are responsible for, and have successfully followed a recognized driving course covering road safety measures and the importance of sharing the road with pedestrians and other types of vehicles.</p> <p>Control driver activities to avoid exceeding normal work shifts and to ensure they have enough rest periods.</p> <p>Avoid as much possible the use of chemicals for clearing vegetation. Favour manual or mechanical clearing methods.</p> <p>If diversion of traffic is necessary, take into account key location livelihoods, health and safety services and sociocultural activities in planning alternate routes.</p> <p>Avoid the formation of open holes, or ensure these are covered as much as possible, especially within the urban areas.</p> <p>Design safety awareness campaign in collaboration with local authorities and governmental agencies aimed at local residents.</p> <p>Monitor the use of pedestrian crossings and conduct specific awareness campaign to encourage their use.</p> <p>Limit work activities to normal work hours (8 h to 18 h) as much as possible, especially within the urban areas and those areas close to any receptor (i.e., tourism activities on farms).</p> <p>Ensure the development and implementation of a <u>Waste Management Plan</u> that should allow for safe and quick disposal of waste, as not to result in any form of pollution or spread of diseases. All waste should be properly stored on site in appropriate containers and regularly disposed off-site by certified companies.</p>		

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Effective storage and/or treatment of sewage on site and removal there-off are compulsory and should be done in accordance with a Wastewater Management and Disposal Plan to be developed by the contractor. All workers should be informed and trained not to use the field and that heavy fines will be applied to the contractor if any human waste is found on-site or any other adjacent area.</p> <p>Extend the stakeholder engagement plan into the operation phase to cover the entire Project lifecycle as required by IFC PS1 and Equator Principle P5.</p>		
Labour & Working Conditions	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Risk of injuries and physical and mental illnesses, risk of abuse by contractors hiring underage workers (child labour, violation of workers' rights, worker insecurity, fatigue and stress generating conflict at the household and community levels and potentially act as a trigger for social problems such as drug and alcohol abuse and GBV influx of workers and job seekers may negatively affect the social acceptability of the Project.	<p>The Contractor is responsible to prepare and implement an <u>Occupational Health and Safety Plan (OHS)</u> and an <u>Emergency Preparedness and Response Plan (EPRP)</u> to include fire and medical emergencies during the construction phase and addressing the following aspects as minimum:</p> <p>Hire an accredited Health &amp; Safety professional.</p> <p>Identify hazardous sources to workers and identify mitigating measures to eliminate dangers.</p> <p>Workers must be trained to recognise potential hazards including electrical hazards, use proper work practices and procedures, recognise adverse health effects, understand the physical signs and reactions related to exposures, and are familiar with appropriate emergency evacuation procedures. They must also be trained to how to use the Personal Protective Equipment (PPE).</p> <p>Inspection and testing of all equipment and machines should be regularly undertaken by experienced and qualified person.</p> <p>Prepare an Emergency Response Plan (ERP) and have trained personnel on-site to action and management ERP.</p> <p>Ensure that appropriate and enough first aid equipment, fire extinguishers in good working conditions and sand buckets are available on-site.</p> <p>Overall, no-smoking is allowed on the site, except within the dedicated smoking room, which should be provided and equipped with necessary bucket and fire extinguisher.</p> <p>Follow latest WHO and national measures on Covid-19 as relevant.</p> <p>Regular inspection of workers against pathogenic agents and provision of immunization when needed.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Identify and provide contacts of closest authorities and emergency services to contact in case of emergencies, especially with reference to feld fires.</p> <p>Provision of full PPE including suitable footwear to avoid slippage and to protect workers from injuries.</p> <p>Workers exposed to noise exceeding permissible levels (e.g., ballast uploading) should wear hearing protection.</p> <p>Develop and implement hiring guidelines that meet or exceed relevant national regulations and international standards, including:</p> <ul style="list-style-type: none"> <li>▪ Public and Environmental Health Act No. 1 of 2015;</li> <li>▪ Labour Act (No. 11 of 2007);</li> <li>▪ African Development Bank Operational Safeguards OS5; and</li> <li>▪ International Finance Corporation (IFC) Performance Standard 2: Labour and Working Conditions.</li> </ul> <p>Contractually require all contractors, subcontractors, and suppliers to adopt and comply with policies and procedures that comply with national regulations and international standard and address all aspects of labour standards relevant to the project.</p> <p>Develop and implement a <u>Health and Safety Management Plan</u> that meets or exceeds national regulations and international standards to protect every worker involved in construction activities, including temporary workers. Specific provisions must be included for:</p> <ul style="list-style-type: none"> <li>▪ Supply of drinking water of adequate quantity and quality.</li> <li>▪ Provision of adequate and gender-separated sanitation at construction sites.</li> <li>▪ Declaration of accidents through an accident reporting mechanism.</li> <li>▪ Handling of domestic and specialized waste, as well as dangerous goods.</li> <li>▪ Procedures in case of injuries and accidents.</li> <li>▪ Provision and use of personal protective equipment (e.g., helmets, gloves, safety glasses, etc.)</li> <li>▪ Securing of equipment and demarcation of any excavation work areas; and</li> <li>▪ Deployment of signs and fences in construction areas, where necessary.</li> </ul> <p>Develop and implement an <u>Emergency Response Plan</u> and employ experienced person to manage response.</p> <p>Develop and implement a monitoring system for the application of the above plans, regulations, and standards by all levels involved in the Project, including contractors, subcontractors, and suppliers of goods and services.</p>		



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Develop and implement a grievance redress mechanism for workers and residents and establish a safe and ethical reporting environment that allows for anonymous reporting.</p> <p>Implement a long-term training program throughout the construction phase to ensure adequate training and qualification of all staff employed for the project.</p> <p>Provide medical facilities throughout the construction phase for the use of workers where required.</p> <p>Ensure reasonable working hours, wages and other benefits.</p> <p>Provide suitable and safe amenities and sanitation facilities, including available drinking water and latrines.</p> <p>Implement measures for supporting the recruitment and retainment of female workers outlined in Section 8.2.15.</p> <p>Maximize the hiring of local labour through the following measures:</p> <ul style="list-style-type: none"> <li>▪ Apply human resource policies favouring local labour including, but not limited to, local hiring targets.</li> <li>▪ Implement training programs to build local capacity; and</li> <li>▪ Disclose information on newly created business opportunities.</li> </ul> <p>Establish partnerships with social and health services at project level.</p> <p>Prepare a list of relevant medical and social resources and services for workers and ensure all relevant staff (e.g., human resources, supervisory staff, grievance redress mechanism staff, etc.) have access to and are familiar with this document.</p>		
Gender Equality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities, and maintenance.	Risk of Gender Based Violence, increase abandonment of wives and children and of prevalence of sexually transmitted infections because of influx of construction workers and job seekers.	<p>A <u>Gender and Social Inclusion (GSI) Policy</u> should be prepared and include the below mentioned.</p> <p>Encourage the recruitment of female workers, with equal payment for male and female workers, for equivalent jobs. This can be achieved through the following potential measures:</p> <ul style="list-style-type: none"> <li>▪ Set targets for women employment.</li> <li>▪ Recruit and train women to be integrated in existing work teams.</li> <li>▪ Offer equal salaries for the same work to all employees with the same level of experience and skills, whether they are men, women, or people with a disability.</li> <li>▪ Implement family-friendly measures such as health coverage and time-off for the birth of a new child. Ensure these measures are in line with Namibian regulation.</li> <li>▪ Provide civic and employee education on sexual harassment in the workplace.</li> <li>▪ Ensure adequate amenities in field-based work such as segregated toilets, adequate waste disposal facilities, water for personal hygiene, etc.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<ul style="list-style-type: none"> <li>▪ Develop and implement gender and issue sensitive staff grievance redress mechanisms and establish a safe and ethical reporting environment that allows for anonymous reporting.</li> </ul> <p>Develop a Gender and Social Inclusion (GSI) Policy for the Project's activities.</p> <p>Develop and conduct GSI information/ awareness sessions with all staff.</p> <p>Develop and implement a strong <u>Contractor's Code of Conduct</u> that protects women, girls, boys and men from gender-based violence (physical, sexual, and psychological) and closely monitor its application and effectiveness. The Code of Conduct should include among others:</p> <ul style="list-style-type: none"> <li>▪ A strict prohibition of GBV and sexual intercourse with partners younger than 18 years of age (underage sex).</li> <li>▪ The requirement to immediately report any suspected case of GBV or underage sex to construction supervising engineer.</li> </ul> <p>Develop and implement internal grievance and support that is accessible to all employees, pays special attention to the different realities of female and male victims of GBV, and includes the possibility of denouncing any form of harassment or intimidation. Ensure proper actions are taken according to the Namibian legislation in cases of harassment.</p> <p>Develop and implement an external gender-sensitive grievance redress mechanism that is accessible to all segments of the general population, pays special attention to the different realities of female and male victims of GBV, and includes the possibility of denouncing any form of harassment or intimidation. Ensure proper actions are taken according to the Namibian legislation in cases of harassment.</p> <p>Implement and follow-up on gender-sensitive grievance redress mechanisms, paying special attention to the different realities of female and male victims of GBV.</p> <p>Organize education campaigns, including a STI and HIV/AIDS prevention program, for the workers and surrounding communities to facilitate workers and communities' interactions.</p> <p>Ensure that the Project offers some procurement opportunities for women, youth and persons with disabilities as required by Namibian legislation and policies. This can be facilitated by:</p> <ul style="list-style-type: none"> <li>▪ Establishing a system for tracking bidders and awardees from women-headed or majority women-owned firms.</li> <li>▪ Setting up a mechanism to promote bid-readiness support for women-owned or majority women-owned small firms and businesses.</li> <li>▪ Maintaining vigilance for opportunities which could be offered to women groups.</li> </ul> <p>Provide, if possible, additional income generating opportunities to women during construction (e.g., provision of catering services, selling local products).</p>		

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Archaeology and Cultural Heritage	Site preparation, excavations, preparation of embankment, and borrow pit activities.	Possibility of destroying undiscovered and/or unidentified artefact during construction activities.	<p>An <u>Archaeological Find Action &amp; Preparedness Plan</u> should be drafted, including the below mentioned.</p> <p>Caution should be exercised during the construction phase in the event that archaeological/heritage remains are discovered during the excavations.</p> <p>The change find method should be applied and caution is required at all times, which should include the following-</p> <ul style="list-style-type: none"> <li>• Record keeping;</li> <li>• Expert verification;</li> <li>• A chain of custody instructions for movable finds;</li> <li>• Cultural heritage awareness raising sessions for the construction workforce;</li> <li>• Clear criteria for potential temporary work stoppages that could be required for rapid resolution of issues related to the finds.</li> </ul> <p>In the event of a suspected chance finding of an unknown or undocumented cultural artefact, the following actions must be taken by the contractor:</p> <ul style="list-style-type: none"> <li>▪ Stop the work at the particular site.</li> <li>▪ Contact the National Heritage Council of Namibia and request that a representative be sent to evaluate the finding.</li> <li>▪ Work may resume if the suspected artefact does not have cultural interest. Further investigation work must be initiated if the item is of cultural interest.</li> <li>▪ Once the site has been fully investigated and National Heritage Council of Namibia has provided clearance, work may resume.</li> </ul> <p>The direct responsibility for implementing and managing the change find method resides with the on-site environmental officer appointed by the contractor. It is important that the environmental officer clearly outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority, as well as any agreed consultation procedures.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
Bulk Infrastructure (roads; electricity; telecommunication; water)	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Potential degradation of public roads due to increase in heavy traffic movement (i.e., construction vehicles and trucks).	<p>A <u>Pre-Construction Infrastructure Survey and Status Report</u> should be compiled to record infrastructure within the project area and the status thereof, with clear management and mitigation principles on how to maintain the pre-construction status of all infrastructure affected.</p> <p>Identify transport methods best suited to the existing transport infrastructure. Consider transportation of the bulk of material and goods via rail instead of road.</p> <p>Frequently perform inspections on local roads used by construction activities and accesses used for material transport and perform maintenance work and repair where and if necessary.</p> <p>Establish adequate signage on roads used by construction activities to ensure road user and pedestrian security.</p> <p>Ensure the development of a Traffic Management Plan that considers the distinctive features of the Project area in order to minimize road damage flow and that includes, among others, the following measures:</p> <ul style="list-style-type: none"> <li>▪ Identify roads that can sustain heavy machinery and those that are particularly vulnerable to wear and tear.</li> <li>▪ Control access to work areas to ensure that only necessary personnel and machinery is present.</li> <li>▪ Optimize transport routes to reduce travel distances by vehicles and machinery.</li> </ul> <p>Impose a speed limit for various vehicles, put a stricter limit on roads in poor conditions.</p> <p>In the case unpaved roads need to be used during periods of heavy rainfall, conduct maintenance and repairs as quickly as possible to limit impact on local traffic movement.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
		Temporary interruption to rail traffic to allow for specific construction activity.	<p>Contact and maintain communication with TransNamib to avoid service interruptions by planning construction work around the train schedule, which should be presented in a <u>Railway Interruption Schedule</u>.</p> <p>In the unlikely case of accidental service interruptions, coordinate with TransNamib to minimize the duration of interruption and quickly inform users.</p> <p>Negotiate construction schedule with TransNamib to minimise train delays and associated adverse impacts.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
		Relocation or reconnection of electricity or telecommunication line to allow for construction work or new alignment.	A pre-construction identification and survey of bulk electricity and telecommunication lines from NamPower, CENORED and the applicable local authorities, as well as Telecom should be undertaken by the contractor to identify possible impact. Discussions with affected authority and mitigation plan should be discussed and approved by applicable authority. This should be presented within the <u>Pre-Construction Infrastructure Survey and Status Report</u> .	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation Measure	Responsibilities	
				Implementation	Monitoring and Evaluation
			<p>Contact and maintain communication with the applicable authorities to minimize the risk of accidental breakage. Ensure the presence of applicable authorities' specialists at key stages of work in the vicinity of the bulk infrastructure.</p> <p>Inform users of planned service interruptions sufficiently ahead of time for them to put in place strategies to mitigate the consequences of power interruptions.</p> <p>Re-establish power and telecommunication as quickly as possible when interruptions are unavoidable.</p>		
		Potential damages and service interruption to underground bulk pipelines crossing the railway line.	<p>A <u>Pre-Construction Infrastructure Survey and Status Report</u> should be undertaken by the contractor to identify possible impacts. Discussions with affected authority and mitigation plan should be discussed and approved by applicable authority.</p> <p>Install signage clearly indicating the location of pipelines to ensure that construction personnel are aware of the bulk infrastructure.</p> <p>Contact and maintain communication with the applicable authorities to minimize the risk of accidental breakage. Ensure the presence of applicable authorities' specialists at key stages of work such as during any excavation work in the vicinity of the bulk infrastructure.</p> <p>In the case of accidental breakage:</p> <ul style="list-style-type: none"> <li>▪ Rapidly implement the Spill Response Plan.</li> <li>▪ Conduct repairs as quickly as possible in coordination with the applicable authority; and</li> <li>▪ Inform users of service interruption.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)
		Impact on visual quality and sense of place.	<p>A <u>Pre-construction Visual Impact Plan</u> should be compiled identifying potential receptors and appropriate locality of facilities having a potential negative visual impact to the surrounding receptors.</p> <p>Avoid, when and if possible, locating borrow pits within areas visually exposed to tourist facilities.</p> <p>The contractor's site should be located as far as possible from main access roads and tourism spots within the area and screened in such a way that it minimises, as far as practicably possible, the visual effect.</p> <p>The appointed contractor should ensure that adequate temporary disposal facilities are available on-site and that all waste are properly stored not resulting in any littering or visual disturbances. Waste should be disposed of regularly and at appropriate facilities as per the Waste Management Plan.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent E&S Officer (6 monthly);



## **5 ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME**

This section of the ESIA presents the environmental and social (E&S) monitoring to be implemented to ensure general and specific mitigation measures applied during the construction activities are adequate in avoiding and/or minimizing project impacts.

Monitoring is aimed at ensuring that all recommended mitigation measures and the Contractor' Environmental and Social Management Plan (CESMP) are implemented, and goals are achieved, all activities are documented, and any insufficiency identified and amended. An important aspect is that monitoring allows for the evaluation of effectiveness of mitigation measures and amendment thereof to ensure proper mitigation of anticipated impacts. As a result, the monitoring plan will evolve and adapt as the Project proceeds.

Monitoring to be done includes -

- On-site inspections;
- Confirmation of the effectiveness of mitigation measures; and
- Reviews and updates, as required, based on observations and potential changes.

Table 5-1 lists the main environmental and social monitoring measures to be applied. It is important to note that the responsibility for the collection of baseline condition data, prior to commencement of works, rest with the appointed Contractor. This is required to ensure that baseline conditions to which monitoring results will be compared are site-specific, recent, and reflect the true situation on the ground prior to construction work. Baseline data collection should be conducted at various sites within the PPA and the SPA, where disturbances are expected.

**Table 5-1** – Environmental and Social Monitoring Activities

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring
Hydrology – Water Resource Quantity	Inspect boreholes within the SPA and determine water levels in comparison to baseline levels.	Avoid depletion of underground water source. Implement project as per the proposed Construction Water Demand Management Plan and apply mitigations (Table 10.2-1).	Entire footprint of the construction site	Continues on-site monitoring as activities take place (savings) and monthly water level inspections at monitoring boreholes.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.
Hydrology – Water Resource Quality	Conduct visual inspection of water quality around the activities near watercourses or water bodies.  Dated photo records of the site conditions. Compare with baseline condition.	Avoid significant degradation of baseline conditions.  Visual inspection of the site, workers, equipment and vehicles. Dated photo record of the site conditions.  Apply the stated mitigation measures (Table 10.2-1) and Contractor Plans (i.e., Hazardous Waste and Materials Management Plan; Wastewater Management and Disposal Plan; Waste Management Plan; Stormwater Management Plan; Construction Activity Pollution Prevention Plan; Spill Prevention and Response Plan.  Approved waste management plans covering at minimum all the aspects detailed in this ESMP.  Approved Hazardous Waste and Materials Management Plan covering at minimum all the aspects detailed in this ESMP.  Complete a compliance checklist for mitigation actions and measures.  Valid certificates for all waste contractors.	At those places of the construction site close to water bodies or drainage channels.	Daily basis for as long as construction activity at particular sensitive area continues	Resident Engineer and HSE Representative  Development of the required plans (section 10.9.2)  Implementation of plans, internal monitoring and reporting to Project Engineer.	Project Engineer and Independent Environmental Consultant  Reviewing Contractor's plans to ensure their compliance to ESMP requirements.  Ensuring the correct implementation of the mitigation and monitoring measures  Review and assurance of Contractors reports.
Hydrology – Water Flow & Flooding	Inspect construction site, culverts and drainage structures for material or debris accumulations.	Ensure effective stormwater flow on-site and that no damming of water or local flooding appears. Apply proposed mitigations (Table 10.2-1) and actions as per the Contractor's Storm Water Management Plan.	At the work site (PPA) and surroundings (SPA)	Continues	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring
						Review and assurance of Contractor's reports.
Flora (Habitat)	Vegetation clearance to be done following an on-site walk over and identification of species to be protected and if not able to protect relocate or removed with permit approval.  Minimal vegetation removal.  Dated photo records of the site conditions. Compare with baseline condition.	Protect sensitive habitats and protected and/or endangered species. Apply mitigations proposed (Table 10.2-1) and contractor's Biodiversity Management Plan.  All sensitive areas should be earmarked as no-go areas.  Complete a compliance checklist for mitigation actions and measures.	Within the railway reserve and at borrow pits or boreholes.	Before construction commences	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.
Fauna	Undertake a pre-construction walkover to identify sensitive fauna habitats to be avoided and protected.	Protect sensitive habitats and protected and/or endangered species. Apply mitigations proposed (Table 10.2-1) and contractor's Biodiversity Management Plan.  All sensitive areas should be earmarked as no-go areas.	Within the railway reserve and at borrow pits or boreholes.	Before construction commences	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.
Air Quality	Undertake regular visual inspection of construction sites and access roads.  During periods of intense construction work and high winds with significant amount of dust generated in close proximity to any receptor, apply the proposed mitigation measures (Table 10.2-1).  Dated photo record with documentation of the site conditions.  In the event of excessive dust pollution undertakes sampling for analysis.	Avoid excessive dust generation and minimise idling of equipment, machinery and vehicles.  Approved Construction Activity Pollution Prevention Plan.  All mitigation measures have been implemented.	At the particular construction activity wherever on-site	Continues	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.
Local Livelihood and Economic Activities – Tourism & Conservation Activities	Ensure continues access to tourism activities	Diversion roads should not block access to tourism activities and facilities.	Access roads to tourism activities and facilities	Continues for duration of construction period	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring
Local Livelihood and Economic Activities	Ensure continues access to local business and informal business activities	Diversion roads should not block access to formal and informal businesses, health facilities and cultural sites and facilities	Access roads to formal and informal businesses, health facilities and cultural sites and facilities	Continues for duration of construction period	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.
Noise levels & vibrations	Conduct regular inspections to construction activities known for excessive noise levels and ensure proper mitigation (Table 10.2-1) has been applied. Confirm that workers use protective gear during the use of machinery generating excessive noise. Undertake noise inspections on regular bases to determine level of noise 100m from the activity.	Respect the ambient noise levels and restrict excessive noise to a minimum. Workers should make use of protective gear when working with machinery generating excessive noise. Visual Inspection of the site, workers, equipment and vehicles to ensure compliance to noise mitigation. Complete a compliance checklist for mitigation actions and measures.	At the place where the particular activity is taking place	Continues during the construction period, especially in the case of in close proximity to receptor (i.e., within 100m)	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.
Labour & Working Conditions	Approved Occupational Health and Safety Plan (OHS) and an Emergency Preparedness and Response Plan. Ensure contractor, subcontractor and suppliers provide healthy and safe working environment and conditions of work. Keep record and assess number of accidents and incidents and determine cause.	Healthy and save working and living conditions for workers. Provide training to workers on healthy and save working and living conditions and requirements.	Project site where workers are accommodated and working	Continues for construction period	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.
Marginalised Groups	Maintain communication with marginalised groups. Favour employment of indigenous people.	Inclusion of Marginalised Groups onto the Project.	Entire construction workforce	Continues for the duration of the construction period.	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring
Community Health, Safety and Security	<p>Approved Waste Management Plan, a Wastewater Management and Disposal Plan, Construction Activity Pollution Prevention Plan.</p> <p>Approved Stakeholder Engagement Plan (Appendix D to the ESIA Report).</p> <p>Ensure that all identified impacts are avoided and/or mitigated, as per Table 10.2-1 and the various plans to be drafted by the contractor.</p> <p>All recorded grievances should be sufficiently addressed.</p> <p>Maintain continues communication with affected community and request input and feedback.</p> <p>Visually inspect all working areas of construction during routine site visits and evaluate the state of measures implemented to ensure local community health, safety and security.</p>	<p>Avoid and minimise impacts.</p> <p>Solve grievances submitted by community.</p> <p>All work areas should be clearly indicated for no unauthorised access; provide safe and convenient pedestrian paths and crossing points along the railway alignment and construction areas within the urban centres; apply speed control and traffic control systems at pedestrian crossing areas and vehicle crossings; implement and maintain appropriate road signs, signals, markings, and other traffic regulation; erect barriers and buffers around critical work areas where interactions with pedestrians are possible.</p> <p>Complete a compliance checklist for mitigation actions and measures.</p>	Entire project area.	Continues for the duration of the construction period.	<p>Contractor or HSE Representative</p> <p>Implementation of mitigation measures, internal monitoring and reporting to Proponent.</p>	<p>Project Engineer and Independent Environmental Consultant</p> <p>Ensuring the correct implementation of the mitigation and monitoring.</p> <p>Review and assurance of Contractor's reports.</p>
Gender Equality	<p>Favour the employment of woman. Achieve equal payment for male and female workers of equivalent experience and qualification.</p> <p>Provide certain percentage of work for women, youth and persons with disabilities.</p>	Aim at employing women in as many as possible fields of construction.	Contractor and sub-contractor, as well as entire supply chain	Continues for construction period	<p>Contractor or HSE Representative</p> <p>Implementation of mitigation measures, internal monitoring and reporting to Proponent.</p>	<p>Project Engineer and Independent Environmental Consultant</p> <p>Ensuring the correct implementation of the mitigation and monitoring.</p> <p>Review and assurance of Contractor's reports.</p>
Gender Relations	Ensure healthy relations between different genders of the construction team.	Equal respect to all. No GBV towards women.	Contractor and sub-contractor, as well as entire supply chain	Continues for construction period	<p>Contractor or HSE Representative</p> <p>Implementation of mitigation measures, internal monitoring and reporting to Proponent.</p>	<p>Project Engineer and Independent Environmental Consultant</p> <p>Ensuring the correct implementation of the mitigation and monitoring.</p> <p>Review and assurance of Contractor's reports.</p>



Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring
Archaeology and Cultural Heritage (chance find)	Ensure protection of unknown archaeological finds during construction activities.	Have a knowledgeable person on-site to identify and act according to required Heritage Act.	At areas where disturbance is expected, i.e., embankment, borrow pits and boreholes.	Continues for the duration of the construction period.	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.
Bulk Infrastructure (roads; electricity; telecommunication; water)	Inspect public and local roads used by construction vehicles and accesses condition to ensure continuous safety.	Public roads and local roads are maintained at baseline condition.	All roads used by construction vehicles and machinery working on the Project.	Continues for the duration of the construction period.	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.
Reduced energy efficiency and increased GHGs.	Visual Inspection of the site, workers, equipment and vehicles to ensure compliance to reduced energy consumption.  Complete a compliance checklist for mitigation actions and measures.  Record daily fuel consumption and apply mitigations.	Reduce total volume of fuel used on site.	Entire project area.	Continues for the duration of the construction period.	Contractor or HSE Representative Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant Ensuring the correct implementation of the mitigation and monitoring. Review and assurance of Contractor's reports.

## **6 CONSULTATIONS**

Consultations with the affected communities are a continues process throughout the life of the Project, i.e., planning phase (current phase), construction phase, operational phase, and decommissioning phase.

### **6.1 MEASURES REQUIRING CONSULTATION**

The measures, goals and expected outcomes, which necessitate consultation with the respective and applicable I&AP are listed below in Table 6.1-1.

The details to each of the people, organisations, institutions, authorities, and/or representative is listed in Appendix A.

### **6.2. TARGET GROUPS**

The communities affected by this Project includes the following -:

- Farm owners adjacent to the railway servitude;
- Local Authority areas through which the railway passes;
- Bulk infrastructure suppliers, which infrastructure passes over or under or along the railway servitude;
- Governmental and regulatory authorities including national and decentralized agencies;
- Community members of all age, sex, and origin;
- Vulnerable people, including Indigenous Peoples, women, and people living with disabilities (PLWD), elders and youth, that might be affected by the Project.

Stakeholders identified to date, based on previous stakeholder engagement, primarily for the ESIA study (2022), as categorised above are presented within the attached Appendix A to this ESMP.

Table 6.1-1 - Measures, Goals and Expected Outcomes

Measures	Goals	Expected Outcome	Stakeholders
Land for deviations of railway	Obtain land to accommodate railway line & servitude	Agreement to the sale of land and compensation	Farm owner & local authority
Land for borrow pits	Obtain material for embankment	Agreement to use and compensation	Farm owner
Construction water	Obtain water (i.e., underground; semi-purified; bulk NAMWATER) for embankment	Agreement to use and compensation	Farm owner; NAMWATER, local authority
Access over private land	Ensure accessibility to and from the project site	Agreement to use and compensation	Land owner (farm of erf)
Access of and onto public roads	Ensure accessibility to and from the project site	Safe traffic movement	Roads Authority, Local authority
Indigenous and/or protected species	Obtain approval for the removal of flora	Legal compliance and enable construction facilities and infrastructure	Ministry of Environment, Forestry and Tourism
Archaeological finds	Protection of heritage and archaeological finds	Legal compliance and avoid damage to heritage and archaeological finds	Namibia Heritage Council
Temporary obstruction of public access roads	Avoid traffic delays and safety risks and in time notification	Uninterrupted flow of traffic and safe movement	Roads Authority, Local authority

Measures	Goals	Expected Outcome	Stakeholders
Temporary interruptions to rail transport & schedule	Avoid railway transport delays and safety risks and in time notification	Uninterrupted flow of railway transport and safe movement	TransNamib
Temporary interruptions to bulk infrastructure services	Avoid interruption to the supply of bulk services and in time notification	Uninterrupted or minimum interruption in the supply of bulk services	NAMWATER, NAMPOWER, CENORED
Employment of members from the adjacent communities	Provide opportunity to work to people from the nearby communities and avoid socio-economic negatives as a result of worker in migration	Socio-economic upliftment of nearby community and stable socio-economic status	Community representatives and leaders
Employment of vulnerable groups within the communities	Provide opportunity to work to vulnerable groups within the nearby communities and ensure equal opportunities	Socio-economic upliftment of nearby vulnerable groups and stable socio-economic status	Community representatives and leaders & representative organisations

### 6.3 CONSULTATIVE PROCESSES & PROCEDURES

As required by regulations 21 to 24 of the Environmental Impact Assessment Regulations (GG. Notice 30 of 2012) of the Environmental Management Act (No. 7 of 2007), IFC PS1 and P5 of the Equator Principle, stakeholder engagement has the objective of consulting with the affected individual, community and/or authority to obtain and disclose information on the Project, obtain and disclose approvals, but also to establish a healthy and sustainable relationship and work ethic between all parties.

For this purpose, a Stakeholder Engagement Plan (Appendix D to the ESIA, February 2023) was developed for implementation by the Proponent and appointed Contractors.

Table 6.3-1 - Consultative Processes, Frequency, Reporting Methods and Result Disclosure

Consultative Processes	Frequency	Reporting Methods	Result Disclosure
Notice in the printed media	6-monthly	Written	Follow-up telephone confirmation (spot checks). Tear out records of notices in printed media. Distribution to all affected persons, institutions & organisation.
Live reads on local radio stations within the local languages	Monthly	Verbal	Follow-up telephone confirmation & print. Distribution to all affected persons, institutions & organisation.
Notices at Regional Government Offices & Local Authority Office	Continues	Written	Follow-up telephone confirmation with authority representative. Photo records of notices in printed media. Distribution to all affected persons, institutions & organisation.
Communication via representative organisations	Monthly	Written	Follow-up telephone confirmation & print. Distribution to all affected persons, institutions & organisation.
Direct email communication	Weekly	Written	Follow-up telephone confirmation & record of emails send. Distribution to all affected persons, institutions & organisation.



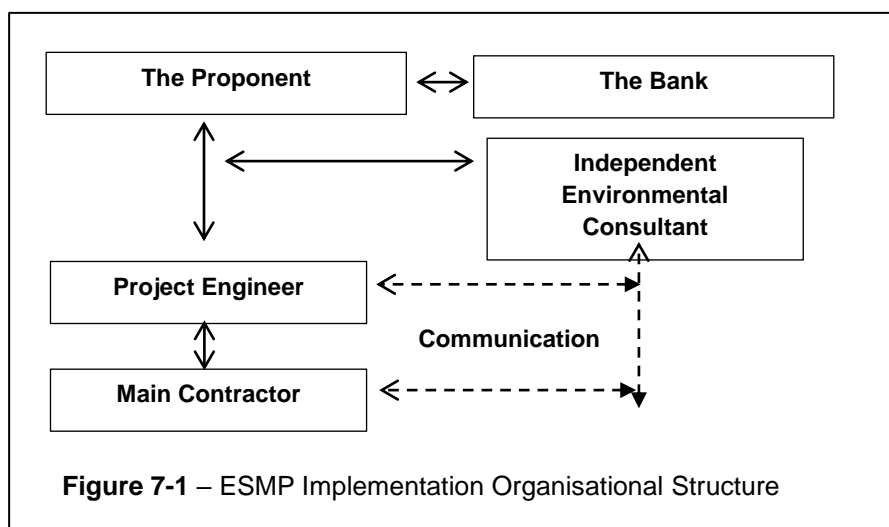
<b>Consultative Processes</b>	<b>Frequency</b>	<b>Reporting Methods</b>	<b>Result Disclosure</b>
Social media communication	Weekly	Written / verbal	Follow-up telephone confirmation. Distribution to all affected persons, institutions & organisation.
Hand delivery to person. Institution, organisation	6-monthly	Written	Follow-up telephone confirmation (spot checks). Distribution to all affected persons, institutions & organisation.
Website of Proponent, Contractor & Consultants	Weekly	Written	Follow-up telephone confirmation (spot checks).
Public consultation meetings	Monthly	Verbal	Attendance. Distribution of minutes of meetings to all affected persons, institutions & organisation.
Focus group discussions	Monthly	Verbal	Attendance. Distribution of minutes of meetings to all affected persons, institutions & organisation.
One-on-one discussions	Monthly	Verbal	Attendance. Distribution of minutes of meetings to all affected persons, institutions & organisation.
Visit and meeting	Monthly	Verbal	Attendance. Distribution of minutes of meetings to all affected persons, institutions & organisation.
Grievance redress mechanism & Stakeholder Engagement Plan			

## 7 RESPONSIBILITIES AND INSTITUTIONAL ARRANGEMENTS

This section describes the overall organisation of environmental and social management for implementation of the ESMP.

### 7.1. MANAGEMENT STRUCTURE & COMMUNICATION CHANNEL

Details of the management structure are presented below in Figure 7-1. All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisational structure presented below. Detailed roles and responsibilities are presented below.



### 7.2 ROLES AND RESPONSIBILITIES

#### 7.2.1 The African Development Bank

The Bank's Role is to support the Client in meeting all applicable safeguards requirements through technical support and monitors compliance throughout the project cycle. The Bank does undertake due diligence and conducts two implementation support missions per year for category 1 and also reviews Monthly E & S Monitoring reports on implementation of the ESMP, ARAP sub management plan, Stakeholder Engagement and GRM and makes recommendations on identified E & S risks/non compliances to ensure they are being adequately mitigated through agreed action plans

#### 7.2.2 Project Owner / Borrower / Implementing Agency / Proponent

The Proponent is ultimately responsible for the implementation of the ESMP and the financial cost of all environmental and social control measures. Although the Ministry of Works and Transport (Proponent) does not have an E&S Division, the mentioned should be created for purpose of this Project and future projects alike. The Proponent must ensure that any person acting on his/her behalf complies with the conditions/specifications contained in this ESMP.

The Proponent is also responsible for the appointment of a Project Engineer, Contractor/s and Independent Environmental Consultant (IEC).

As the Project implementing agency, the Ministry of Works and Transport will take overall responsibility for correct application of the ESMP and provision of necessary resources for its implementation via its relevant Division with the Department Transport. During the construction phase, the Department Transport will be responsible for the supervision of the correct implementation of the ESMP, as per the AfDB's ISS requirements and national regulations and conditions. The mentioned Department shall be responsible to appoint an independent Environmental Consultant, with at least 10 years of experience demonstrating sufficient level of expertise to oversee independent construction monitoring and compliance, as per the AfDB's ISS requirements and national regulations and conditions, which would include conducting site visits where required and preparing reports to the Proponent, lending institutions or regulatory authorities as required.

The assigned Division within the Department of Transport will be responsible for –

- Implementing and monitoring the ESMP;
- Coordinating and leading awareness campaigns and capacity building within the Division if required;
- Coordinating with the main contractor and independent Environmental Consultant with regard to ESMP requirements;
- Responding to the results of internal and external monitoring visits/ inspections;
- Supervising the reception, registration and correct processing of any complaints/ grievances received from any stakeholders; and
- Prepare and deliver reports on the ESMP and EHS performance as required.

Given the required responsibilities, it is recommended that the assigned person/s within the Division of the Department Transport undergo capacity building and training on the AfDB safeguards and national legal requirements. It is further recommended that training be given to the appointed contractor as well, which should focus on the implementation and monitoring of the ESMP. The appointed contractor is again responsible to train his workers on the ESMP implementation including EHS requirements during the induction session or by conducting additional sessions. This shall be performed before the commencement of any work to prevent exposure to construction activities associated risks.

Examples of training that should be provided as a minimum include:

- Understanding significant risks and activities associated with the Project;
- Awareness of the requirements of this ESMP and associated plans/procedures;
- Roles, responsibilities, and accountabilities, including who to contact with any questions or concerns;
- Project's Grievance Redress Mechanism;

- Incident management and reporting requirements;
- Worker's code of conduct; and
- Emergency response procedures.

Training shall be delivered by experienced trainers, based on the competency requirements and in the relevant language of the attendee, or else translation shall be provided.

### **7.2.3 Project Engineer**

The Project Engineer is responsible for the engineering design of the Project and management of the on-site construction activities from the side of the appointed contractor/s.

The Project Engineer shall as part of his duties address any site problems pertaining to the environment at the request of the Proponent and/or the Independent Environmental Consultant (IEC). The Project Engineer shall have the responsibility to ensure that the Proponent's responsibilities are executed in compliance with the ESMP and/or any other documentation proposed from the Proponent and/or IEC. Any on-site decisions with the appointed contractors having relevance to environmental matters are ultimately the responsibility of the Project Engineer.

The Project Engineer shall assist the IEC where necessary and shall have the following responsibilities in terms of the implementation of this ESMP:

- The Engineer, along with the IEC and Resident Engineer, must obtain, examine and approve all required plans.
- Promptly issuing instructions requested by the IEC and Resident Engineer to the Contractor/s.
- Deduct environmental penalties from certificate payments as agreed and instructed by the IEC.
- Assisting the IEC in making decisions and finding solutions to environmental and social problems that may arise during the construction phase.
- Oversee the responsibilities of the Resident Engineer and Contractor/s, and assist in all required matters.
- Monitor and verify that the ESMP are always adhered to and act if specifications are not followed.
- Order the removal of person(s) and/or equipment not complying with the ESMP specifications.
- Provide input into the IEC's on-going review of the ESMP.
- Communicate environmental issues to the IEC.

#### **7.2.4 Independent Environmental Consultant (IEC)**

The Independent Environmental Consultant (IEC) is acting on behalf of the Proponent and shall communicate directly with the Project Engineer and/or Proponent. The IEC shall be responsible for monitoring, reviewing, and verifying the Contractor's compliance with the ESMP during the construction phase. The IEC shall have the right to investigate the site at any time during the project phases and unexpected visits will be allowed.

The IEC's duties shall include, inter alia, the following:

- The IEC shall make recommendations independent of the Project Engineer; take immediate action on Site when (i) prescriptive conditions are violated, or in danger of being violated, and to inform the Project Engineer, Resident Engineer/s and Contractor/s immediately of the occurrence and to take action, e.g. issuing of penalties; and (ii) where clearly defined and agreed 'no go' areas are violated, or in danger of being violated, and to inform the Project Engineer, Resident Engineer/s and Contractor/s of the occurrence and action taken.
- Advise the Contractor and/or the Project Engineer on environmental issues within the project area.
- Undertake regular site visits to ensure compliance with the ESMP and verify that environmental impacts are kept to a minimum throughout the construction phase (i.e., construction monitoring).
- Keep a photographic record of progress on site from an environmental perspective.
- Assist the Contractor and/or the Project Engineer in finding environmentally acceptable solutions to construction problems as and if any arise.
- Recommend additional environmental protection measures should this become necessary.
- Keep a register of complaints and dealing with any community issues or comments.
- Report any incidents to the Proponent and Project Engineer that may or have caused damage to the environment or which is in breach of the ESMP.
- Prepare an environmental audit report at the conclusion of the construction phase.
- The IEC, along with the Project Engineer and Resident Engineer, must obtain, examine and approve all plans.
- Ordering the removal of, or issuing penalties for person/s and/or equipment not complying with the specifications of the ESMP.
- Involve specialists to advise on environmental management issues as they emerge during the construction phase.

The IEC shall visit and inspect the site at least once every three months (or as determined by the Project Engineer) to ensure that correct operational procedures are being implemented and that the Contractor is complying with the environmental specifications of the ESMP.



Additional site inspections by the IEC may be required during the initial and final stages of the construction phase. The IEC shall address any queries to the Project Engineer. If the queries cannot be resolved at this level, they shall be referred to the Proponent, if necessary.

The IEC will carry the responsibility of monitoring the implementation of the ESMP on Site, assisted by the Project Engineer. In this regard, the IEC will submit monitoring reports to the authorities until after all rehabilitation work has been completed.

The IEC must have:

- a good working knowledge of all relevant National and International environmental policies, legislation, guidelines, and standards, inclusive of the AfDB ISS;
- the ability to conduct inspections and audits and to produce thorough and informative reports;
- the ability to manage public communication and complaints;
- the ability to think holistically about the structure, functioning and performance of environmental systems; and
- proven competence in the application of the following integrated environmental management tools:
  - ESIA's.
  - ESMP's.
  - Environmental auditing.
  - Mitigation and optimisation of impacts.
  - Monitoring and evaluation of impacts.

#### **7.2.5 Main Contractor**

The Main Contractor shall have the following responsibilities:

- Implement and monitoring that all provisions of the ESMP are always adhered to and acting if specifications are not followed. If the Contractor encounters difficulties with the specifications, he/she must discuss alternative approaches with the IEC and/or the Project Engineer prior to proceeding.
- Monitor and verify that the environmental impacts are kept to a minimum and mitigations proposed are applied throughout the construction phase.
- Make and keep construction personnel aware of environmental issues and to ensure they show adequate consideration to the environmental sensitivities.
- Report any incidents of non-compliance with the ESMP to the Project Engineer and/or the IEC.
- Keep a register of complaints on-site and record community comments and issues, and the actions taken in response to these complaints.

- Rehabilitate any sensitive environments damaged due to his/her negligence. This shall be done in accordance with the IEC and Project Engineer's specifications and instructions.
- The Contractor shall ensure that no damage whatsoever is caused because of his operations or otherwise by his workers in the areas adjacent to the construction sites.
- The Contractor shall ensure that his workmen are properly instructed and carry out the requirements of this ESMP.
- The Contractor will be held liable for all unauthorised damage caused by him or any of his workmen or Sub-Contractors.

Failure to comply with the ESMP from the side of the contractor will result in penalties (to be defined in consultation with Project Engineer) and reported non-compliance may result in the suspension of work or termination of the contract by the Project Engineer on instruction from the Proponent.

### **7.3 ENVIRONMENTAL AND HEALTH MANAGEMENT SYSTEM**

#### **7.3.1 Responsibilities and Liabilities**

The day-to-day monitoring and verification that the ESMP is being adhered to shall be undertaken by the appointed Contractor/s, as listed within the various sections below.

- 1.1. Notwithstanding the provisions of Clause 4.9 of the General Conditions of Contract (GCC), the technical specifications and contractual work plan, the Contractor will plan, execute, and document construction works pursuant to the present Environment, Social, Health and Safety specifications (ESHS).
- 1.2. In pursuance to Clause 17.2 of the GCC, the Contractor is liable, with respect to the Employer, for all damages to natural resources caused by the execution of the works or the methods used for execution, unless it is established that the execution or methods were necessary, according to the provisions of the Contract or an Engineer's instruction.
- 1.3. Notwithstanding the definition of "Site" of Clause 1.1.6.7 of the GCC and in the context of the present specification the ESHS specifications, the word "Worksite(s)" means:
  - (i) The land where work will be carried out, or
  - (ii) the land necessary for the implantation of Worksite facilities (work camp, workshops, offices, storage areas, concrete production plants) and including special access roads, or
  - (iii) quarries for aggregates, rock material and riprap, or
  - (iv) borrow areas for sand and other selected material, or
  - (v) stockpiling areas for backfill material or other demolition rubble, or
  - (vi) any other location, specifically designated in the Contract as a Worksite.

The term « Worksite(s) » encompasses any individual Worksite or all Worksites.

1.4. The ESHS specifications refer to:

- a) Protection of the natural environment (water, air, soil, vegetation, biological diversity) in areas adjacent to the Worksite, access roads, quarries, borrow areas, stockpiling of backfill material, camps, or storage areas,
- b) Health and safety conditions to be maintained for the Contractor's personnel and any other person present on the Worksites, or along access routes, and
- c) Working practices and the protection of people and populations living near the Worksite, but exposed to the general disturbance caused by works.

1.5. Subcontractors

The present ESHS specifications apply to the Contractor and unless explicitly agreed with the Engineer, all subcontractors used for the execution of the works. Pursuant to Clause 4.4 of the GCC, the Contractor is fully liable for all actions, non-compliance and negligence by subcontractors, their representatives, employees, and workers, to the same degree as it would be held liable for its own actions, non-compliance, or negligence or that of its own representatives, employees or workers.

1.6. Applicable regulations

The Contractor must identify all regulations in relation to the protection of the environment (water, air, soils, noise, vegetation, fauna, flora, waste, groundwater) and, pursuant to Clauses 6.4 and 6.2 of the GCC, the protection of people (labour law, indigenous populations, standards on occupational exposure, other). The Contractor must list all texts, standards, and other regulatory limitations in its construction Environmental and Social Management Plan (C-ESMP as specified in Clause 2.1) and specify the means taken for compliance.

### **7.3.2 ESHS Planning Document**

2.1. Construction Environmental and Social Management Plan (C-ESMP)

- 2.1.1. The Contractor prepares and ensures prior validation by the Engineer, implementation, and regular update of a Worksite Environmental and Social Management Plan (C-ESMP).
- 2.1.2. The C-ESMP represents the unique reference document in which the Contractor defines in detail all organisational and technical provisions implemented to satisfy the obligations of the present ESHS specifications.
- 2.1.3. The Contractor defines in the C-ESMP the number, the locations and the type of Worksite as defined in Clause 1.3. For each of the identified Worksite, the Contractor establishes a Site Environmental Protection Plan (SEPP). The list of sites subject to the preparation of a SEPP is validated by the Engineer. The SEPP(s) are annexed to the C-ESMP.

- 2.1.4. The C-ESMP covers the entire period from the signature of the Contract to the final acceptance of the works by the Engineer.
- 2.1.5. Unless agreed otherwise by the Engineer, the C-ESMP is written in English.
- 2.1.6. The first draft version of the C-ESMP is provided to the Engineer with the Programme as specified in Clause 8.3 of the GCC.
- 2.1.7. In pursuance of the provisions of Clause 2.1.6, before the start of works on a new Worksite, and unless otherwise agreed with the Engineer, the draft C-ESMP is submitted to the Engineer at the latest thirty (30) days prior to the start of work at the Worksite.
- 2.1.8. The Engineer has 14 days to provide comments to the Contractor. The revised C-ESMP, integrating the Engineer's comments is resubmitted to the Engineer for validation at the latest 7 days prior to the start of works at the Worksite.
- 2.1.9. The issue of the Engineer's instruction for the start of works or activities at each site is subject to the approval of the C-ESMP including the site's SEPP.
- 2.1.10. During the execution of the works, unless otherwise agreed with the Engineer, the C-ESMP will be updated by the Contractor every two months and reissued to the Engineer. The revised version shall highlight the new elements incorporated in the document.
- 2.1.11. The C-ESMP (and the SEPP) is structured according to the plan specified in Appendix B of the present ESHS specifications.

### **7.3.3 Management of Non-Conformities**

Any non-compliance with the agreed procedures of the ESMP is a transgression of the various statutes and laws that define how the environment is managed. Non-conformance identified during monitoring must be recorded. Non-conformance reports will describe, in detail, the cause, nature and effects of any environmental non-conformance by the Contractor and could stand as evidence should legal action be required. If possible, photographs should also be included as evidence to substantiate the report. This report will also suggest mitigation measures to correct the non-conformance (if necessary) and contemplate revisions to any of the strategies used in the construction phase, whether they pertain to monitoring or to construction methods used on site. The non-conformance shall be documented and reported as part of the Monitoring Report.

- 3.1. In application of Clause 5, non-conformities detected during inspections carried out by the Engineer are subject to a process adapted to the severity of the situation. Non-conformities are divided into 4 categories as follows:
  - 3.1.1. Notification of observation of minor non-conformities. The non-conformity results in a notification to the on-site Contractor's representative, followed-up by a signed notification of observation prepared by the Engineer. The multiplication

of notifications of observation at the Worksite, or absence of corrective actions by the Contractor, can result in the severity of the non-conformity being raised to that of level 1.

- 3.1.2. Level 1 non conformity: Non-conformities that do not represent a serious immediate risk for health and environment. The non-conformity is the subject of a report addressed to the Contractor and which shall be resolved within five (5) days. The Contractor addresses to the Engineer a report explaining how the non-conformity has been corrected. Further to an inspection and a favourable evaluation of effectiveness of the corrective action, the Engineer signs a close-out report for the non-conformity. In all cases where a non-conformity of level 1 is not resolved within one (1) month, the severity of the non-conformity is raised to level 2.
- 3.1.3. Level 2 non-conformities: applies to all non-conformities that have resulted in damage to health or the environment or which represent a high risk to health and the environment. The same procedure as for level 1 non-conformities is applied. Corrective action shall be taken by the Contractor within three (3) days. The Contractor addresses a report explaining the corrective actions implemented. All level 2 non-conformities which are not resolved within one (1) month, are raised to level 2.
- 3.1.4. Level 3 non-conformities: applies to all non-conformities that represent a risk with major consequences to health and the environment. The highest levels of the Contractor's and Engineer's hierarchies present in the Employer's country are informed immediately and the Contractor has twenty-four (24) hours to bring the situation under control. Clause 14.7 of the Particular Conditions of Contract (PC), a level 3 non-conformity results in the suspension of interim payments until the non-conformity has been resolved. If the situation requires, and in pursuance to Clause 8.8 of the PC, the Engineer can order the suspension of work until the resolution of the non-conformity.

The IEC shall issue the Contractor a notice of non-compliance whenever transgressions are observed. The Contractor/s shall act immediately when such notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the Project site pertaining to the environment and social conditions shall be recorded in a dedicated register and the response noted with the date and action taken.

The Contractor is deemed not to have complied with the ESMP if, inter alia:

- There is evidence of contravention of the ESMP specifications within the boundaries of the project site, site extensions and roads;
- There is contravention of the ESMP specifications which relate to activities outside the boundaries of the construction site;
- Environmental damage caused due to negligence;

- Construction activities take place outside the defined boundaries of the site;
- The Contractor fails to comply with corrective or other instructions issued by the IEC and/or Engineer within a specific time; and/or
- The Contractor fails to respond adequately to complaints from the public.

A system of penalties shall be implemented to ensure compliance with the ESMP. Where the Contractor inflicts irreparable damage upon the environment or fails to comply with any of the environmental and/or social specifications of the ESMP (within 10 days) this would constitute a breach of Contract for which the Contractor may be liable to pay a penalty.

The system of penalties shall be implemented in the following way:

- Penalties shall be issued per incident and individual at the discretion of the IEC;
- Penalties shall be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental and/or social specifications; and
- The IEC shall not collect the penalties from individuals, but shall inform the Project Engineer and Contractor of the contravention, the individual's identity, and the amount of the penalty/ies.

Failure by any employee of the Contractor or their sub-contractors to show adequate consideration to the environmental and/or social aspects of the contract shall be considered sufficient cause for the Project Engineer to have that employee of the Contractor, or their sub-contractors removed from the site. The IEC may, through the Project Engineer, also order the removal of equipment that is causing continual environmental damage.

It is recommended that penalties be instituted for the following violations and any others determined during work as detailed below:

- Littering on site or in general areas.
- Lighting of illegal fires on site and outside of dedicated areas.
- Hazardous chemical/oil spill and/or dumping in non-approved sites and persistent or un-repaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas.
- Excess dust or excess noise emanating from the construction site.
- Any vehicles being driven at a speed more than designated speed limits.
- Any vehicles driven off demarcated tracks.
- Damage to sensitive environments.
- Uncontrolled/unmanaged erosion.



- Unauthorised removal and/or damage to fauna, flora or cultural or heritage objects on site.
- Possession or use of intoxicating substances on site.
- Urination and defecation anywhere except at designated facilities.
- Poaching and/or killing of any wildlife, mammal, bird, reptile, amphibian and/or bird.
- Trespassing onto neighbouring private farmlands without authorisation.
- Found in possession of any wildlife and/or animal remains.
- Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the ESMP, the Contractor shall be liable.

### **7.3.4 Management of Non-Conformities**

#### **4.1. ESHS Supervisors and Manager**

- 4.1.1. Pursuant to Clause 4.18 of the GCC and in addition to the provisions of Clause 6.7 of the GCC, the Contractor appoints an Environment, Social, Health and Safety manager in charge of implementing the present ESHS specifications.
- 4.1.2. The ESHS manager is permanently based on the Worksite for the full duration of the works as of Contractor's mobilisation until the provisional acceptance of all works.
- 4.1.3. This manager holds the power within the Contractor's organisation to be able to suspend the works if considered necessary in the event of level 2 or 3 non-conformities, and allocate all resources, personnel and equipment required to take any corrective action considered necessary.
- 4.1.4. The ESHS Manager speaks fluently the language used for the Contract and the official language of the Employer's country, if the language used for the Contract is not an official language. The ESHS Manager will hold a relevant University degree or a significant experience of at least 10 years in designing and monitoring the implementation of an environmental and social management plan for construction works.
- 4.1.5. The Contractor appoints one ESHS supervisor for each shift on each Worksite.
- 4.1.6. ESHS supervisors represent the ESHS Manager within work teams. Their role is to ensure that the works are carried out pursuant to the present ESHS specifications and notify the ESHS Manager if any detected non-conformities.

#### **4.2. Person in charge of relations with external stakeholders**

- 4.2.1. The Contractor appoints a person responsible for relations with external stakeholders for the site: local communities, administrative authorities, and representatives of economic activities located within one hour travel from the Worksite.

4.2.2. The person responsible for relations external stakeholders can also be the ESHS Manager appointed under Clause 4.1.1 of the ESHS specifications, providing that the language of the local population is spoken fluently.

4.2.3. This person will be based on the Worksite on a permanent basis.

4.2.4. Administrations and local authorities will be informed of the existence of this person as of the start of works and will be provided with telephone contact details so as to be able to contact this person if a problem arises during the execution of works or concerning the behaviour of the Contractor's employees outside the Worksite.

4.3 The team, including the ESHS supervisors and manager, and the person in charge of relations with external stakeholders, will be allocated the necessary resources to operate independently. The team will be allocated the following as a minimum:

- a) A 4WD vehicle (unless otherwise instructed by the Engineer) and the necessary operating budget;
- b) A complete IT workstation: computer, printer, Internet access;
- c) Field equipment: GPS, digital camera; and
- d) One communication equipment per person adapted to the context (mobile phone, satellite phone, or should coverage not be adequate, a long-range two-way radio)

#### **7.3.5 Inspections**

5.1 The ESHS Manager will carry out an ESHS inspection of the facilities and Worksite on a weekly basis jointly with the Engineer.

5.2 A written report will be drafted for each weekly inspection, in a format approved by the Engineer, addressing non-conformities detected on the Worksite as specified in the present ESHS specifications.

5.3 Each non-conformity will be documented by a digital photograph with captions to provide a visual illustration, explicitly indicating the location, date of inspection and the non-conformity in question.

#### **7.3.6 Reporting**

6.1 As part of the Progress Report specified in Clause 4.21 of the GCC, the Contractor submits an ESHS activity report summarising all ESHS initiatives implemented in relation to the execution of the works during the reporting period to the Engineer on a monthly basis. The activity report is separate document from the update of the C-ESMP, which is updated at the intervals indicated in Clause 2.1.10 of the present ESHS specifications.

6.2 The ESHS activity report is complete and permanent document, with full page numbering, established in a structured and concise manner to ensure accuracy and

ease of use. Unless indicated otherwise by the Engineer, the document is written exclusively in English.

6.3 Pursuant to Clause 4.21 of the GCC, the ESHS activity report is submitted at the latest 7 working days after the last day of the month in question. The report contains the following information.

6.3.1 List of ESHS personnel at present at the site at the end of the month.

6.3.2 Inspections carried out (location and intervals).

6.3.3 Non-conformities detected during the reporting period with descriptions of the corrective actions taken.

6.3.4 Update of the product registers and inventory of hazardous waste.

6.3.5 Description of activities to prevent erosion and control sediment transport undertaken during the month.

6.3.6 Description of stakeholder engagement activities undertaken with neighbouring populations, local authorities, governmental agencies.

6.3.7 Monitoring results for the following indicators:

- a) Effluent quality (Clause 12.5)
- b) Worksite location (Clause **Error! Reference source not found.**)
- c) Recruitment, number of positions and hours worked by local employees (Clause 37.3)
- d) Health & safety statistics: in pursuance to Clauses 4.21 and 6.7 of the GCC, number of lost-time accidents, number of accidents without lost-time, frequency of accidents, and serious misconduct by employees (record sheet attached as an appendix to the activity report, pursuant to Clause 7.7).

6.3.8 Report on training activities (topic, number and duration of sessions, number of participants).

6.3.9 Provisional action for the coming months

6.4 Incident notification

6.4.1 The Engineer is informed within one hour of any incident involving serious bodily injury to a member of personnel, site visitor or any other third party, caused by the execution of the works or the behaviour of the personnel of the Contractor.

6.4.2 The Engineer is informed of any near accident relating to the execution of the works which, in slightly different conditions, could have led to bodily injury to people, or damage to private property or the environment, within 6 hours of the event.

### **7.3.7 Rules & Procedures**

- 7.1. Rules of procedure are established by the Contractor for Worksites, addressing the following: safety rules, zero tolerance for substance abuse (refer to Clause 36), environmental sensitivity of areas around the Worksites, the dangers of STDs and HIV/AIDS and respect for the beliefs and customs of the populations and community relations generally.
- 7.2. The rules are clearly displayed at the different Worksites and posted in the Contractor's vehicles and machinery driving cabs.
- 7.3. The rules confirm the Contractor's commitment to implementing the ESHS provisions provided for in the Contract.
- 7.4. New employees and existing members of personnel are made aware and acknowledge their understanding of the rules of procedure and the associated provisions. Rules of procedure document are initialled by all employees prior to the start of works.
- 7.5. Pursuant to Clauses 6.9 and 6.11 of the GCC, the rules of procedure include a list of acts considered as serious misconduct and which result in dismissal by the Contractor should an employee repeatedly commit the offence despite awareness of the rules of procedure, and this is without prejudice to any legal action by the public authority for non-compliance with applicable regulations:
  - a) Drunkenness during working hours, leading to risks for the safety of local inhabitants, customers, users and personnel;
  - b) Punishable statements or attitudes , and sexual harassment in particular,
  - c) Violent behaviour;
  - d) Intentional damage to the assets and interests of others, or the environment;
  - e) Repeated negligence or imprudence leading to damage or prejudice to the environment, the population or properties, particularly breaching provisions intended to prevent the spreading of STD and AIDS;
  - f) Drug use; and
  - g) Possession and/or consumption of meat or any other part of an endangered animal or plant as defined in the Washington convention (CITES) and national regulations.
- 7.6. Serious misconduct, such as organization of sex trade (pimping), committing paedophilia, physical aggression, drug trafficking, deliberate and severe pollution, trading and/or trafficking in all or part of protected species, will lead to immediate dismissal as of the first report of misconduct is detected, in application of the rules of procedure and labour laws.

- 7.7. The employer establishes a record for each case of serious misconduct, and a copy will be provided to the employee in question, indicating all action taken to terminate the misconduct by the employee in question and to bring the attention of other members of personnel to the type of incident detected. This record will be provided to the Engineer as an attachment to the monthly report (see Clause 6.3).

### **7.3.8 ESHS Training**

- 8.1. The Contractor prepares a training programme for its workforce, as described in the C-ESMP, and documented each month in the ESHS activity report.
- 8.2. Training sessions are two-fold: introductory sessions for starting work at the Worksite, and technical training as required in relation to the execution of the works.
- 8.2.1. Starting work sessions are organised for each employee and shall cover as a minimum:
- a) Rules of procedure;
  - b) Safety rules on Worksite;
  - c) Protection of areas adjacent to Worksite;
  - d) Risks relating to sexually transmitted diseases (Clause 6.7 of the GCC);
  - e) Basic health: combating malaria (if prevalent) and waterborne diseases, improving hygiene; and
  - f) Emergency response procedures or evacuation.
- 8.2.2. Technical training:
- a) Training in the skills needed for tasks requiring a work permit (Clause 23 of the ESHS specifications).
  - b) Training in first aid and transporting the injured in order to achieve the targets defined in Clause 28.1 on the number of first aid officers per shift.
  - c) Ability to drive on rough ground.
- 8.3. The Contractor detail in the training programme the actions and ESHS training for subcontractors and other members of the joint venture when applicable.

Contractors shall ensure that its employees and any third party who carries out all or part of the Contractor's obligations are adequately trained about the implementation of the ESMP, as well as regarding environmental legal requirements and obligations. Training shall be conducted by the Contractor's Health and Safety Officer and/or Environmental Officer where necessary.

The purpose of this environmental training is to provide a general explanation of sustainable environmental and social practises, but also to explain the content of the ESMP, the relevance

thereof and how it will be implemented through monitoring. The environmental specifications of this ESMP should clearly be explained to all the Contractors and their site staff, as well as non-compliance to it and related penalties.

Environment and health awareness training programmes should be targeted at three distinct levels of employment, i.e., the executive, middle management and labour. The Contractor shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness and the content of the ESMP. The presentation needs to be conducted in the language of the employees to ensure it is understood.

The environmental training shall, as a minimum, include the following:

- The mitigation measures required to be implemented when carrying out their work activities.
- Environmental legal requirements and obligations.
- Details regarding flora/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction.
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.
- No trespassing or movement outside of the dedicated Project site (i.e., railway servitude).
- No poaching and/or being in possession of any animal remains.
- The importance of always wearing suitable clothing to be identified as a project worker.
- The importance of not littering and/or making of fires for whatever reason.
- The importance of using supplied toilet facilities.
- The need to use water sparingly.
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.

### **7.3.9 Standards**

- 9.1. The Contractor complies with all norms, standards and discharge limit values defined in the national regulations of the Employer's country regulations and pursuant to Clause 1.6 of the present ESHS specifications.
- 9.2. The Contractor complies with norms, standards and discharge limit values recommended by AfDB and World the specialised international organisations affiliated to the United Nations, as described in Clause 9.3 below.



9.3. For matters not addressed in the AfDB above document, the norms, standards and discharge limit values of the following institutions shall apply:

- World Health Organization (WHO);
- International Labour Organization (ILO) (in particular in pursuance to Clauses 6.20, 6.21, 6.23 and 6.24 of the GCC); and
- World Bank, including the IFC and its Environmental, Health and Safety guidelines available from <http://www.ifc.org/ehsguidelines>.

### **7.3.10 Protection of Adjacent Environmental Areas**

10.1. Pursuant to Clause 4.18 of the GCC, and unless instructed otherwise by the Engineer, the Contractor uses construction methods and means of protection in order that no adverse effects are incurred on vegetation, soils, groundwater, biodiversity, natural drainage, and the water quality in areas adjacent to Worksites for the entire duration of the works.

10.2. Wetland areas include marshes, fens, mires or natural or artificial bodies of water, whether permanent or temporary, where water is stagnant or flowing, fresh, saline or briny, including seawater with a low-tide depth of six metres or less. Filling of all or part of a wetland area is not permitted unless the works are necessary according to the provisions of the Contract or the instructions of the Engineer.

10.3. With the exception of access roads, or unless instructed otherwise by the Engineer, the entire perimeter of land sites with a surface area of less than 2 hectares is physically demarcated with a fence or tape. For Worksites with a surface area of less than 2 hectares, the perimeter will be physically demarcated by a perimeter track, road, signs, or any other means leaving no possible ambiguity as to the location of the Worksite perimeter.

10.4. Unless indicated otherwise by the Engineer, the Contractor defines the perimeter of the Worksite at a distance of at least:

- a) 50 m from any permanent water course and outside of floodable areas,
- b) 300 m from sensitive urban services and buildings (health centre, school, water supply for populations),
- c) 200 m from any housing, and
- d) 300 m from housing in the specific case of work requiring the use of explosives.

10.5. If the footprint of the works is located in the situations a) to d) of the Clause 10.4 above, and unless agreed upon otherwise by the Engineer, the Contractor will contract a bailiff to make a sworn statement regarding the existence and conditions of residential

buildings situated around the site with a distance specified in paragraph b) to d) of Clause 10.4.

- 10.6. The bailiff's sworn statement is prepared and provided to the Engineer with the SEPP.

#### **7.3.11 Selection of Borrow Areas, Backfill Material Stockpile Sites and Access Roads**

- 11.1. The Contractor will submit to the Engineer for prior approval, (i) the location of proposed borrow areas or areas to be excavated, or (ii) proposed backfill material stockpile locations or zones designated for the rubble from demolition works.
- 11.2. This requirement also applies to the side casting during the construction of linear infrastructure (roads, pipelines, transport routes) and which are included in the category of stockpiling of waste material.
- 11.3. The opening or rehabilitation of all access routes between Worksites will be shown on a map and approved by the Engineer prior to the start of the corresponding works.

#### **7.3.12 Effluents**

- 12.1. Effluents consist of liquid discharges, including infiltration, from Worksite, transporting a pollutant (dissolved, colloidal or particles).
- 12.2. A pollutant is a given chemical compound that is at a concentration that is greater than the limit values recognised for that compound according to the Clause 9 of the present ESHS specifications.
- 12.3. If no recognised threshold exists pursuant to Clause 12.2, the Contractor provides proof that the charges are harmless.
- 12.4. No effluent is discharged by the Contractor into water courses, soils, lakes or the marine environment without prior treatment and without monitoring of the treatment's performance to guarantee the absence of pollution.
- 12.5. The Contractor carries out or contracts the monitoring of the effluent quality pursuant to Clause 12.4 of the present ESHS specifications. In the first case, the Contractor provides the ESHS manager with the means and skills to carry out in-situ monitoring and laboratory analysis of the performance indicators. In the second case, the Contractor establishes a contract with a specialised contractor, accredited with the Employer's country authorities for this activity.
- 12.6. The effluent monitoring is carried out pursuant to and using an equipment that complies with the relevant standards of the International Standards Organization (ISO).
- 12.7. The physical and chemical parameters of the effluent that are monitored are those that are listed in the Employer's country environmental regulations, or if these do not exist,

the parameters are based on the recommendations of specialised international organisations pursuant to Clause 9 of the present ESHS specifications. The parameters have prior approval from the Engineer.

- 12.8. The Contractor will list, locate, and characterise (flow, expected quality, discharge frequency) all sources of effluents and outlets in the natural environment in the Site Environment Protection Plan(s).
- 12.9. The Contractor will submit to the Engineer an effluent quality monitoring report on a monthly basis, including documentation for the following for each effluent discharge point: (i) average flow rates of discharged effluents, (ii) discharge frequencies and durations over the month, and (iii) the physical and chemical quality of the effluent discharged, for the conformity parameters listed in Clause 12.1 above.
- 12.10. The special case of rainwater run-off -
  - 12.10.1. Run-off consists of the rainwater flow on the surface or the soil and other technical surfaces at Worksites.
  - 12.10.2. In the context of the Contract, run-off is considered as an effluent unless demonstrated otherwise, as documented, and substantiated by the Contractor, and approved by the Engineer.
  - 12.10.3. All platforms where generators, hydrocarbon storage tanks and refuelling stations are installed have impervious surfaces, are drained and equipped with an oil removal treatment to prevent pollution pursuant to Clause 12.4 above. For concrete platforms, run-off will be drained to settling basin, where the pH will be buffered.

### **7.3.13 Atmospheric Emissions and Dust**

- 13.1. Emissions refer to any discharge into the air of solid substances, aerosols, gases, radiation, or energy, whether point sources (e.g. incineration stack) or diffuse (e.g. fugitive dust emissions from road use by trucks).
- 13.2. The Contractor will use equipment and adopt construction and transport methods with atmospheric emissions which are not in excess of the threshold emission values recommended by the Employer's country standards, or the organisations mentioned in Clause 9.
- 13.3. Once having received the agreement from the Engineer, the Contractor will document the maintenance records for its fleet of vehicles, machinery, and equipment. The records will be in English, or any other language approved by the Engineer, and will be at the disposal of the Engineer.

- 13.4. The fleet of vehicles or equipment emitting combustion gases will be maintained at the intervals and according to the methods specified by the manufacturer.
- 13.5. On unpaved roads used by the vehicles and machinery of the Contractor:
  - 13.5.1. The Contractor takes action to abate fugitive dust emissions generated by vehicles or mobile equipment in residential areas and on roads within the Worksite perimeter.
  - 13.5.2. The abatement measures include the regular application of water or any other non-hazardous dust suppression agents, reduction of vehicle speed in and near sensitive receptor areas. Contractor vehicle speed limits are specified in Clause 42.7.
  - 13.5.3. The Contractor describes in the C-ESMP the road sections designated for the application of dust suppression agents and the methods and frequencies programmed. The Contractor will implement the measures approved by the Engineer.
- 13.6. When storage, transport and handling of bulk materials in the open air and exposed to the wind, the Contractor implements the necessary dust abatement measures, including one or several of the following techniques: humidification of the surface, covering of the surface, or vegetation of the surface.

#### **7.3.14 Noise and Vibration**

- 14.1. The Contractor uses equipment and adopts construction and transport methods so not to generate noise levels in excess of values recommended by the Employer's country regulations and organisations mentioned in Clause 9.
- 14.2. High noise generating works (e.g. pile driving, blasting, rock clearing, drilling, percussion drilling) inducing an increase of 3 dB in ambient noise levels at the nearest occupied off-Worksite receptor area are carried out during normal working days, but prohibited at night between 18:00 and 06:00. An off-Worksite receptor is defined as an offsite area used for nocturnal socioeconomic activities (e.g. accommodation camps, residential areas, hotels, health centres).
- 14.3. The use of heavy vehicles at night is specified in Clause 42.6.

#### **7.3.15 Waste**

- 15.1. The Contractor is responsible for identifying, collecting, transporting and treating all waste produced on the Worksites by its personnel, subcontractors and visitors to the Worksites.

- 15.2. The Contractor selects suppliers having a voluntary and documented policy to reduce the volume and weight of packaging, and to select recyclable or biodegradable packaging.
- 15.3. The Contractor establishes and maintains a waste register which is at the disposal of the Engineer. This register will record all waste management operations: production, collection, transport, treatment. The following aspects are documented in this register:
- a) Type of waste, using the nomenclature specified in Clause 15.7;
  - b) Waste quantities;
  - c) Name and address of the third-party waste management facilities receiving waste or parties taking possession of the substances no longer considered as waste;
  - d) Name and address of waste transport contractors;
  - e) Planned waste treatment.
- 15.4. The contractor files and maintains at the disposition of the Engineer the waste manifests for the collection, transport, treatment and/or elimination of waste.
- 15.5. The waste register is established and available as of the Contractors mobilisation to the Worksite. This register will be archived for at least 1 year after the provisional acceptance of the works.
- 15.6. The Contractor implements specific waste management practices adapted to the level of danger for human health or the natural environment. Three waste categories are identified for Worksites and in tracking documents:
- a) Hazardous waste: any waste with one or several dangerous properties.
  - b) Non-hazardous waste: any waste with no properties rendering it hazardous. Non-hazardous waste contaminated by hazardous material will be considered as hazardous waste, unless indicated otherwise by the Engineer.
  - c) Inert waste: any waste unaffected by any significant physical, chemical or biological modifications, which does not decompose, burn or produce any physical or chemical reaction, is not biodegradable and does not damage any substance with which it comes into contact in a manner likely to cause damage to the environment or human health.
- 15.7. The Contractor assesses, document and effectively implements any local recycling or re-use options for its waste.

- 15.8. Waste is categorised and stored separately prior to removal from the Worksites, depending on the level of danger, phase (liquid, solid or gas), the waste management solution to be applied and its potential in terms of recycling or reuse.
- 15.9. Waste is collected from each Worksite at the same rate that it is produced and is placed in temporary locations meeting the following criteria:
- a) Located at a distance of over 100 m from any natural sensitive area and over 500 m from any socioeconomic sensitive area (school, market, healthcare centre, water well or catchment area), with the exception of waste storage area in camps.
  - b) Protected from moving machinery and vehicles, but easy to access for regular collection.
  - c) Located on a flat impervious surface to prevent infiltrations.
  - d) Under cover for non-inert waste.
  - e) Stored in containers of the appropriate size, tightness and level of resistance depending on the danger and phase (solid, liquid, gas) of the waste.
  - f) Liquid wastes storage is equipped with secondary retention with a volume at least equal to the volume of the waste contained in the containers.
  - g) Hazardous waste stored pursuant to Clause 25.7 of the present ESHS specifications.
- 15.10. Waste is removed from Worksites and transported to recycling, treatment and waste management facilities on a regular basis. The frequency of removal, approved by the Engineer, guarantees:
- a) No overflow from containers.
  - b) No unpleasant odour or emissions which are dangerous for human health.
  - c) No proliferation of insects, rodents, dogs or other animals which are harmful or dangerous for human health.
  - d) Regular cleaning of containers and surfaces on which they are located.
- 15.11. Unless otherwise specified in the Contract or instructed by the Engineer, waste incineration is prohibited on Worksites. Two exceptions are medical waste and green waste, which unless instructed to the contrary by the Engineer, are managed pursuant to Clauses 15.15.1 and 16.1.3 of the present ESHS specifications.

The use of third-party waste management services is subject to a documented prior audit of the treatment, storage and recycling facilities by the Contractor, to guarantee the conformity with the provisions of the present ESHS specifications on waste.



15.12. Pursuant to Clause 1.5 of the present ESHS specifications, the provisions applicable to the Contractor regarding waste management also apply to any third party waste management contractors. The Engineer reserves the right to inspect third party waste management facilities and prohibit the Contractor from using the facilities if considered unacceptable.

15.13. The management of non-hazardous waste complies with the following conditions:

15.13.1. Non contaminated inert waste is removed and can be disposed of to landfill with unused backfill material. The location, capacity and environmental protection measures, particularly for water courses, implemented by the Contractor or subcontractor, will comply with the provisions of the present ESHS specifications.

15.13.2. Non-hazardous waste that cannot be recycled is disposed of to landfill, and complying with the following criteria:

- a) Walls and base sealed by a geo-membrane or a layer of compacted clay with a permeability  $10^{-7}$  cm/s.
- b) Drained for the recovery of leachates, which are routed to a lagoon aerobic/anaerobic treatment prior to discharge into the natural environment or collected in a temporary storage prior to regular collection and transfer to a treatment unit (septic tank or wastewater treatment plant).
- c) Regularly compacted and covered by earth to limit odours and the proliferation of insects.
- d) When the landfill has reached full capacity, vents are installed to evacuate gases, and the landfill covered by a geo-membrane with a minimum thickness of 1 mm, or a layer of compacted clay, and a top layer of 1.5 m of topsoil, which is revegetated.

15.14. The Contractor's hazardous waste is managed by a specialised waste subcontractor, accredited in the Employer's country for this activity.

15.15. In the absence of an existing waste management solution for hazardous waste satisfying the provisions of Clause 15.14 of the present ESHS specifications, the Contractor takes the following action:

15.15.1. Medical waste is incinerated in a specific facility constructed and accredited for this purpose. The Contractor will submit the technical specifications of the facility to the Engineer before importing or procuring the equipment.

15.15.2. Hydrocarbons, lubricants, paints, solvents and batteries are transported in drums to the capital city, or any other city where suitable waste

management facilities are available. Sludge from settling tanks/ponds, septic tanks or oily water skimmers will also be managed in the same way.

- 15.15.3. Contaminated soils from construction/demolition and drilling muds will be treated, stabilised and disposed of to landfill. Prior approval is obtained from the Engineer regarding the method and site location. The Contractor obtains authorisation from the competent local authorities prior to any disposal to landfill.
- 15.15.4. Prior approval from the Engineer is required before implementing waste management solutions on any other hazardous waste.
- 15.15.5. Prior to the provisional acceptance of the works, the Contractor provides documentation on hazardous waste landfilled at the other sites than accredited third party waste management facilities. The documentation includes a plan showing the location of landfill sites. The document is provided to the competent local authorities whose jurisdiction covers the landfill sites.

#### **7.3.16 Vegetation Clearance**

- 16.1. The Contractor describes in the C-ESMP the planned methods and schedule for vegetation clearing. Specific agreement from the Engineer is obtained prior to any clearing works.
  - 16.1.1. Vegetation clearing using chemicals is not permitted.
  - 16.1.2. Vegetation clearing using bulldozer is not permitted in zones less than 30 m from areas designated as sensitive by the Engineer, where only manual clearing is authorised.
  - 16.1.3. Unless otherwise specified in the Contract or if otherwise instructed by the Engineer, burning vegetation is not permitted. Green waste can be burnt with prior approval from the Engineer regarding the location, method, and schedule.
- 16.2. Areas cleared prior to undertaking earthworks are shown on a plan with a minimum scale of 1/10,000. Plans are submitted to the Engineer for validation prior to starting to clear works.
- 16.3. The Contractor undertakes physical demarcation of zones to be cleared using a method approved by the Engineer.
- 16.4. The characteristics (location, species, diameter at chest height) of trees not to be cut down are defined by the Engineer in coordination with the Employer. Such trees are

marked with paint and protected against clearing machinery using a method approved by the Engineer.

16.5. Clearing is undertaken without damage to adjacent non-cleared areas. Topsoil is stored within the cleared areas at the edge of the cleared zone. Clearing is undertaken working from the edge of the zone inwards.

16.6. Wood with economic value

16.6.1. During clearing, the Contractor stockpiles separately: (i) tree trunks with a diameter at chest height greater than the size defined by the Engineer, and (ii) trunks with a smaller diameter, branches, leaves, stumps and roots.

16.6.2. Unless instructed otherwise by the Engineer when validating the plans of Clause 16.2 or unless specified otherwise in the Employer's country regulations, the trunks of trees exceeding the diameter defined by the Engineer are the property of the Contractor.

### **7.3.17 Erosion & Sediment Transport**

17.1. The Contractor plans earthworks and optimises the management of space to ensure that all cleared surfaces and areas exposed to soil erosion are minimised on all Worksites.

17.2. Topsoil

17.2.1. Unless indicated otherwise by the Engineer, the top 25 centimetres of the soil will be considered as topsoil.

17.2.2. Earthworks for the temporary occupation of the Worksite are preceded by the clearing of topsoil and the storage of this soil separately from the underlying sterile soil.

17.2.3. Topsoil is stored according to the provisions approved by the Engineer to enable reuse during Worksite rehabilitation.

17.3. Draining rainwater run-off

17.3.1. The gradient of Worksites allows the collection and drainage of rainwater from the entire surface area to one or several discharge points. No pools of water are created.

17.3.2. Suspended solids in rainwater are removed using sediment traps / settling ponds. Rainwater from vehicle parking areas, machinery areas, workshops is subject to treatment with oily water separators.

17.3.3. Rainwater pre-treatment units are sized, cleaned, maintained and accessible to ensure compliance with the effluent quality criteria defined in Clause 12.10 and to allow monitoring of performance.

#### 17.4. Sediment control

17.4.1. The Contractor installs sediment control barriers to slow the flow of water and control sediment transport at Worksites with (i) a gradient of more than 20%, and (ii) where land is disturbed by the works or where stockpiled mineral material exposed to sheet or rill erosion.

17.4.2. Sediment control barriers are installed on the slope or at the base of the slope to protect the natural drainage system from sediment accumulation at levels higher than the natural situation. These barriers comply with the following principles:

- a) Made with geotextiles or straw bales or any other means pre-approved by the Engineer.
- b) Deployed before the start of works and removal of topsoil. Barriers can be used for the physical demarcation of working areas.
- c) Installed, cleaned, maintained and replaced according to manufacturer recommendations.
- d) Drainage surface area does not exceed 1,000 m<sup>2</sup> per 30 m of barrier. The length of the slope behind the barrier is less than 30 m, and is not used for flows in excess of 30 l/s.

17.4.3. For the dredging of marine sediments, unless specified otherwise in the Contract, or instructed otherwise by the Engineer, and particularly if the working area is exposed to currents, the Contractor will install a geotextile silt curtain, or any other technique approved by the Engineer to control turbidity clouds.

#### 17.5. Backfilling and stockpiling of backfill materials

17.5.1. To ensure stability and resistance to rainwater runoff erosion, mineral material stockpiles do exceed a height of 6 m, with a maximum slope of 3:2 (height: volume). The slope is crossed at a height of 3 m by a berm with a minimum width of 2 m and with a peripheral drainage trench.

17.5.2. For permanent backfill material stockpiles, the stockpile is shaped and compacted every 30 cm to ensure long-term stability.

17.5.3. Temporary stockpiles in place for more than 60 days are protected against runoff erosion by (i) revegetation using fast-growing grass species, either by

direct seeding or by hydro-seeding, or (ii) using other natural anti-erosion cover with prior approval from the Engineer.

17.6. Side casting during the construction of linear structures (roads, pipelines, transport lines), will be permitted in the following conditions:

17.6.1. For natural gradients with a slope  $<40\%$ , the side cast materials are piled to create a slope of less than 2H:1V.

17.6.2. For natural gradients with a slope  $>40\%$ , to ensure stability 3 m wide berms will be installed perpendicular to the slope and onto which the side cast material is deposited. Regular earthworks to maintain the form of the side case and long-term stability of the side cast is carried out. The slope of the side cast in general does not exceed 3H:2V.

17.6.3. The provisions of Clauses 10 and 17.4 for the protection of water courses exposed to erosion induced by the works apply.

### **7.3.18 Site Rehabilitation**

18.1. Unless instructed otherwise by the Engineer, the Contractor will rehabilitate all Worksites disturbed by the works, prior to the provisional acceptance of the works.

18.2. All buildings and free standing and underground structures (e.g. piping, underground tanks, sumps and basins) are removed pursuant to the provisions of Clause 4.23 of the GCC. All waste and rubble is removed in accordance to the provisions of Clause 15 of the present ESHS specifications. After removal of buildings structures and rubble, the Contractor returns Worksites to their original condition, according to the following provisions.

18.2.1. Land is levelled to ensure that run-off water drains without eroding soil or stagnating in pools. Unless instructed otherwise by the Engineer, the gradients of restored sites (excluding backfill as defined in Clause 17.5 of the present ESHS specifications) must be as for the adjacent undisturbed land.

18.2.2. Rehabilitated Worksites do not represent hazards for people. Areas near steep drops at quarries are indicated with permanent concrete signs. Holes are refilled. Sharp or unstable items are rendered inoffensive.

18.2.3. Unless specified otherwise in the Contract, or instructed otherwise by the Engineer, the Contractor undertakes revegetation of all Worksites disturbed by the works and bears the cost of such work.

18.2.4. Topsoil set aside during initial earthworks pursuant to Clause 17.2, is evenly spread over areas which have been levelled or where ruts have been cut into

compacted areas. The surface of compacted soils on Worksites is loosened by scouring (using rakes or other acceptable methods).

18.2.5. The Contractor describes in the C-ESMP the planned revegetation works to ensure sustainable Worksite rehabilitation: methods, plant species to be used and their origins, activity schedule based on a progressive provisional acceptance of Worksites.

18.2.6. Prior approval by the Engineer is required regarding the origin of seeds and plants proposed by the Contractor. The species used for revegetation must be suitable for the local environmental conditions, and selected according to the rehabilitation programme: stabilisation of backfill, landscaping, drainage, prevention of erosion.

18.2.7. Revegetation is undertaken throughout the duration of construction works, and is not limited to the rehabilitation of Worksites at the end of the works.

18.3. The present Clause 18 applies to the side casting of waste mineral materials generated during the construction of linear structures (roads, pipelines, transport lines).

#### **7.3.19 Documentation On-site Conditions**

19.1. The Constructor documents changes in condition of all Worksites from the start of works until to final acceptance. Documentation comprises dated and geo-referenced colour photographs taken from a constant angle and viewpoint.

19.2. The Worksite condition is documented as a minimum for the following stages:

- before any Worksite disturbance at the start of works;
- on completion of works, but prior to starting rehabilitation;
- on completion of rehabilitation and revegetation, if necessary, but prior to provisional acceptance of the works;
- 11 months after the provisional acceptance of the works and prior to the definitive acceptance of the works.

19.3. The Contractor specifies in the C-ESMP (i) the list of viewpoints to be used, (ii) areas to be photographed, and (iii) methods used for taking and archiving photographs.

19.4. Adjacent areas (100 m from the perimeter of the Worksite) are included in photographic documentation.

19.5. Unless instructed otherwise by the Engineer, structures to be buried are photographed weekly until covered. As a minimum the structures are photographed twice for works



with duration of less than 7 days, and at least once a week for works with a longer duration.

- 19.6. Photographs subject to the present Clause 19 are archived in digital format and provided to the Engineer on a monthly basis.
- 19.7. The nomenclature of electronic files for photographs explicitly indicates the Worksite, date and structure documented.

### **7.3.20 Health and Safety Plan**

- 20.1. In application of Clauses 6.7 and 4.8 of the GCC, the Contractor describes in the Health and safety plan section of the C-ESMP its organisation for managing health and safety, pursuant to its Health and Safety Management system (HSMS).
- 20.2. Pursuant to Clauses 6.7 and 6.15 of the GCC, the plan identifies and specifies:
  - a) all health and safety risks relating to the execution of the works;
  - b) prevention and protection measures to control risks related to the execution of the works;
  - c) Human and material resources involved;
  - d) Works requiring work permits; and
  - e) Emergency plans to be implemented in the case of an accident.
- 20.3 The Contractor implements prevention, protection and monitoring measures, as described in the health and safety plan.

### **7.3.21 Daily and Weekly Meetings**

Regular meetings will be held between the Project Engineer, RE, Contractor and the IEC. The purposes of the meetings shall be:

- To establish the suitability of the Contractor's methods and machinery to lower the risk involved for the environment.
  - To discuss possible non-conformance to ESMP guidelines or environmental legislation.
  - To assess the general state of the environment on site and discuss any environmental problems which may have materialised.
- 21.1. The Contractor organises as a minimum one health and safety meeting per Worksite per week (or at another frequency approved by the Engineer) with all the personnel assigned to the Worksite. This applies only to Worksites where work is ongoing. At the meeting accidents and incidents that occurred in the previous week are discussed and feedback provided. Means of improvements are identified, documented and

assessed to establish corrective actions. The Engineer is invited to participate at all health and safety meetings. Meeting reports are provided to the Engineer.

- 21.2 The Contractor organises daily (or at another frequency approved by the Engineer) health and safety meetings at all Worksites, per shift and per team, prior to the start of the daily work. The meeting establishes the health and safety risks associated with the day's tasks and activities, and means of prevention and protection to be implemented.

### **7.3.22 Equipment and Operating Standards**

- 22.1. The facilities and equipment used by the Contractor are installed, maintained, revised, inspected, and tested pursuant to the manufacturer's recommendations. The recommendations are available in English (or any other language approved by the Engineer).
- 22.2 The Contractor lists and describes in the C-ESMP the national and international standards, guidelines and industry codes of practice, applied during the execution of works.

### **7.3.23 Work Permit**

- 23.1. The Contractor puts in place a work permit procedure to manage risks through the implementation of prevention and protection measures prior to the starting of work. The procedures define the approval process between the person qualified to issue the work permit and the personnel (or subcontractors) carrying out the work.
- 23.2. The period of validity of a permit does not exceed twelve (12) hours without renewal. Permits are not renewed more than thirteen (13) times without the preparation of a new written permit.
- 23.3 Permits are issued in writing. Unless specified otherwise in the Contract, or instructed otherwise by the Engineer, works which require a work permit are defined in the health and safety plan. All other work permits required by the Engineer will be implemented by the Contractor.

### **7.3.24 Personal Protective Equipment**

- 24.1. The Contractor ensures that all personnel, visitors or third parties entering a Worksite are equipped with Personal Protection Equipment (PPE) pursuant to the practices and standards specified in Clause 9.
- 24.2. The Contractor describes in the C-ESMP the PPE to be used per Worksite and per activity.
- 24.3. Notwithstanding Clause 4.22 of the GCC, personnel and visitors to Worksites are equipped with a safety helmet, safety shoes and a reflective jacket as a minimum.

- 24.4. Adequate quantities of PPE are available on the Worksites. Storage conditions must be compatible with usage pursuant to the provisions of Clause 23.1.
- 24.5. Contractor personnel are trained in how to use and care for PPE and the Engineer has access to training certificates.

### **7.3.25 Dangerous Substances**

- 25.1. A substance is considered dangerous if one or several of its properties render it dangerous. The Contractor identifies and manages dangerous substances planned for use on the Worksite in the manner described in the present Clause 25.
- 25.2. The transport to the Worksite and use of dangerous substances requires prior authorisation from the Engineer.
- 25.3. Details of risks and related prevention and protection measures are included in the health and safety plan.
- 25.4. The Contractor obtains all necessary authorisations and/or licenses for the storage and use of dangerous substances from local authorities. A copy of the authorisations is provided to the Engineer.
- 25.5. For each dangerous substance used, the Contractor will implement the recommendations described (i) in the Material Safety Data Sheets (MSDS), and (ii) by the Globally Harmonized System of Classification and Labelling of Chemicals established by the United Nations for hazardous chemicals.
- 25.6. Copies of MSDSs are kept on the Worksite, and made available to personnel. The Contractor provides the Engineer with copies of all MSDSs.
- 25.7. Storage of dangerous substances
  - 25.7.1. Storage area are designed and equipped by the Contractor based, not only on the chemical and physical properties of the products, but also on the types of containers stored, the number of people requiring access, and the quantities of the substance used.
  - 25.7.2. Pursuant to Clause 15.6, the Contractor anticipates and plans for the storage and management of hazardous waste.
  - 25.7.3. Storage areas for dangerous substances are subject to strict rules, which are regularly checked by the ESHS manager appointed pursuant to Clause 4.1.4. The rules include the following as a minimum:
    - a) Access to the storage area is limited to trained and authorised individuals.
    - b) An inventory is maintained up-to-date.
    - c) MSDSs must be available for all stored dangerous substances, and the substances must be clearly labelled.

- d) A strict and methodical storage system is implemented (storage plan posted, large or heavy packaging may not be stored at heights, equipment and tools may not be stored in the dangerous substance storage room).
  - e) Compliance with product expiry dates and implementation of a disposal procedure for substances which are not needed, or which have expired.
  - f) Entrances, exits and access to emergency equipment are kept clear at all times.
- 25.7.4. Storage areas are clearly identified with warning signs at the entrance. The Contractor displays the storage plan (location of the different products, maximum inventory), a summary of labelling system and information on chemical incompatibilities.
- 25.7.5. Chemicals which could react together (leading to explosions, fire, projections, or the emission of dangerous gases) are physically separated.
- 25.7.6. Products that react violently with water are stored so as to prevent contact with water, even in the event of flooding.
- 25.7.7. Inflammable products are stored separately in a dedicated area with adequate ventilation at all times.
- 25.7.8. Buildings used to store large quantities of dangerous substances are isolated from other buildings to avoid the spreading of fire. Such buildings are constructed using solid and non-combustible building materials, and are equipped with evacuation systems and the appropriate firefighting equipment. Access to the buildings is clear, allowing for rapid evacuation in the event of an accident. The electrical systems are reduced to the essential minimum, and access points are equipped with adequate lighting (300 lux).
- 25.7.9. All storage areas are equipped with secondary retentions. Each storage area acts as a general secondary retention. Suitable absorbents (neutralising and non-combustible) are available in the storage area to clean up any spills and leaks.
- 25.7.10. The Contractor maintains the storage area at a suitable temperature for dangerous substances to prevent overpressure and bursting of containers.

### **7.3.26 Planning for Emergency Situations**

- 26.1. The emergency plan required in application of Clause 20.2 covers the following emergency situations as a minimum:
- a) fire or explosion,
  - b) structural failure,
  - c) loss of the containment of dangerous substances, and

d) safety incident or malicious act.

- 26.2. The Contractor details the emergency plan as an appendix to the C-ESMP.
- 26.3. The Contractor ensures that all personnel are informed and aware of how to react in an emergency situation, and responsibilities are defined. Information and awareness training is documented in writing, and available on all Worksites.
- 26.4 The Contractor organises and documents emergency simulation exercises within 3 months of the start of the works, and subsequently once every 12 months up to the provisional acceptance of the works. The Engineer is invited to participate in each of these exercises.

#### **7.3.27 Medical Check-ups**

- 27.1. The Contractor organises medical check-ups for all employees prior to the initial mobilisation to the Worksite to check aptitude for the work. Medical check-ups are carried out pursuant to the recommendations of the International Labor Organization. Subsequent to the check-up, a written medical certificate is issued declaring the aptitude of the worker for the allocated tasks.
- 27.2. Hearing tests are conducted for the Contractor's personnel exposed to noise levels above 80 dB(A) in order to establish initial audiograms. Annual tests are carried out to monitor any changes and detect any deterioration.
- 27.3. The Engineer can request additional medical examinations for the Contractor's personnel if considered necessary, all costs to be borne by the Contractor.
- 27.4. A medical examination is carried out on any employee returning to work after leave caused by a work-related accident. A written medical certificate is issued confirming the employee's aptitude to return to work at the designated workstation.
- 27.5 The Contractor can produce a copy of its personnel's work aptitude certificates at the request of the Engineer or the competent authority.

#### **7.3.28 First Aid**

- 28.1. The Contractor ensures that at least one first aid officer is present at all times during working hours, per shift for 10 to 50 workers present, and one extra first aid officer for each additional 100 workers allocated to the shift.
- 28.2. The Contractor equips the Worksite with a communication system exclusively for the purposes of communication with the first aid services. Information on how to communicate with the first aid services is clearly indicated near the communications equipment.

### 7.3.29 Health Care Centre and Medical Personnel

29.1. For Worksites with more than 25 workers present at any one time and where it is not possible to reach a hospital, medical clinic or the Contractor's health centre within a period of 30 minutes, by land and in normal conditions:

29.1.1. The Contractor sets up a health care centre at its own cost. This centre is:

- a) Operational and easy to access at all times;
- b) Kept clean and in good condition;
- c) Equipped with appropriate heating or air-conditioning;
- d) Equipped with sanitary facilities and drinking water;
- e) Equipped with instruments, equipment, medicines and material required to examine and treat injured or sick workers in emergency conditions;
- f) Equipped with the supplies and furnishing required to allow medical personnel to provide first aid and fulfil their other functions.

29.1.2. A doctor is on-site at all times, working full-time during normal day-shift hours. The doctor is on-call when more than 20 workers are working simultaneously outside of normal day-shift hours.

29.1.3. The doctor has the following profile:

- a) At least 5 years' experience on large-scale construction works at sites located at a distance from a hospital;
- b) Trained in infectious diseases, waterborne and epidemiological diseases prevalent in the Employer's country;
- c) Able to lead training sessions on occupational health and first aid;
- d) Trained in management and logistics for a remote health care centre;
- e) Able to speak the same working language used by most members of personnel fluently (communication in emergency situations);
- f) In good physical condition, able to access remote working areas.

29.1.4. The Contractor allocates a road or air vehicle for first aid purposes to the first aid station pursuant to standard NF EN 1789:2007.

29.1.5. The Contractor ensures the presence of at least one nurse to assist the doctor per shift with 100-200 workers allocated, and one extra nurse for each additional 200 workers allocated to this shift. Over and above 500 workers per shift, the Contractor ensures the presence of an extra doctor for each additional 500 workers allocated to this shift.

### **7.3.30 First Aid Kits**

- 30.1. The Contractor equips each Worksite with an adequate number of first aid kits to ensure that all workers can access these kits in approximately 5 minutes. Kits must be available at all times.
- 30.2. Each vehicle is equipped with a first aid kit.
- 30.3. First aid equipment and kits comply with attached specifications.

### **7.3.31 Emergency Medical Evacuations**

- 31.1. The Contractor establishes and provides the Engineer within one month of the start of works, an agreement with a specialised company for the handling of personnel in the event of a serious accident requiring an emergency medical evacuation, which cannot be organised using the first aid vehicle specified in Clause 29.1.4 without endangering the life of the patient.
- 31.2. The agreement includes a convention with a referring hospital where the member of personnel evacuated in emergency conditions will be treated.
- 31.3. The agreement covers the use of air transportation in order to evacuate the injured patient(s) to the referring hospital.

### **7.3.32 Access to Health Care**

- 32.1. The Contractor guarantees access to health care as defined in Clause 29 for all personnel in case of accident or illness occurring during the execution of the works, i.e.:
  - a) Medical check-ups: initial (recruitment), annual and upon returning to work after sick leave;
  - b) Screening, vaccinations and preventive healthcare;
  - c) General healthcare during the execution of the works;
  - d) Medical assistance in the event of an accident and assistance for emergency evacuations.
- 32.2. Subcontractor personnel, other contractors, the Employer or the Engineer, present at the Worksite, must never be refused medical assistance, under the pretext that they are not directly employed by the Contractor. The Contractor may however define a unit rate cost per medical act for personnel, other than its own personnel, display this rate in the healthcare centre and forward the information to the Engineer.



- 32.3. In the event of accident or serious illness, medical personnel must be trained, available and equipped with the necessary material, medicines and consumables to provide first aid for the patient, stabilise their condition, until the patient is:
- a) either treated or discharged, or
  - b) hospitalized at the camp or in a larger hospital, or
  - c) evacuated to a medical centre which is well equipped for intensive care, if necessary.

### **7.3.33 Health Monitoring**

- 33.1. The Contractor cannot recruit workers in poor health.
- 33.2. The initial pre-recruitment examination must confirm that applicants carry no infectious diseases and are physically able to carry out the tasks required for the position.
- 33.3. The Contractor organises annual medical check-ups for its employees and keeps up to date a medical record for each employee. The presence of employees for medical check-ups, treatment and hospitalisation is incorporated into the Contractors planning.
- 33.4. The Contractor provides employees with prophylaxis and vaccinations against local diseases and vectors. In particular, the Contractor will promote the use of impregnated mosquito nets by its personnel in camps or offsite lodging, and distributes these nets appropriately.
- 33.5. The health and safety plan include an employee health risk assessment based on exposure to dangerous substances and describe the medical monitoring implemented.

### **7.3.34 Sanitary Repatriation**

- 34.1. The Contractor is responsible for the sanitary repatriation of employees in the event of a serious injury or illness. The Contractor will take out the necessary insurance to cover the cost of the sanitary repatriation of its employees.

### **7.3.35 Hygiene**

#### **35.1. Drinking water**

- 35.1.1. Pursuant to Clause 6.14 of the GCC, the Contractor provides personnel with drinking water at all Worksites. The quantity and quality of this water complies with the standards of the World Health Organization at supply points.
- 35.1.2. Regardless of the means of supply of drinking water selected by the Contractor, the quality of the drinking water provided to workers is tested on a monthly basis or more frequently. The protocol for taking and analysing samples is based on the recommendations of the World Health Organization.

#### **35.2. Accommodation conditions**

35.2.1. The accommodation provided for non-resident personnel in a camp or an alternative structure outside of the Worksites, such as a hotel or rented house, will comply with the conditions of the present Clause 35.2 in pursuance of Clause 6.6 of the GCC.

35.2.2. Unless specified otherwise in the Contract, or instructed otherwise by the Engineer, personnel are housed in rooms. Rooms do not host more than 4 individuals, with no bunk beds, and with 0.5 m<sup>3</sup> of storage space available per person.

35.2.3. Rooms are lit and equipped with power sockets, beds and windows fitted with mosquito nets. Flooring is of a hard and impervious material.

35.2.4. Night-time noise levels to which personnel are exposed comply with the limits recommended by the World Health Organization.

35.2.5. The Contractor provides one drinking water tap per 10 employees, one shower per 10 people maximum, one individual toilet for 15 individuals maximum, and one urinal per 25 men at accommodation camps.

35.2.6. Fire extinguishers are made available in each building at clearly identified locations, and fires are strictly forbidden outside of the cooking area.

35.2.7. The Contractor constructs and maintains a shared leisure area in each camp and a sports field (used for football and basketball as a minimum) for use by personnel.

### 35.3. Hygiene in shared areas

35.3.1. Sanitary areas (showers, sinks, urinals, toilets) are cleaned and disinfected by the Contractor's cleaning service at least once every 24 hours. Cleaning operations are documented.

35.3.2. The canteen, kitchen and kitchen utensils are cleaned after each meal service.

### 35.4. Food

35.4.1. In application of Clause 6.13 of the GCC and Clause 39.2 of the present ESHS specification, the Contractor provides meals to its employees per shift in a canteen area and according to a procurement system which complies with the provisions of this Clause 35.4 at all Worksites.

35.4.2. The Contractor defines and implements actions in order to guarantee (i) the quality and quantities of food stuffs, (ii) compliance with health rules when preparing meals, (iii) fitting out and servicing premises and equipment, both in the kitchen and food storage areas.

35.4.3. The Contractor inspects the cleanliness of food transport vehicles, temperature control and the cold chain, as well as best-before dates, and takes the necessary corrective actions. The temperatures of chillers are regularly checked.

35.4.4. The Contractor checks that health requirements are met for food storage conditions in the kitchen or other locations, food cooking times and temperatures, and the conditions in which prepared products are left prior to consumption, to ensure no health risks. Prepared food is eaten or thrown away; no food remains are reused.

35.4.5. The Contractor recruits trained canteen personnel and ensured that supervisors monitor compliance with sanitary instructions. The Contractor ensures that canteen personnel have means of ensuring compliance with health rules (changing rooms, linen, hand washers, the condition of flooring and paint, and the existence of a cleaning plan).

35.5. The doctor at the health centre specified in Clause 29.1.2 of the present ESHS specifications, carries out an audit on all Worksites every 3 months, and documents the results, and includes the conditions of hygiene in which meals are prepared and food conserved. The results of this audit are provided to the Engineer.

35.6 The Contractor, on the basis of the advice of the doctor at the health centre, informs employees on appropriate behaviour in terms of workplace hygiene. The occasional distribution of information is not sufficient, the Contractor regularly reiterates the importance of hygiene, documents these reminders, and ensures that the information is understood, easy to apply and scrupulously complied with.

#### **7.3.36 Substance Abuse**

36.1. Pursuant to Clause 6.16 of the GCC, the use, possession, distribution or sale of illegal drugs, controlled substances (as per local regulations) and alcohol is totally prohibited. The Contractor implements a zero-tolerance policy for the abuse of these substances.

36.2. Any person suspected by the Engineer to be under the influence of alcohol or controlled substances is immediately suspended from his position by the Contractor, pending the results of medical tests.

#### **7.3.37 Local Recruitment**

37.1. Local recruitment is defined as the number of positions actually allocated to people residing in the region of the works (less than one hour by land transport to the Worksite) for more than one year and citizen of the Employer's country.

37.2. Pursuant to Clause 6.1 of the GCC, the Contractor implements a voluntary local recruitment policy for its personnel for the duration of the works and shall enforce this policy to its subcontractors.

37.3. The Contractor demonstrates the effective implementation of this voluntary policy to the Engineer in its monthly activity report as defined in Clause 6.3 of the present ESHS specifications.

- 37.4. Pursuant to Clause 8 of the present ESHS specifications, the Contractor develops a training programme aiming to support the voluntary local recruitment policy.
- 37.5. Local labour needs are estimated prior to the start of works and described in the C-ESMP with the following information:
- a) Identification of positions that could be filled by local staff and the level of qualification required.
  - b) Definition of the planned procedure for the effective recruitment of these members of staff.
  - c) Deployment schedule for these positions.
  - d) Initial training to be provided by the Contractor for each job description.
- 37.6. Local recruitment at the Worksite, including at the entrance, is prohibited.
- 37.7. Local recruitment officer
- 37.7.1. One month prior to the start of works, the Contractor establishes a local recruitment office in the district where the main Worksite is located, at a location pre-approved by the Engineer.
  - 37.7.2. A representative of the Contractor is present in this office at least two mornings each week, from the start of the works to a date pre-approved by the Engineer.
  - 37.7.3. The representative provides information on job vacancies with the Contractor for the execution of the works (required qualifications, duration, and location) and on the information to be provided in applications.
  - 37.7.4. Lists of local candidates are drafted by the representative allocated to the office and forwarded to the Contractor's Humans Resources manager on a weekly basis.
- 37.8. The Contractor's Human Resources manager selects candidates listed by the local recruitment office based on requirements for the works and the Contractor's recruitment procedures. A written contract between the Contractor and the local employee is drafted, signed and archived by the Contractor.
- 37.9. If the Worksites are located near to several different communities, the Human Resources manager ensures a fair distribution of local recruitment between the different communities.
- 37.10. Pursuant to Clause 6.22 of the GCC, the Contractor maintains one record per local employee indicating the hours worked per person allocated to the works, the type of tasks carried out, the wages paid, and any training provided. Records are available at the main Worksite at all times, so the Engineer and the authorised representatives of the government can assess the content.

### **7.3.38 Transport & Lodgement**

- 38.1. Unless specified otherwise in the Contract, or instructed otherwise by the Engineer, the Contractor provides or enables access to daily transport for employees not housed in the camps managed by the Contractor and living more than 15 minutes' walk from the Worksite and less than one hour by land transport.
- 38.2. The transport is organised under conditions which comply with local regulations, and which ensure the safety of the people transported.
- 38.3. The Contractor organises collective transport: pick-up times and locations are defined, and services organised appropriately.
- 38.4. If the Worksite is moved during the working season and if the Contractor retains the local personnel trained at the start of the works, the accommodation of the employees is managed by the Contractor:
  - within a mobile camp with the other non-local employees, or
  - in villages located near to the mobile Worksite, in this case, each local employee will receive a housing allowance in addition to his wages.

### **7.3.39 Meals**

- 39.1. Food supplies for the meals of the Contractor personnel will exclude any meat obtained from hunting or poaching, with the exception of fish.
- 39.2. The Contractor provides at least two meals per shift to local employees pursuant to the hygiene conditions specified in Clause 35 of the present ESHS specifications.

### **7.3.40 Damages to People and Property**

- 40.1. Pursuant to Clauses 4.14 and 17.1 of the GCC, the Contractor is responsible for damages to people and property caused by the execution of the works, or the procedures used for execution.
- 40.2. The Engineer is informed of any damage caused to people, or the property of individuals, other than the Contractor's personnel, within 6 hours of the event, regardless of the value of the prejudice.
- 40.3. Housing existing before the start of the works, located within a minimum radius of 800 m around the perimeter of the quarries and within a minimum radius of 500 m around the other Worksites that will be subject to blasting, will be examined by a bailiff unless agreed upon otherwise with the Engineer.
- 40.4. The bailiff's sworn statement is prepared and provided to the Engineer with the SEPP.

- 40.5. Should any problems be detected due to the intensity of blasting, the Engineer is entitled to request that the Contractor carry out seismic measurements of the intensity of the vibrations induced by the blasting, at variable distances from the blasting points, under the supervision of the Engineer, and at the cost of the Contractor.

#### **7.3.41 Traffic**

- 42.1. The Contractor defines the characteristics of its fleet of vehicles and site machinery in the C-ESMP.
- 42.2. The Contractor defines the itineraries used on a map for each route between the different Worksites and obtains the validation of the Engineer. The Contractor requests that the Employer obtain the authorisations of the competent administrative authorities if public roads are used.
- 42.3. Within one month of the start of works, the Contractor informs the administrative authorities of areas crossed by the Contractor's vehicles, of the itinerary and characteristics (frequency of passing, size and weight of trucks, materials carried) of the Contractor's fleet of vehicles.
- 42.4. If public roads are used, and unless approved otherwise by the Engineer, the Contractor mandates a bailiff to make a sworn report regarding the state of the road prior to use by the Contractor's vehicles. The report is annexed to the C-ESMP.
- 42.5. The Contractor describes in the C-ESMP expected traffic created by its fleet of vehicles (frequency of trips between Worksites, working hours, convoys).
- 42.6. Unless specified otherwise in the Contract or instructed otherwise by the Engineer, heavy vehicles (i.e. with a GVWR of more than 3.5 tons) may not be used at night between 22:00 and 06:00.
- 42.7. Speed limits
- 42.7.1. The Contractor takes action to limit and check the speed of all vehicles and machinery used to execute the works.
- 42.7.2. The maximum speed of all machinery and vehicles of the Contractor complies with the lowest of the following: the speed limit defined according to the Employer's country regulations or the following limits.
- a) 10 km/h within the Worksites.
  - b) 30 km/h in villages or hamlets, from 100m before the first house.
  - c) 50 km/h in towns.
  - d) 80 km/h on unpaved roads outside of towns, villages, hamlets and camps.

- 42.7.3. Pursuant to Clause 4.15 of the GCC, and in coordination with the competent Employer's country authorities, the Contractor provides and installs signs for the fleet of vehicles along public roads, when public signs are inadequate.
- 42.7.4. The Contractor provides each of its drivers with a map at the appropriate scale of the roads authorised for the execution of the works, clearly indicating the maximum speeds authorised, and ensures their understanding.
- 42.7.5. The Contractor implements a real-time GPS location solution for each of its vehicles and permanently remote monitor of the position and speed of each vehicle.
- 42.8. It is strictly prohibited to transport people, equipment, or products other than those required for the works and the management of Worksites, on board any of the Contractor's vehicles. This provision also applies to the transport of live animals and meat obtained from hunting, fishing or poaching.
- 42.9. The trailers and skips used to carry materials which could be projected (sand, crushed material, aggregates, selected materials) are covered with a tarpaulin for the entire itinerary between two Worksites.
- 42.10. The Contractor carries out regular inspections along the roads used by its fleet of vehicles to ensure compliance with the provisions of Clauses 42.7 to 42.9 of the present ESHS specifications. The Contractor records these inspections and the results and transmits a summary of checks carried out for the previous month to the Engineer on a monthly basis.

#### **7.3.42 Information Boards**

The Contractor shall be responsible for erecting information boards on site. The number and locations of these boards shall be agreed by the Project Engineer and IEC.

Information boards should be placed at conspicuous locations at the entrance to the Project site. The contents of the information board shall be provided by the Project Engineer and will essentially be to advise the public of the construction operation and the prohibition on entering certain areas. The information board shall apart from the details of the contractor also provide the name and contact number of the Project Engineer and that of the Independent Environmental Consultant to ensure that the public has access to the Project Engineer and/or Independent Environmental Consultant to ask for information and/or to lodge any complaints.

#### **7.4 GRIEVANCE MECHANISM**

As previously stated, social acceptance of the proposed Project plays a crucial role within the overall success of both the assessment process, implementation during construction and long-



term operation thereof. Continues interaction, communication, and distribution of information on a regular basis, throughout the different project phases, are instrumental to social acceptability.

In this regard, there are two main tools through which this can be achieved: (i) raising public awareness and carrying out mandatory public displays; and (ii) establishment of a viable grievance redress mechanism (GRM).

**Raising public awareness:** Information about the grievance handling system described below should be distributed at an early stage of the Project implementation (i.e., pre-construction stage) to all project affected people as presented in Appendix D1 of the ESIA (as a minimum) through regular information channels used by the Project. This should include initiating meetings at the start of the Project where feasible, public meetings during Project implementation, notices in the printed media, radio broadcasts, email notifications, posting on notice boards at authorities and online. The process of raising a complaint should be explained by reaching out to the community or by conducting a meeting with community representatives. It is important that community representatives include women at all times.

**Grievance Redress Mechanism (GRM):** Transparency and accountability should be core elements of the Project. A comprehensive GRM should be set up to account for all potential complaints arising from the Project's potential impacts. In addition to the main project GRM, two additional GRMs should be developed by the Contractor; one for the community and the second for the workers.

The goal of the GRM in general is to increase transparency and accountability and to reduce the risk of the Project affecting communities and serves as important feedback and learning mechanism that can help improve Project mitigation success. The objective will be to provide channels for I&APs to provide feedback on Project activities via a mechanism that allows for the identification and resolution of issues affecting the Project, promptly and effectively in an appropriate manner and at no cost to the community. This includes safeguards-related complaints pertaining to this ESIA and the AfDB safeguards policies as a whole.

As a minimum, the Project should establish the following channels through which the Identified, Interested and Affected Parties (I&APs) and Authorities can provide their grievances, comments and or feedback regarding Project activities:

- A dedicated email address;
- A dedicated phone and facsimile line;
- A dedicated postal address to send written letters;
- A dedicated physical address that can be visited;
- Feedback via community representatives and/or local authority offices; and
- Periodic community meetings, each of which shall include women.

The above-mentioned channels should as a minimum include that of the Contractor, Project Engineer and the Independent Environmental Consultant. A pro-forma complaint sheet should be drafted and made available at various platforms.

The GRM should include the following set of operating procedures to ensure successful implementation and transparency:

- Receive and register complaints;
- Grievance's document verification;
- Conduct field inspections in order to verify and confirm the authenticity and eligibility of the reported grievance. The field inspection could include interviews with different parties involved;
- Referring cases to other GRMs, if necessary and/or to the courts;
- Referring cases to a third party; and
- Track, and evaluate the process and results.

In the event that an agreement could not be reached, the borrower could play the role of a mediator via well-trained voluntary mediators following a pre-set time frame.

For the community GRM, a multi-stage mechanism will be used comprising of but not necessarily limited to the steps listed below:

- Step 1, any person aggrieved by any aspect can lodge a grievance to the Contractor and/or Project Engineer and/or Independent Environmental Consultant, which in turn should provide resolution within 10 calendar days.
- Step 2, if the aggrieved person is not satisfied with the decision of the Contractor and/or Project Engineer during Step 1, he/she can present the case to the supervising company to resolve within 10 calendar days.
- Step 3, if the complainant is still dissatisfied with the outcome of step 2, he/she can escalate the complaint to the Directorate of Environmental Affairs with the Ministry of Environment, Forestry and Tourism to resolve the issue within 30 calendar days.

## **7.5 ESMS AND ASSOCIATED MANAGEMENT / ACTION PLANS**

The Proponent is also responsible to preparing an Environmental and Social Management System (ESMS) and a series of associated Management/Action Plans to ensure the adequate management of all environmental and social aspects relating to the Project.

### **7.5.1 Environmental and Social Management System**

An ESMS should integrate environmental and social impact and risk management into the Proponent's business processes so that the Proponent can manage potential environmental and social impacts of subprojects by ensuring the conduct of environmental and social due

diligence prior to financing subprojects and adequate monitoring during the term of the loan agreement.

The ESMS is thus system designed to ensure compliance with law and regulations relating to the Project's sustainable development, which includes the natural environment, the affected community, and workers' occupational health and safety. The main objectives of the ESMS can be summarised as:

- To ensure compliance with all applicable laws and regulations, procedures, and policies applicable to the Project of relevance within the country and of international level;
- Ensure that corrective measures and actions are taken in the event of non-compliance to the ESMP and ESMS;
- Clearly define the responsibilities of the applicable people for compliance matters;
- Communicate the environmental and social commitments undertaken by the Proponent to all; and
- Provide managers and staff with a clear framework for ESMS implementation.

The ESMS brings together all the measures to avoid, mitigate and compensate potential impacts resulting from the Project on the natural and social environments.

#### **7.5.2 Management & Action Plans**

The appointed contractor is as part of his/her Environmental and Social Management Plan also responsible to develop other management and action plans to ensure avoidance and or minimization of identified impacts, as defined in this ESIA.

Following the ESIA, the following list of plans (and procedures) should be developed by the appointed contractor in order to effectively implement the ESMP during the construction phase.

- Construction Water Demand Management Plan;
- Underground Water Monitoring Plan;
- Hazardous Waste and Materials Management Plan;
- Wastewater Management and Disposal Plan;
- General Waste Management Plan;
- Spill Prevention and Response Plan;
- Water Run-off and Flooding Management Plan;
- Pre-Construction Site Assessment & Laydown Plan;
- Pre-Construction Site Survey and No-go Plan;
- Construction Air Pollution Prevention Plan;

- Soil Stability Management Plan;
- Spill Prevention and Response Plan and a Waste Management Plan;
- Emergency Preparedness and Response Plan (to include fire, medical, accidents, security emergencies and environmental incidents);
- Pre-Construction Infrastructure Survey and Status Report;
- Railway Interruption Schedule;
- Pre-construction Visual Impact Plan;
- Biodiversity Management Plan with Protected Plants Permit Application Plan;
- Occupational Health and Safety Plan;
- Gender and Social Inclusion (GSI) Policy;
- Workers Grievance Redress Mechanism (GRM);
- Contractor Code of Conduct;
- Construction Safety & Security Conduct Plan;
- Project and Workers Grievance Redress Mechanism;
- Construction Traffic Management Plan;
- Archaeological Find Action & Preparedness Plan;
- Stakeholders Engagement Plan;
- Compensation Strategy and Finance Plan; and
- Construction Closure and Rehabilitation Plan.

Guidance on the content of the different plans and procedure is given in relevant sections within the ESMP tables. When compiling the above mentioned plans the IFC Performance standards and African Development Bank Operational Safeguards should be reviewed for inclusion into these Plans. All plans should at minimum specify the following in addition to the management requirements:

- Objective;
- Roles & responsibilities;
- Specific implementation procedures & requirements;
- Technical and operational requirements
- Timing and location;
- Targets to be achieved;
- Performance indicators for monitoring;
- Implementation supervision;

- Applicable local and international legal standards;
- Non-conformity management;
- Review and monitoring; and
- Training.

## **8 ESTIMATED COSTS**

The estimated capital and recurrent cost associated with the various proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements are presented below in Tables 8-1 to 8.3.

**Table 8-1** – Estimated Costs for Impact Mitigations

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
Hydrology – Water Resource Quantity	Extraction of groundwater for construction requirements.	Depletion of scarce water resource.	<p>Prepare and implement a <u>Construction Water Demand Management Plan</u>, considering the findings of the Hydrogeological Assessment (Appendix B1 to the ESIA Report), which should include the use of semi-purified wastewater collected from nearby urban areas' wastewater treatment facilities, as well as NAMWATER supply.</p> <p>Other available sources within the larger region should be considered as part of the Construction Water Demand Management Plan.</p> <p>Limit groundwater use to essential needs and aim at continually improve efficiency in the use of groundwater to minimise effect on local availability.</p> <p>Regularly inspect all installations associated with groundwater extraction and distribution to eliminate leaks which are wasting the resource.</p> <p>Regularly maintain the equipment used to spray water for dust abatement to eliminate leaks and minimise losses.</p> <p>Consider the installation of systems to collect and store rainwater to minimise dependency on groundwater within the work sites.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	600,000.00 – 800,000.00
			As part of the mentioned <u>Construction Water Demand Management Plan</u> , an <u>Underground Water Monitoring Plan</u> should be drafted whereby the water levels and quality is monitored.			400,000.00 – 600,000.00
Hydrology – Water Resource Quality	Temporary construction facilities, transportation of hazardous liquids and materials, site preparation, borrow pit activities, drainage and stormwater management, structural work, waste and hazardous material management, operation and routine maintenance.	<p>Use of contaminants &amp; hazardous materials &amp; construction waste &amp; solid waste from toilets (suspended solids and others).</p> <p>Potential contamination of ground- and surface water through accidental spills and leaks during construction activities.</p>	<p>Prepare and implement a <u>Hazardous Waste and Materials Management Plan</u>, a <u>Wastewater Management and Disposal Plan</u>, and a <u>General Waste Management Plan</u> which include arrangements for managing solid and liquid hazardous and non-hazardous waste (to be approved by the supervising consultant and the environmental department before the start of the construction).</p> <p>Ensure the development of a strong Environmental &amp; Social Management Plan, including but not limited to, strong measures to improve efficiency in the use of water, a <u>Spill Prevention and Response Plan</u> and a Waste Management Plan that should consider the following recommendations:</p> <ul style="list-style-type: none"> <li>▪ Hazardous waste and hazardous material (including cement bags) storage facilities should be built on an impermeable surface offering confinement capacity in the event of a spill or release. These storage facilities should offer protection against weather conditions, have access control and secured.</li> <li>▪ Store all waste in distinct closed containers to allow for some segregation (recyclables and waste) and adequate confinement.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	500,000.00 – 600,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<ul style="list-style-type: none"> <li>▪ The fuel trucks that will ensure fuelling of machinery at the work sites should carry a spill kit. Except for fixed water works equipment that cannot be moved, all machinery should be moved away from water side before fuelling (at least 30 m). All fuel storage tanks should be equipped with adequate and required confinement capacity.</li> <li>▪ Ensure some of the personnel trained are available to intervene in the event of accidental spills or leaks.</li> <li>▪ Contacts of firms (names and phone numbers) specialized in spill intervention must be kept on-site in the event of a spill or leak that cannot be handled with on-site spill kits alone.</li> <li>▪ Ensure material used for construction comes from known clean sources to avoid chemical contamination. If soils from a non-certified site are accepted, characterization prior to use is recommended.</li> </ul> <p>Waste minimisation and prevention hierarchy.</p> <p>Identification of the types and dimensions of storage means at source for hazardous and non-hazardous wastes.</p> <p>Design and construct a central waste storage area for non-hazardous wastes which accommodate for the received segregated streams/or any alternative solution proposed by the contractor.</p> <p>Identify the nearest landfill for the disposal of the non-recycled items.</p> <p>Identify a recycling contractor preferably from the nearby villages.</p> <p>Waste contractors' certifications and compliance assurance. All waste streams should be transported and disposed of by certified service providers and disposed of in licensed landfills/dump sites.</p> <p>Training for workers on sound environmental practices to manage solid wastes.</p> <p>Storage used oils in sealed drums sheltered from the sun and rain until collection.</p> <p>Record keeping (waste inventory, waste disposal registers and consignment notes).</p> <p>Complete prohibition dumping of solid and liquid waste in any river, stream, and drainage line or water body.</p> <p>When using diesel generators, place the generator on an impermeable protective base layer or drip tray.</p> <p>Ensure vehicles, equipment and machinery is in good working order to minimize the leak of contaminants.</p>			



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Ensure dedicating a specific area for the cleaning of concrete trucks. Capture the resulting wastewater and proceed to adequate treatment or disposal.</p> <p>Install terrestrial silt screens, where practically possible, between work areas and water's edge to limit transport of fines in water run-off.</p> <p>In case of accidental spills of hydrocarbons, isolate and collect the contaminated soil and store as hazardous waste to be disposed of in hazardous waste landfills.</p> <p>For the contractors' temporary offices, use intact septic tanks, free of any leaks and to be regularly emptied before reaching its maximum capacity or on-site wastewater treatment to be done to achieve general standards.</p>			
			<p>Development and implementation of a Hazardous Substances' Management Procedure, to form part of the <u>Spill Prevention and Response Plan</u>. The procedure should at minimum address the following aspects: operational procedures, procurement, prohibited substances, inventory, risk assessments, labelling, storage, Safety Data Sheets and control measures. The procedure should mention specific measures for the control of risks associated with the use of the diesel fuel for power generation. The management plans and procedures can be standalone documents or part of an overall construction environmental, health and safety management plan. This shall also include a note on accidental spills of hydrocarbons, and methods of isolation and collection of the contaminated soil and storage as hazardous waste to be disposed of in hazardous waste landfills.</p> <p>Inspection of the site for existing contamination from previous work/activities. Where inspection results were positive, carefully collect and isolate all the contaminated soil in sealed bags to be disposed in the nearest hazardous waste landfill/treatment facility.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	150,000.00 – 200,000.00
			<p>As part of the mentioned <u>Construction Water Demand Management Plan</u>, an <u>Underground Water Monitoring Plan</u> should be drafted whereby the water levels and quality is monitored.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	400,000.00 – 600,000.00
Hydrology – Water Flow & Flooding	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous	Temporary obstruction of surface water flow during construction and maintenance activities.	<p>The following mitigations should be presented in a <u>Water Run-off and Flooding Management Plan</u>.</p> <p>Define vehicle and machinery movement routes within the work site and ensure they are respected to limit the creation of erosion.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	100,000.00 – 150,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
	material management, operational activities and maintenance.		<p>Where possible, run-off water from the work area and adjacent lands should be captured through ditches and redirected appropriately.</p> <p>As much as possible, conduct work that may impact local hydrology during the dry seasons (from June to November) to minimize the risks associated with watercourse obstruction or encroachment.</p> <p>Avoid construction activities within rivers, water courses and drainage lines during rain seasons (from December to May).</p> <p>Except where specifically required (i.e., for bridge construction), avoid storage of granular or any other material within, on the shore of or near (less than 30 m) a water course to limit the risks of such material impeding water flow.</p> <p>Continues monitoring of up-stream conditions to detect any flow in advance.</p> <p>Installation of infrastructure should provide for the necessary design and avoidance measures to protect infrastructure from flood damages.</p> <p>Conduct regular inspection and cleaning of culverts to remove encumbrances and maintain the efficiency of the drainage system.</p>			
Flora (Habitat)	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, operational activities and maintenance.	Loss of vegetation cover through site clearing for variety of purposes (i.e., new embankment; construction site & laydown areas, storage areas, etc.) and temporary roads.	<p>During the planning phase of the construction period, the appointed contractor should identify areas for lay down areas and construction vehicle sites within areas that are already cleared or disturbed, to be captured in a <u>Pre-Construction Site Assessment &amp; Laydown Plan</u>.</p> <p>Only prominent gravel tracks should be utilised during the construction phase, to avoid track proliferation. Off-road driving should be strictly prohibited.</p> <p>Permits should be obtained for protected plant species that unavoidably need to be removed.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	400,000.00 – 600,000.00
		Spreading of invasive species and alteration of local vegetation conditions.	<p>The below mentioned should be included into the <u>Pre-Construction Site Assessment &amp; Laydown Plan</u>.</p> <p>Prevent and discourage the collecting of firewood, as dead wood has an important ecological role. Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g., chopping down of live and/or protected tree species such as <i>Acacia erioloba</i> which is a good quality wood.</p> <p>Avoid the removal and damage of bigger trees (especially protected species – i.e., <i>Acacia erioloba</i> [camel thorn], <i>Faidherbia albida</i> [Anna tree], <i>Tamarisk usneoides</i> [wild tamarisk] and <i>Acanthosicyos horridus</i> [Inara] plants [See Tables 5 and 6; Forest Act No. 12 of 2001]) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna.</p>			

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Implement a policy of “no tolerance” towards the existing invasive alien plant species (i.e., <i>Argemone ochroleuca</i>, <i>Datura</i> spp., <i>Eucalyptus</i> spp., <i>Nicotiana glauca</i>, <i>Prosopis</i> spp. and <i>Ricinus communis</i>) in the area. This should include the removal and destruction of these species throughout the proposed development areas. Such activity would be beneficial to the overall ecology of the area, especially the Kuiseb River area where most of these aliens currently occur.</p> <p>Rehabilitation of the disturbed areas – i.e., initial development access route “scars” and associated tracks, as well as temporary construction sites. Workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g., wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies’ environmental integrity, but also show true local commitment to the environment.</p> <p>Educate/inform contractors on protected species to avoid and the consequences of damaging such species. Liaise with DRFN and/or MET to provide this service.</p> <p>Investigate the idea of employing a qualified environmental officer (EO) during the construction phase to ensure appropriate conduct by contractor(s).</p> <p>Avoid the use of herbicides for plant/weed control along the pipeline/power line route(s).</p> <p>Employ an ecologist for advice on the best route(s) prior to construction – i.e., assist with the final alignment.</p> <p>Avoid unnecessary clearance of vegetation and keep to the minimum required.</p> <p>Preserve existing vegetation where no construction activity is planned and mark areas as no-go areas. These areas must be designated as sensitive, and staff and contractors must be formally made aware that these areas are not to be destroyed.</p> <p>Remove and keep topsoil to be reused in the same area for revegetation needs. Revegetate temporally disturbed areas once the work is completed with indigenous flora species.</p> <p>In order to limit the spread and propagation of invasive species, all such invasive species within the corridor of impact and/or right of way should be removed/cleared.</p> <p>Inspect construction vehicles and heavy machinery before first mobilization on site to ensure they are free of soil or viable segments of invasive alien species.</p>			

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Do not use soils potentially contaminated with invasive alien species as a covering material on site or elsewhere.</p> <p>Rehabilitate burrow pits using indigenous vegetation when works are completed, or in accordance with landowner agreement.</p> <p>Implement a construction closure plan in which rehabilitation measures are defined and budgeted.</p> <p>All construction material and waste must be removed from the construction sites and the area rehabilitated once works are completed.</p> <p>Avoid project activities (e.g., camps, laydown yards, topsoil storage etc.) within remaining natural habitats, which should be placed within already disturbed areas.</p> <p>Undertake a pre-construction walkover survey within the railway reserve, quarry sites and other temporary construction facilities to identify the areas of natural habitat and priority plant species. Mark and leave undisturbed to the extent feasible, or relocate if feasible.</p>			
Fauna	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, operational activities and maintenance.	<p>Habitat loss, degradation or modification through construction work.</p> <p>Increase in mortality from poaching and killing. Behaviour disturbances because of construction noise.</p>	<p>The below-mentioned mitigations should be presented in a <u>Pre-Construction Site Survey and No-go Plan</u>.</p> <p>Implement and maintain track discipline limited to existing tracks and/or certain tracks with maximum speed limits (e.g., 30 km/h) as this would result in fewer faunal road mortalities and associated dust pollution problems.</p> <p>Avoid off road driving. Nocturnal driving should also be avoided as this result in the destruction of slow-moving fauna – e.g., various reptiles and other nocturnal species.</p> <p>Restore shores and riverbeds to their pre-existing condition once works are completed.</p> <p>Ensure culvert and drainage structures' dimensions allows for connectivity of aquatic habitat.</p> <p>Avoid and/or limit the use of lights during nocturnal activities as this influence and/or affects various nocturnal species – e.g., bats and owls, etc. and contribute to “light pollution”. Use focused lighting for least effect.</p> <p>Prevent overnight activities during the construction phase(s). This could result in pollution; killing of perceived dangerous nocturnal species (e.g., snakes, bats, etc.); illegal collection of species for the pet industry (e.g., chameleon), etc.</p> <p>Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g., ostrich eggs, etc.), indiscriminate killing of perceived dangerous species (e.g., snakes, etc.), and the collection of wood as this</p>	Proponent / MET	<p>Contractor's E&amp;S Officer (daily basis); Independent Environmental Consultant (3 monthly)</p>	650,000.00 – 750,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>would diminish and negatively affect the local fauna – especially during the construction phase(s).</p> <p>No hunting by the contractor's workers shall be allowed. Possession, transport, collection, fishing, hunting or purchase of IUCN Red-listed species, CITES listed species, and any species protected by national law by the contractor's workers will not be permitted.</p> <p>Initiate a suitable and appropriate refuse removal policy during the construction phase(s) as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g., black-backed jackal, crows, etc.</p> <p>Avoid the removal and damage of bigger trees (especially protected species – i.e., <i>Acacia erioloba</i> (camel thorn), <i>Faidherbia albida</i> (Anna tree) and <i>Tamarix usneoides</i> (wild tamarisk) plants [See Tables 5 and 6; Forest Act No. 12 of 2001]) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna.</p> <p>Rehabilitation of the disturbed areas – i.e., initial development access route “scars” and associated tracks, as well as temporary construction sites. Preferably workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g., wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies' environmental integrity, but also show true local commitment to the environment.</p> <p>Prevent (do not allow) domestic pets – e.g., cats and dogs – accompanying the workers during the construction phase as pets can cause considerable damage to the local fauna. Cats also interbreed and transmit diseases to the indigenous African wildcat found in the area. The indiscriminate and wanton killing of the local fauna (including domestic stock) by such pets should be avoided at all costs.</p> <p>Initiate a policy of capture and removal of fauna (e.g., slow moving species such as chameleon, snakes, etc.) encountered serendipitously within the construction areas. Such fauna should be removed to other areas of similar habitat in the area.</p> <p>Ensure that mobile ablution facilities are used and frequently serviced on site during the construction phase(s) to avoid pollution in the area.</p> <p>Educate/inform contractors on dangerous and protected species to avoid and the consequences of illegal collection of such species. Liaise with DRFN and/or MET to provide this service.</p> <p>Undertake a pre-construction walkover survey within the railway reserve, burrow pit sites and other temporary construction sites to identify any active</p>			

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>nests. If a threatened bird species is nesting, consult a local avifauna specialist for guidance on actions to be taken.</p> <p>Investigate the idea of employing a qualified environmental officer (EO) during the construction phase to ensure appropriate conduct by contractor(s).</p>			
Air Quality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, structural works, base & embankment preparation, routine maintenance of servitude.	Release of dust and atmospheric contaminants (GHG emissions).	<p>The below mitigations should be presented within a <u>Construction Air Pollution Prevention Plan</u>.</p> <p>Avoid leaving mechanical equipment, machinery, trucks, and vehicles idling unnecessarily.</p> <p>Ensure all vehicles; equipment and machinery are in good working order.</p> <p>Limit vehicle and machinery speed within the work site to minimize dust generation. Authorized speeds on the work site should be specified and enforced by the contractor.</p> <p>Use water bowsers as dust abatement to limit excessive dust emissions from granular material handling and piling, and vehicle movements.</p> <p>All vehicles used by the contractor to deliver construction materials and/or collect waste materials to and from the site should be completely covered to avoid material spillage.</p> <p>Drop granular material as close to the ground possible to reduce the generation of airborne particles.</p> <p>Implement an Eco-driving attitude program that will help better manage heavy equipment and fuel consumption.</p> <p>All construction vehicles used on-site should be within a perfect state and not result in higher CO<sup>2</sup> emissions than what the particular vehicle's allowable CO<sup>2</sup> emissions levels.</p> <p>When practically possible, use alternative technologies, energy sources and materials.</p> <p>All vehicles used by the contractor to deliver construction materials and/or collect waste materials to and from the site should be completely covered to avoid material spillage.</p> <p>Regular maintenance and inspection of equipment and vehicles used on site.</p> <p>Promote the purchase of low-sulphur diesel.</p> <p>As much as practically possible, construction material and waste should be transported to and from construction sites using cargo trains.</p> <p>Vehicles uploading material should maintain the lowest possible fall height to reduce noise and dust generation.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	700,000.00 – 800,000.00



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Apply dust suppression making use of semi-purified wastewater.</p> <p>Avoid construction activities during times of strong winds.</p> <p>Farm owners and nearby residents should be informed of the construction activities and period, and requested to avoid the particular area during this time.</p>			
Soil and Sediment – Soil stability/erosion	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, structural works, and base & embankment preparation.	Soil erosion and loss of topsoil.	<p>Develop and implement an appropriate <u>Soil Stability Management Plan</u>, including but not limited to, site assessment requirements prior to disturbances and availability of soil erosion protection systems.</p> <p>Slope stability assessments should be done where required for in areas of cut and or fill operations within the final route alignment.</p> <p>Final designs are to include suitable mitigation measures based on the findings of such studies. Soil stability and erosion should be monitored prior to the installation of such final mitigation measures.</p> <p>Areas disturbed indirectly as part of construction activities (e.g., temporary access routes, temporary vegetation clearing) should be protected from erosion and rehabilitated to a protected state after disturbing activity are done.</p> <p>Temporary run-off and erosion control management should be included into the Soil Stability and Management Plan and implemented during construction phases. This should identify construction stages during which assessments and measures should be applied for each section of road as well as all temporary construction areas.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	450,000.00 – 500,000.00
Soil and Sediment – Soil & sediment quality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, operational activities and maintenance.	Contamination of surface soils through accidental leaks or spills of contaminants during construction and maintenance activities.	<p>Ensure all vehicles; equipment and machinery are in good working order with a particular attention to fuel/oil pipes, tanks and sumps, hydraulic hoses, etc.</p> <p>Keep spill kits at the work site to accelerate intervention in the event of a spill or leak.</p> <p>Ensure the development of a strong Environmental and Social Management Plan, including but not limited to, a <u>Spill Prevention and Response Plan</u> and a <u>Hazardous Waste and Materials Management Plan</u> that should consider the following recommendations:</p> <ul style="list-style-type: none"> <li>Hazardous waste and hazardous material storage facilities should be built on an impermeable surface offering confinement capacity in the event of a spill or release. These storage facilities should offer protection against weather conditions, have controlled access and be secured.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	350,000.00 – 400,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<ul style="list-style-type: none"> <li>▪ Store all waste in distinct closed containers to allow for segregation (recyclables and waste) and adequate confinement.</li> <li>▪ The fuel trucks that will ensure fuelling of machinery at the work sites should carry a spill kit. All fuel storage tanks should be equipped with adequate and required confinement capacity.</li> <li>▪ Ensure personnel trained are available to intervene in the event of accidental spills or leaks are available.</li> <li>▪ Contacts of firms (names and phone numbers) specialised in spill intervention must be kept on-site in the event of a spill or leak that cannot be handled with on-site spill kits alone.</li> <li>▪ Ensure material used for construction comes from known clean sources to avoid chemical contamination. If soils from a non-certified site are accepted, characterisation prior to use is recommended.</li> </ul> <p>All waste should be properly disposed off-site by certified companies.</p>			
Local Livelihood and Economic Activities – Land-Based Livelihood Activities	Land acquisition for railway, resettlement and compensation. Use of borrow pits and access to land.	Temporary (borrow pits) or permanent (railway) loss of land. Reduction of agricultural production by loss of land. Potential loss of economic activities for the same reasons.	<p>Update and implement the provided <u>Stakeholder Engagement Plan</u>, which should include the below mentioned mitigations and procedures.</p> <p>Develop Compensation Strategy and Finance Plan, as per the applicable Policies.</p> <p>Undertake a survey of affected portions of land, determine land values and engage affected landowners for compensation.</p> <p>Ensure that agreements are in place to access private land and for compensation of land according to market related values. Relocation and compensation guided by applicable Namibian legislation.</p> <p>Apply all herein mentioned mitigation measures applying to fauna and flora, as well as social health and safety for the duration of the construction and operational phases.</p> <p>Avoid locating borrow pits on valuable agricultural lands and in forested areas and respect the official agreement with the landowner with regards to site rehabilitation once work is completed.</p> <p>Land accommodating agricultural infrastructure (i.e., pens, windmills, gravel dams, etc.) should be excluded from being used for borrowing pits and/or railway realignment.</p> <p>Project to apply and maintain their avoidance strategy for any land with any uses as a priority action. All efforts must be made to allow for harvesting of crops prior to any land-related impacts, if applicable.</p> <p>Involve relevant authorities and stakeholders where conflicts could occur, not only in the urban areas, but also on commercial land.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	5,000,000.00 – 10,000,000.00



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			A robust and multi-channels project level Grievance Redress Mechanism to be developed and used.			
Local Livelihood and Economic Activities – Self-Employed and Business Based Livelihood	Land acquisition for railway, resettlement and compensation for loss of land, temporary construction activities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, base & embankment, waste and hazardous materials management, purchase of materials, goods and services, presence of workers and influx of job seekers, operation and routine maintenance.	Restriction and/or reduction of business activities as a result of dust, particles and pollution and by restriction of access to business. Effect on supply and distribution of goods and delivery of services. Effect on supply and distribution of goods.	<p>Ensure the development and implementation of a <u>Construction Traffic Management Plan</u> that considers the distinctive features of the Project area in order to provide maximum traffic flow and accessibility during the construction phase.</p> <p>To maximize the project's positive impacts on the creation of jobs, the following enhancement measures are recommended:</p> <ul style="list-style-type: none"> <li>▪ Apply human resource policies favouring local labour.</li> <li>▪ Implement training programs to build local capacity.</li> <li>▪ Disclose information on newly created business opportunities.</li> </ul> <p>Ensure to include self-employed and business-based livelihood as part of the stakeholder engagement plan, namely those having a direct interaction with the railway line.</p> <p>If diversion of traffic is necessary, which might result in restricted access to local businesses, consider effective alternatives and reduce the time of access restriction.</p> <p>Ensure as far as possible continued access to industries/business located along the railway. If diversion of traffic is necessary, take into account the location of industries/business and their access to suppliers and economic outlets in planning alternate routes.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	250,000.00 – 350,000.00
Local Livelihood and Economic Activities – Tourism & Conservation Activities	Land acquisition for railway, resettlement and compensation for loss of land, temporary construction activities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, base & embankment, waste and hazardous materials management, purchase of materials, goods and services, presence of workers and influx of job seekers, operation and routine maintenance.	<p>Potential loss of ecological components that form part of the attraction for tourists.</p> <p>Effect on transport efficiency of tourists.</p> <p>Release of dust and atmospheric contaminants.</p> <p>Increased noise levels as a result of construction activities.</p>	<p>Implement the following aforementioned mitigation measures to reduce pollution and environmental degradation of touristic natural areas:</p> <ul style="list-style-type: none"> <li>▪ Flora &amp; fauna (restrict removal).</li> <li>▪ Soil management (dust reduction and contamination).</li> <li>▪ Atmospheric environment (dust reduction and contamination).</li> <li>▪ Surface and groundwater quality mitigation measures.</li> </ul> <p>Ensure the development of a strong Environmental and Social Management Plan, including but not limited to, site assessment requirements prior to disturbances, a spill prevention and response plan and a waste management plan.</p> <p>Ensure the development of a <u>Construction Traffic Management Plan</u> that considers the distinctive features of the Project area in order to provide maximum traffic flow and that includes, among others, the following measures:</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	150,000.00 – 250,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<ul style="list-style-type: none"> <li>Control access to work areas to ensure that only necessary personnel and machinery is present.</li> <li>Optimize transport routes to reduce travel distances by vehicles and machinery and avoid tourist routes.</li> </ul> <p>If diversion of traffic is necessary, take into account key location of major tourists' sites in planning of alternate route.</p>			
			Develop and implement a noise management procedure as a standalone document or as a part of an occupational health and social plan.			150,000.00 – 250,000.00
Noise levels & vibrations	Temporary construction facilities, transportation goods and materials, site preparation, borrow pit activities, structural works, base & embankment preparation, routine maintenance of servitude.	Release of dust and atmospheric contaminants.	<p>Develop and implement a <u>Noise Management Procedure Plan</u> as a standalone document or as a part of an occupational health and social plan. The following measures as a minimum should be covered:</p> <p>Optimise the use of equipment and turn off any equipment when not in use.</p> <p>Use of modern, well-maintained equipment fitted with abatement devices (e.g., mufflers, noise enclosures).</p> <p>Control exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure.</p> <p>Stop all noisy work at night (before 6 am after 6pm)</p> <p>Maintain equipment and machinery including brakes, mufflers, catalysers and silencers in good running condition, clean (power washed), free of leaks, excess oil and grease.</p> <p>Prohibit idling of vehicles on the site or near sensitive receptors. Generators and machinery should be shut down when not in use.</p> <p>Inform drivers to limit speed in sensitive areas and to limit noise from the rear panel of dumpster truck. Drivers should be sensitized on noise reduction measures through an Eco-driving attitude program.</p> <p>Equip the compressors and generators used on site with an acoustic enclosure, a noise barrier or placing them in a soundproof box. This is particularly important in areas with sensitive receptors.</p> <p>If blasting is required, ensure noise and vibration mapping has been realized, limit load of explosives accordingly and advise local population in advance to prevent nuisances.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	80,000.00 – 120,000.00
Community Health, Safety and Security	Temporary construction facilities, transportation of goods and materials, site preparation, borrow		As required by IFC Performance 1 and P5 of the Equator Principle, update and implement a <u>Stakeholder Engagement Plan (SEP)</u> to keep communities informed of work site evolution, planned activities and any potential risk that	Proponent / MET	Contractor's E&S Officer (daily basis); Independent	80,000.00 – 100,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
(including traffic and accessibility)	pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Increased crime in surrounding communities with associated safety and security risks.  Increased risk of health problems due to influx of job seekers and construction workers.	<p>may arise from the work site. The SEP should include, among others, the following components:</p> <ul style="list-style-type: none"> <li>▪ A list of Project stakeholders derived from the present ESIA, the RAP, information from RAP implementation as well as any other relevant information.</li> <li>▪ Analysis of stakeholder engagement to date.</li> <li>▪ Identification of methods of communication and information disclosure for specific groups; and</li> <li>▪ Action plan for stakeholder information and engagement during project construction.</li> </ul> <p>Plan and conduct at least one yearly stakeholder engagement session to inform, in one session, all interested and influential stakeholders on the construction activities. Subjects to be covered include a summary of activities held during the last year, upcoming projects, ESMP implementation results, HSE aspects, and a discussion pertaining to the main grievances received and how to resolve them. Sometime should be allowed for questions and exchanges.</p> <p>Inform community members and crime response units of construction activities within their vicinity and provide effective means of communication.</p> <p>Clearly placed signs should be displayed at strategic localities stating the objective of the project, duration of the work and the phone number to receive grievances for both the contractor and community.</p> <p>Draft a <u>Construction Safety &amp; Security Conduct Plan</u> to be enforced on-site by the contractor towards all appointed construction staff.</p> <p>Prominent signs at the contractor's office and construction site should be displayed warning not to cross the fence boundaries onto adjacent farmlands. Construction workers should also be informed and continuously reminded not to access adjacent farms for any reason. Trespassers will be prosecuted, and heavy fines applied to the contractor.</p> <p>The bulk of materials and goods should be transported to the site making use of rail transport. All construction workers should be issued with identifiable clothing to ensure easy identification of unauthorised people within the workforce.</p> <p>Public awareness and sensitization campaign should be undertaken. This should include railway safety.</p> <p>Implement a health management system for the construction workforce, to ensure through medical check-ups and that they will not introduce disease into local communities.</p>		Environmental Consultant (3 monthly)	

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			Instruct all vehicles drivers contracted by the project on safe driving guidelines.			
			<p>Implement an <u>Emergency Preparedness and Response Plan (EPRP)</u> to manage major incidents if they should occur in the vicinity of the construction site.</p> <p>Prepare and implement a project and <u>Workers Grievance Redress Mechanism (GRM)</u>.</p> <p>Ongoing identification, evaluation and monitoring of potential community health and safety risks. Establish partnerships with social and health services at project level.</p> <p>Storage of track units or construction material should not affect traffic or pose any risk to communities adjacent to the railway reserve.</p> <p>Develop and implement a strong <u>Contractor Code of Conduct</u> detailing the guidelines on expected engagement with local communities and penalties for failure to adhere to regulations, and closely monitor its application and effectiveness. The Code of Conduct should include among others:</p> <ul style="list-style-type: none"> <li>▪ A strict prohibition of GBV (including harassment, exploitation and abuse) and sexual intercourse with partners younger than 18 years of age (underage sex).</li> <li>▪ The requirement to immediately report any suspected case of GBV or underage sex to construction supervising engineer.</li> <li>▪ Train all workers on GBV risks and related sanctions. Ensure that management and security staff are adequately trained to identify and eradicate all forms pertaining to GBV and gender-based discrimination. Introduction of strict sanctions (e.g., dismissal) for workers involved in any form of abuse, inappropriate behaviour or GBV.</li> <li>▪ A strict prohibition for engaging in illicit or criminal activities.</li> <li>▪ Migrant workers must undergo a pre-hiring and annual medical check-up and should be treated if sick. They should be trained on disease prevention and recognition to avoid spreading. Organize education campaigns, including a STI and HIV/AIDS prevention program, for the workers and surrounding communities to facilitate interactions between workers and communities.</li> </ul> <p>The contractor to avoid hiring “at the gate” to discourage spontaneous influx of job seekers.</p> <p>Implement above mentioned soil management mitigations to avoid nuisances (dust and contamination).</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	250,000.00 – 300,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Ensure the development of a Traffic Management Plan that considers the distinctive features of the Project area in order to provide maximum safety and traffic flow and that includes, among others, the following measures:</p> <ul style="list-style-type: none"> <li>▪ Control access to work areas to ensure that only necessary personnel and machinery is present.</li> </ul>			
			<ul style="list-style-type: none"> <li>▪ Develop and implement specific access routes to and within the work site that are optimized to reduce travel distances by vehicles and machinery and ensure all drivers working for the project are aware of the established routes.</li> <li>▪ Verify with the Ministry of Works and Transport the existing authorized load limits on the various sections of the road network to be used, if any, and enforce compliance.</li> <li>▪ Provide safe and convenient pedestrian paths and crossing points along the road alignment and construction areas, including under and over passes.</li> <li>▪ Ensure installation and maintenance of speed control and traffic control systems at pedestrian crossing areas.</li> <li>▪ Ensure installation and maintenance of appropriate road signs, signals, markings, and other traffic regulation devices related to pedestrian facilities and vehicular traffic.</li> <li>▪ Ensure implementing the Traffic Management Plan for the transportation of material from borrow pits to the work site. This Plan should include a map highlighting sensitive receptors in relation with access routes to be used. The map should be updated regularly with access route changes.</li> <li>▪ Provide Project drivers with awareness sessions on the Traffic Management Plan and keep records of the trainings.</li> <li>▪ Conduct a regular mandatory drug and alcohol testing for drivers working on the construction sites.</li> </ul> <p>Ensure all drivers working for the project have a valid driver's license, are certified for driving the vehicle they are responsible for, and have successfully followed a recognized driving course covering road safety measures and the importance of sharing the road with pedestrians and other types of vehicles.</p> <p>Control driver activities to avoid exceeding normal work shifts and to ensure they have enough rest periods.</p> <p>Avoid as much possible the use of chemicals for clearing vegetation. Favour manual or mechanical clearing methods.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>If diversion of traffic is necessary, take into account key location livelihoods, health and safety services and sociocultural activities in planning alternate routes.</p> <p>Avoid the formation of open holes, or ensure these are covered as much as possible, especially within the urban areas.</p> <p>Design safety awareness campaign in collaboration with local authorities and governmental agencies aimed at local residents.</p> <p>Monitor the use of pedestrian crossings and conduct specific awareness campaign to encourage their use.</p>			
			<p>Limit work activities to normal work hours (8 h to 18 h) as much as possible, especially within the urban areas and those areas close to any receptor (i.e., tourism activities on farms).</p> <p>Ensure the development and implementation of a Waste Management Plan that should allow for safe and quick disposal of waste, as not to result in any form of pollution or spread of diseases. All waste should be properly stored on site in appropriate containers and regularly disposed off-site by certified companies.</p> <p>Effective storage and/or treatment of sewage on site and removal there-off are compulsory and should be done in accordance with a <u>Wastewater Management and Disposal Plan</u> to be developed by the contractor. All workers should be informed and trained not to use the field and that heavy fines will be applied to the contractor if any human waste is found on-site or any other adjacent area.</p> <p>Extend the stakeholder engagement plan into the operation phase to cover the entire Project lifecycle as required by IFC PS1 and Equator Principle P5.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	450,000.00 – 800,000.00



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
Labour & Working Conditions	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Risk of injuries and physical and mental illnesses, risk of abuse by contractors hiring underage workers (child labour, violation of workers' rights, worker insecurity, fatigue and stress generating conflict at the household and community levels and potentially act as a trigger for social problems such as drug and alcohol abuse and GBV influx of workers and job seekers may negatively affect the social acceptability of the Project.	<p>The Contractor is responsible to prepare and implement an <u>Occupational Health and Safety Plan (OHS)</u> and an <u>Emergency Preparedness and Response Plan (EPRP)</u> to include fire and medical emergencies during the construction phase and addressing the following aspects as minimum:</p> <p>Hire an accredited Health &amp; Safety professional.</p> <p>Identify hazardous sources to workers and identify mitigating measures to eliminate dangers.</p> <p>Workers must be trained to recognise potential hazards including electrical hazards, use proper work practices and procedures, recognise adverse health effects, understand the physical signs and reactions related to exposures, and are familiar with appropriate emergency evacuation procedures. They must also be trained to how to use the Personal Protective Equipment (PPE).</p> <p>Inspection and testing of all equipment and machines should be regularly undertaken by experienced and qualified person.</p> <p>Prepare an Emergency Response Plan (ERP) and have trained personnel on-site to action and management ERP.</p> <p>Ensure that appropriate and enough first aid equipment, fire extinguishers in good working conditions and sand buckets are available on-site.</p> <p>Overall no-smoking is allowed on the site, except within the dedicated smoking room, which should be provided and equipped with necessary bucket and fire extinguisher.</p> <p>Follow latest WHO and national measures on Covid-19 as relevant.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	500,000.00 – 700,000.00
			<p>Regular inspection of workers against pathogenic agents and provision of immunization when needed.</p> <p>Identify and provide contacts of closest authorities and emergency services to contact in case of emergencies, especially with reference to feld fires.</p> <p>Provision of full PPE including suitable footwear to avoid slippage and to protect workers from injuries.</p> <p>Workers exposed to noise exceeding permissible levels (e.g., ballast uploading) should wear hearing protection.</p> <p>Develop and implement hiring guidelines that meet or exceed relevant national regulations and international standards, including:</p> <ul style="list-style-type: none"> <li>▪ Public and Environmental Health Act No. 1 of 2015;</li> <li>▪ Labour Act (No. 11 of 2007);</li> </ul>			200,000.00 – 250,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<ul style="list-style-type: none"> <li>▪ OS5 of the African Development Bank Standards; and</li> <li>▪ International Finance Corporation (IFC) Performance Standard 2: Labour and Working Conditions.</li> </ul> <p>Contractually require all contractors, subcontractors, and suppliers to adopt and comply with policies and procedures that comply with national regulations and international standard and address all aspects of labour standards relevant to the project.</p> <p>Develop and implement a Health and Safety Management Plan that meets or exceeds national regulations and international standards to protect every worker involved in construction activities, including temporary workers. Specific provisions must be included for:</p> <ul style="list-style-type: none"> <li>▪ Supply of drinking water of adequate quantity and quality.</li> <li>▪ Provision of adequate and gender-separated sanitation at construction sites.</li> <li>▪ Declaration of accidents through an accident reporting mechanism.</li> <li>▪ Handling of domestic and specialized waste, as well as dangerous goods.</li> <li>▪ Procedures in case of injuries and accidents.</li> <li>▪ Provision and use of personal protective equipment (e.g., helmets, gloves, safety glasses, etc.)</li> <li>▪ Securing of equipment and demarcation of any excavation work areas; and</li> <li>▪ Deployment of signs and fences in construction areas, where necessary.</li> </ul> <p>Develop and implement an Emergency Response Plan and employ experienced person to manage response.</p>			



Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Develop and implement a monitoring system for the application of the above plans, regulations, and standards by all levels involved in the Project, including contractors, subcontractors, and suppliers of goods and services.</p> <p>Develop and implement a grievance redress mechanism for workers and residents and establish a safe and ethical reporting environment that allows for anonymous reporting.</p> <p>Implement a long-term training program throughout the construction phase to ensure adequate training and qualification of all staff employed for the project.</p> <p>Provide medical facilities throughout the construction phase for the use of workers where required.</p> <p>Ensure reasonable working hours, wages and other benefits.</p> <p>Provide suitable and safe amenities and sanitation facilities, including available drinking water and latrines.</p> <p>Implement measures for supporting the recruitment and retainment of female workers outlined in Section 8.2.15.</p> <p>Maximize the hiring of local labour through the following measures:</p> <ul style="list-style-type: none"> <li>▪ Apply human resource policies favouring local labour including, but not limited to, local hiring targets.</li> <li>▪ Implement training programs to build local capacity; and</li> <li>▪ Disclose information on newly created business opportunities.</li> </ul> <p>Establish partnerships with social and health services at project level.</p> <p>Prepare a list of relevant medical and social resources and services for workers and ensure all relevant staff (e.g., human resources, supervisory staff, grievance redress mechanism staff, etc.) have access to and are familiar with this document.</p>			150,000.00 – 200,000.00
Genders Equality	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence	Risk of Gender Based Violence, increase abandonment of wives and children and of prevalence of sexually transmitted infections because of influx of construction workers and job seekers.	<p>A <u>Gender and Social Inclusion (GSI) Policy</u> should be prepared and include the below mentioned.</p> <p>Encourage the recruitment of female workers, with equal payment for male and female workers, for equivalent jobs. This can be achieved through the following potential measures:</p> <ul style="list-style-type: none"> <li>▪ Set targets for women employment.</li> <li>▪ Recruit and train women to be integrated in existing work teams.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	50,000.00 – 100,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
	of workers and influx of job seekers, operational activities and maintenance.		<ul style="list-style-type: none"> <li>Offer equal salaries for the same work to all employees with the same level of experience and skills, whether they are men, women or people with a disability.</li> </ul>			
			<p>Develop and implement a <u>Family Health &amp; Safety Training Programme</u> including the below mentioned.</p> <ul style="list-style-type: none"> <li>Implement family-friendly measures such as health coverage and time-off for the birth of a new child. Ensure these measures are in line with Namibian regulation.</li> <li>Provide civic and employee education on sexual harassment in the workplace.</li> <li>Ensure adequate amenities in field-based work such as segregated toilets, adequate waste disposal facilities, water for personal hygiene, etc.</li> <li>Develop and implement gender and issue sensitive staff grievance redress mechanisms and establish a safe and ethical reporting environment that allows for anonymous reporting.</li> </ul> <p>Develop a Gender and Social Inclusion (GSI) Policy for the Project's activities.</p> <p>Develop and conduct GSI information/ awareness sessions with all staff.</p> <p>Develop and implement a strong Code of Conduct that protects women, girls, boys and men from gender-based violence (physical, sexual, and psychological) and closely monitor its application and effectiveness. The Code of Conduct should include among others:</p> <ul style="list-style-type: none"> <li>A strict prohibition of GBV and sexual intercourse with partners younger than 18 years of age (underage sex).</li> <li>The requirement to immediately report any suspected case of GBV or underage sex to construction supervising engineer.</li> </ul> <p>Develop and implement internal grievance and support that is accessible to all employees, pays special attention to the different realities of female and male victims of GBV, and includes the possibility of denouncing any form of harassment or intimidation. Ensure proper actions are taken according to the Namibian legislation in cases of harassment.</p> <p>Develop and implement an external gender-sensitive grievance redress mechanism that is accessible to all segments of the general population, pays special attention to the different realities of female and male victims of GBV, and includes the possibility of denouncing any form of harassment or intimidation. Ensure proper actions are taken according to the Namibian legislation in cases of harassment.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	150,000.00 – 200,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<p>Implement and follow-up on gender-sensitive grievance redress mechanisms, paying special attention to the different realities of female and male victims of GBV.</p> <p>Organize education campaigns, including a STI and HIV/AIDS prevention program, for the workers and surrounding communities to facilitate workers and communities' interactions.</p> <p>Ensure that the Project offers some procurement opportunities for women, youth and persons with disabilities as required by Namibian legislation and policies. This can be facilitated by:</p> <ul style="list-style-type: none"> <li>▪ Establishing a system for tracking bidders and awardees from women-headed or majority women-owned firms.</li> <li>▪ Setting up a mechanism to promote bid-readiness support for women-owned or majority women-owned small firms and businesses.</li> <li>▪ Maintaining vigilance for opportunities which could be offered to women groups.</li> </ul> <p>Provide, if possible, additional income generating opportunities to women during construction (e.g., provision of catering services, selling local products).</p>			
Archaeology and Cultural Heritage	Site preparation, excavations, preparation of embankment, and borrow pit activities.	Possibility of destroying undiscovered and/or unidentified artefact during construction activities.	<p>An <u>Archaeological Find Action &amp; Preparedness Plan</u> should be drafted, including the below mentioned.</p> <p>Caution should be exercised during the construction phase in the event that archaeological/heritage remains are discovered during the excavations.</p> <p>The change find method should be applied and caution is required at all times, which should include the following-</p> <ul style="list-style-type: none"> <li>• Record keeping;</li> <li>• Expert verification;</li> <li>• A chain of custody instructions for movable finds;</li> <li>• Cultural heritage awareness raising sessions for the construction workforce;</li> <li>• Clear criteria for potential temporary work stoppages that could be required for rapid resolution of issues related to the finds.</li> </ul> <p>In the event of a suspected chance finding of an unknown or undocumented cultural artefact, the following actions must be taken by the contractor:</p> <ul style="list-style-type: none"> <li>▪ Stop the work at the particular site.</li> <li>▪ Contact the National Heritage Council of Namibia and request that a representative be sent to evaluate the finding.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	350,000.00 – 400,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
			<ul style="list-style-type: none"> <li>▪ Work may resume if the suspected artefact does not have cultural interest. Further investigation work must be initiated if the item is of cultural interest.</li> <li>▪ Once the site has been fully investigated and National Heritage Council of Namibia has provided clearance, work may resume.</li> </ul> <p>The direct responsibility for implementing and managing the change find method resides with the on-site environmental officer appointed by the contractor. It is important that the environmental officer clearly outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority, as well as any agreed consultation procedures.</p>			
Bulk Infrastructure (roads; electricity; telecommunication; water)	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance.	Potential degradation of public roads due to increase in heavy traffic movement (i.e., construction vehicles and trucks).	<p>A <u>Pre-Construction Infrastructure Survey and Status Report</u> should be compiled to record infrastructure within the project area and the status thereof, with clear management and mitigation principles on how to maintain the pre-construction status of all infrastructure affected.</p> <p>Identify transport methods best suited to the existing transport infrastructure. Consider transportation of the bulk of material and goods via rail instead of road.</p> <p>Frequently perform inspections on local roads used by construction activities and accesses used for material transport and perform maintenance work and repair where and if necessary.</p> <p>Establish adequate signage on roads used by construction activities to ensure road user and pedestrian security.</p> <p>Ensure the development of a Traffic Management Plan that considers the distinctive features of the Project area in order to minimize road damage flow and that includes, among others, the following measures:</p> <ul style="list-style-type: none"> <li>▪ Identify roads that can sustain heavy machinery and those that are particularly vulnerable to wear and tear.</li> <li>▪ Control access to work areas to ensure that only necessary personnel and machinery is present.</li> <li>▪ Optimize transport routes to reduce travel distances by vehicles and machinery.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	450,000.00 – 500,000.00
			<p>Impose a speed limit for various vehicles, put a stricter limit on roads in poor conditions.</p> <p>In the case unpaved roads need to be used during periods of heavy rainfall, conduct maintenance and repairs as quickly as possible to limit impact on local traffic movement.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	25,000,00.00 – 30,000,000.00

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
		Temporary interruption to rail traffic to allow for specific construction activity.	<p>Contact and maintain communication with TransNamib to avoid service interruptions by planning construction work around the train schedule, which should be presented in a <u>Railway Interruption Schedule</u>.</p> <p>In the unlikely case of accidental service interruptions, coordinate with TransNamib to minimize the duration of interruption and quickly inform users.</p> <p>Negotiate construction schedule with TransNamib to minimise train delays and associated adverse impacts.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	20,000.00 – 25,000.00
		Relocation or reconnection of electricity or telecommunication line to allow for construction work or new alignment.	<p>A pre-construction identification and survey of bulk electricity and telecommunication lines from NamPower, CENORED and the applicable local authorities, as well as Telecom should be undertaken by the contractor to identify possible impact. Discussions with affected authority and mitigation plan should be discussed and approved by applicable authority. This should be presented within the <u>Pre-Construction Infrastructure Survey and Status Report</u>.</p> <p>Contact and maintain communication with the applicable authorities to minimize the risk of accidental breakage. Ensure the presence of applicable authorities' specialists at key stages of work in the vicinity of the bulk infrastructure.</p> <p>Inform users of planned service interruptions sufficiently ahead of time for them to put in place strategies to mitigate the consequences of power interruptions.</p> <p>Re-establish power and telecommunication as quickly as possible when interruptions are unavoidable.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	250,000.00 – 300,000.00
		Potential damages and service interruption to underground bulk pipelines crossing the railway line.	<p>A <u>Pre-Construction Infrastructure Survey and Status Report</u> should be undertaken by the contractor to identify possible impacts. Discussions with affected authority and mitigation plan should be discussed and approved by applicable authority.</p> <p>Install signage clearly indicating the location of pipelines to ensure that construction personnel are aware of the bulk infrastructure.</p> <p>Implement spill prevention and response measures for groundwater quality, soil quality and sediment quality outlined above in this table.</p> <p>Contact and maintain communication with the applicable authorities to minimize the risk of accidental breakage. Ensure the presence of applicable authorities' specialists at key stages of work such as during any excavation work in the vicinity of the bulk infrastructure.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	

Valued Environmental Component	Source of Impacts	Potential Impacts	Mitigation and Monitoring Measure	Responsibilities		Costs (N\$)
				Implementation	Monitoring and Evaluation	
Bulk Infrastructure (roads; electricity; telecommunication; water) <i>(continue)</i>	Temporary construction facilities, transportation of goods and materials, site preparation, borrow pit activities, drainage and stormwater management, structural works, waste and hazardous material management, base & embankment preparation, presence of workers and influx of job seekers, operational activities and maintenance. <i>(continue)</i>	Potential damages and service interruption to underground bulk pipelines crossing the railway line. <i>(continue)</i>	In the case of accidental breakage: <ul style="list-style-type: none"> <li>▪ Rapidly implement the Spill Response Plan.</li> <li>▪ Conduct repairs as quickly as possible in coordination with the applicable authority; and</li> <li>▪ Inform users of service interruption.</li> </ul>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent Environmental Consultant (3 monthly)	1,000,000.00 – 1,500,000.00
		Impact on visual quality and sense of place.	<p>A <u>Pre-construction Visual Impact Plan</u> should be compiled identifying potential receptors and appropriate locality of facilities having a potential negative visual impact to the surrounding receptors.</p> <p>Avoid, when and if possible, locating borrow pits within areas visually exposed to tourist facilities.</p> <p>The contractor's site should be located as far as possible from main access roads and tourism spots within the area and screened in such a way that it minimises, as far as practicably possible, the visual effect.</p> <p>The appointed contractor should ensure that adequate temporary disposal facilities are available on-site and that all waste are properly stored not resulting in any littering or visual disturbances. Waste should be disposed of regularly and at appropriate facilities as per the Waste Management Plan.</p>	Proponent / MET	Contractor's E&S Officer (daily basis); Independent E&S Officer (6 monthly);	180,000.00 – 200,000.00

**Table 8-2** – Estimated Costs for Compliance Monitoring

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
Hydrology – Water Resource Quantity	Inspect boreholes within the SPA and determine water levels in comparison to baseline levels.	Avoid depletion of underground water source. Implement project as per the proposed Construction Water Demand Management Plan and apply mitigations (Table 10.2-1).	Entire footprint of the construction site	Continues on-site monitoring as activities take place (savings) and monthly water level inspections at monitoring boreholes.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	400,000.00 – 600,000.00



Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
Hydrology – Water Resource Quality	Conduct visual inspection of water quality around the activities near watercourses or water bodies.  Dated photo records of the site conditions.  Compare with baseline condition.	Avoid significant degradation of baseline conditions.  Visual inspection of the site, workers, equipment and vehicles. Dated photo record of the site conditions.  Apply the stated mitigation measures (Table 10.2-1) and Contractor Plans (i.e., Hazardous Waste and Materials Management Plan; Wastewater Management and Disposal Plan; Waste Management Plan; Stormwater Management Plan; Construction Activity Pollution Prevention Plan; Spill Prevention and Response Plan.  Approved waste management plans covering at minimum all the aspects detailed in this ESMP.  Approved Hazardous Waste and Materials Management Plan covering at minimum all the aspects detailed in this ESMP.  Complete a compliance checklist for mitigation actions and measures.  Valid certificates for all waste contractors.	At those places of the construction site close to water bodies or drainage channels.	Daily basis for as long as construction activity at particular sensitive area continues	Resident Engineer and HSE Representative  Development of the required plans (section 10.9.2)  Implementation of plans, internal monitoring and reporting to Project Engineer.	Project Engineer and Independent Environmental Consultant  Reviewing Contractor's plans to ensure their compliance to ESMP requirements.  Ensuring the correct implementation of the mitigation and monitoring measures  Review and assurance of Contractors reports.	150,000.00 – 200,000.00
Hydrology – Water Flow & Flooding	Inspect construction site, culverts and drainage structures for material or debris accumulations.	Ensure effective stormwater flow on-site and that no damming of water or local flooding appears. Apply proposed mitigations (Table 10.2-1) and actions as per the Contractor's Storm Water Management Plan.	At the work site (PPA) and surroundings (SPA)	Continues	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	120,000.00 – 150,000.00
Flora (Habitat)	Vegetation clearance to be done following an on-site walk over and identification of species to be protected and if not able to protect relocate or removed with permit approval.  Minimal vegetation removal.	Protect sensitive habitats and protected and/or endangered species. Apply mitigations proposed (Table 10.2-1) and contractor's Biodiversity Management Plan.  All sensitive areas should be earmarked as no-go areas.	Within the railway reserve and at borrow pits or boreholes.	Before construction commences	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.	120,000.00 – 140,000.00

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
	Dated photo records of the site conditions. Compare with baseline condition.	Complete a compliance checklist for mitigation actions and measures.				Review and assurance of Contractor's reports.	
Fauna	Undertake a pre-construction walkover to identify sensitive fauna habitats to be avoided and protected.	Protect sensitive habitats and protected and/or endangered species. Apply mitigations proposed (Table 10.2-1) and contractor's Biodiversity Management Plan.  All sensitive areas should be earmarked as no-go areas.	Within the railway reserve and at borrow pits or boreholes.	Before construction commences	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	80,000.00 – 100,000.00
Air Quality	Undertake regular visual inspection of construction sites and access roads.  During periods of intense construction work and high winds with significant amount of dust generated in close proximity to any receptor, apply the proposed mitigation measures (Table 10.2-1).  Dated photo record with documentation of the site conditions.  In the event of excessive dust pollution undertakes sampling for analysis.	Avoid excessive dust generation and minimise idling of equipment, machinery and vehicles.  Approved Construction Activity Pollution Prevention Plan.  All mitigation measures have been implemented.	At the particular construction activity wherever on-site	Continues	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	80,000.00 – 100,000.00
Local Livelihood and Economic Activities – Tourism & Conservation Activities	Ensure continues access to tourism activities	Diversion roads should not block access to tourism activities and facilities.	Access roads to tourism activities and facilities	Continues for duration of construction period	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	40,000.00 – 60,000.00
Local Livelihood and Economic Activities	Ensure continues access to local business and informal business activities	Diversion roads should not block access to formal and informal businesses, health facilities and cultural sites and facilities	Access roads to formal and informal businesses, health	Continues for duration of construction period	Contractor or HSE Representative	Project Engineer and Independent Environmental Consultant	40,000.00 – 60,000.00



Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
			facilities and cultural sites and facilities		Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	
Noise levels & vibrations	Conduct regular inspections to construction activities known for excessive noise levels and ensure proper mitigation (Table 10.2-1) has been applied.  Confirm that workers use protective gear during the use of machinery generating excessive noise.  Undertake noise inspections on regular bases to determine level of noise 100m from the activity.	Respect the ambient noise levels and restrict excessive noise to a minimum.  Workers should make use of protective gear when working with machinery generating excessive noise.  Visual Inspection of the site, workers, equipment and vehicles to ensure compliance to noise mitigation.  Complete a compliance checklist for mitigation actions and measures.	At the place where the particular activity is taking place	Continues during the construction period, especially in the case of in close proximity to receptor (i.e., within 100m)	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	60,000.00 – 80,000.00
Labour & Working Conditions	Approved Occupational Health and Safety Plan (OHS) and an Emergency Preparedness and Response Plan.  Ensure contractor, subcontractor and suppliers provide healthy and safe working environment and conditions of work.  Keep record and assess number of accidents and incidents and determine cause.	Healthy and save working and living conditions for workers.  Provide training to workers on healthy and save working and living conditions and requirements.	Project site where workers are accommodated and working	Continues for the construction period	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	50,000.00 – 60,000.00
Marginalised Groups	Maintain communication with marginalised groups. Favour employment of indigenous people and women.	Inclusion of Marginalised Groups onto the Project.	Entire construction workforce	Continues for the duration of the construction period.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	60,000.00 – 80,000.00

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
Community Health, Safety and Security	<p>Approved Waste Management Plan, a Wastewater Management and Disposal Plan, Construction Activity Pollution Prevention Plan.</p> <p>Approved Stakeholder Engagement Plan (Appendix D to the ESIA Report, February 2023).</p> <p>Ensure that all identified impacts are avoided and/or mitigated and the various plans to be drafted by the contractor.</p> <p>All recorded grievances should be sufficiently addressed.</p> <p>Maintain continues communication with affected community and request input and feedback.</p> <p>Visually inspect all working areas of construction during routine site visits and evaluate the state of measures implemented to ensure local community health, safety and security.</p>	<p>Avoid and minimise impacts.</p> <p>Solve grievances submitted by community.</p> <p>All work areas should be clearly indicated for no unauthorised access; provide safe and convenient pedestrian paths and crossing points along the railway alignment and construction areas within the urban centres; apply speed control and traffic control systems at pedestrian crossing areas and vehicle crossings; implement and maintain appropriate road signs, signals, markings, and other traffic regulation; erect barriers and buffers around critical work areas where interactions with pedestrians are possible.</p> <p>Complete a compliance checklist for mitigation actions and measures.</p>	Entire project area.	Continues for the duration of the construction period.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	<p>Project Engineer and Independent Environmental Consultant</p> <p>Ensuring the correct implementation of the mitigation and monitoring.</p> <p>Review and assurance of Contractor's reports.</p>	600,000.00 – 800,000.00
Gender Equality	<p>Favour the employment of woman. Achieve equal payment for male and female workers of equivalent experience and qualification.</p> <p>Provide certain percentage of work for women, youth and persons with disabilities.</p>	Aim at employing women in as many as possible fields of construction.	Contractor and sub-contractor, as well as entire supply chain	Continues for construction period	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	<p>Project Engineer and Independent Environmental Consultant</p> <p>Ensuring the correct implementation of the mitigation and monitoring.</p> <p>Review and assurance of Contractor's reports.</p>	60,000.00 – 80,000.00
Gender Relations	Ensure healthy relations between different genders of the construction team.	Equal respect to all. No GBV towards women.	Contractor and sub-contractor, as well as entire supply chain	Continues for construction period	Contractor or HSE Representative  Implementation of mitigation measures,	Project Engineer and Independent Environmental Consultant	20,000.00 – 40,000.00

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
					internal monitoring and reporting to Proponent.	Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	
Archaeology and Cultural Heritage (chance find)	Ensure protection of unknown archaeological finds during construction activities.	Have a knowledgeable person on-site to identify and act according to required Heritage Act.	At areas where disturbance is expected, i.e., embankment, borrow pits and boreholes.	Continues for the duration of the construction period.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	500,000.00 – 600,000.00
Bulk Infrastructure (roads; electricity; telecommunication; water)	Inspect public and local roads used by construction vehicles and accesses condition to ensure continues safety.	Public roads and local roads are maintained at baseline condition.	All roads used by construction vehicles and machinery working on the Project.	Continues for the duration of the construction period.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	4,150,000.00 – 5,200,000.00
Reduced energy efficiency and increased GHGs.	Visual Inspection of the site, workers, equipment and vehicles to ensure compliance to reduced energy consumption.  Complete a compliance checklist for mitigation actions and measures.  Record daily fuel consumption and apply mitigations.	Reduce total volume of fuel used on site.	Entire project area.	Continues for the duration of the construction period.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring, and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	120,000.00 – 150,000.00

**Table 8-3** – Estimated Costs for Public Consultations & Institutional Arrangements

Valued Environmental Component	Monitoring Method	Objective	Locality	Frequency	Mitigation and Monitoring Responsibility	Compliance Monitoring	Cost (N\$)
Public consultations	Stakeholder Engagement Plan	Ensure a transparent communication process and sustainable relationship with all members of the community.	Project area and surroundings (20km)	Continues.	Contractor or HSE Representative  Implementation of mitigation measures, internal monitoring and reporting to Proponent.	Project Engineer and Independent Environmental Consultant  Ensuring the correct implementation of the mitigation and monitoring.  Review and assurance of Contractor's reports.	400,000.00 – 450,000.00
Institutional Arrangements	Office of the Environmental Commissioner - Appoint an Environmental Officer at a satellite office in Otjiwarongo with support equipment to enable dedicated attention to the Project.	Ensure smooth and diligent monitoring and reporting action to the Project without any delays.	Otjiwarongo / Project Site	Continues.	Ministry of Environment, Forestry and Tourism	Ministry of Works and Transport & Project Engineer and Independent Environmental Consultant	1,800,00.00 – 2,100,000.00
	Ministry of Agriculture, Water and Land Reform – Capacity building dedicated agreement to attend to Project requirements (surveying & registration)	To ensure fast track evaluation and approvals of subdivided land portions required for railway use.	Windhoek / Otjiwarongo	Continues.	Ministry of Agriculture, Water and Land Reform	Ministry of Works and Transport & Project Engineer and Independent Environmental Consultant	500,000.00 – 600,000.00
	Ministry of Works and Transport - Capacity building dedicated agreement to attend to Project requirements	Ensure dedicated attention, management and implementation monitoring of Project on the ground.	Windhoek / Otjiwarongo	Continues.	Ministry of Works and Transport	Project Engineer and Independent Environmental Consultant	500,000.00 – 600,000.00

## 9 IMPLEMENTATION RESULTS SCHEDULE AND REPORTING

This section of the ESMP presents the results matrixes of those activities and measures considered of high significance and importance.

### 9.1 UNDERGROUND WATER SOURCE

Groundwater quantity will be impacted during the pre-construction and construction phases. Construction activities of this nature, extent and duration are expected to require large volumes of water for daily construction activities. The required volumes of water for construction and construction period are at this stage not known. Water resource sustainability will be impacted at the construction phase. Information relating to the hydrology baseline conditions is presented in section 5.2.5 of Chapter 5: Baseline Conditions of the ESIA Report (February 2023).

The Project is located within the Omaruru River Basin, located on a watershed and as a result has limited underground water available. Underground water is supplemented mainly by rainfall confirming that contamination from construction or operation activities are of concern.

Water within the area, predominantly obtained via boreholes, is extensively used for domestic, agricultural, and industrial uses. Additional use of groundwater for the Project is expected to influence groundwater volumes and sustainability thereof.

To provide some insight into the status of groundwater within the study area, i.e., in between Kranzberg Station and Otjiwarongo, and an indication of possible groundwater sources, a Hydrological Desktop Study was undertaken by Dynamic Water Resources Management. The Hydrological Desktop Study is attached as Appendix B1 to the ESIA Report (February 2023).

The aspect of possible over abstraction from the aquifer for construction water has been raised as a serious concern having the potential to negatively affect the source (i.e., quality and sustainability), which in effect will have a serious negative socio-economic effect on the receiving community directly dependent on the water source. This is more so for the area in between Kranzberg Station to Kalkfeld, with a stronger underground occurrence within the area closer to Otjiwarongo.

The activity expected to affect groundwater quantity is:

- The use of underground water source for construction activities (dust suppression, compaction of embankment and other requirements) is expected to affect groundwater quantity, which is particularly relevant in the section between Kranzberg Station to Kalkfeld for which the groundwater availability is already low and may have significant impact on groundwater availability for other local users (domestic, agricultural, industrial).

According to the Hydrological Desktop Study, increased abstraction **may** therefore pose significant threats to the groundwater source. The exact significance is at this stage not

known as the volume of water required and construction period is not known, nor is such information available from other studies, resulting in this concern not being able to be assessed in detail and to such extent to state a confident conclusion.

The significance of this impact is directly related to the sensitivity of the receiving source compared to the daily demand and construction duration.

**Table 9-1:** Underground water source- (volume & quality)

IDENTIFIED RISK		UNDERGROUND WATER SOURCE								
Objective	Avoid over abstraction of underground water, which would affect agricultural activities and water supply to residents in urban areas within the study area.									
E & S Risk and Impact	Status (+ or -)	Negative								
	Scale	Regional (RPA)								
	Duration	Duration of project ± 5 years (depending on rainfall & recharge)								
	Frequency	While construction of embankment is ongoing								
E & S Management Results / Implementation Requirements	Implementation of the Groundwater Monitoring Program whereby water levels and abstraction volumes and rates are measured and recorded frequently, as well as water quality measurements.									
	Scale / Location	Regional (RPA)								
	Duration	For duration of time when water is abstracted								
	Frequency / Timing	6-Monthly								
Technical & Operational Requirements		Water levels should be monitored by undertaking water levels measurement within at least 50 boreholes evenly spread over the entire project area. Water samples at 20 boreholes should be taken for analysis to determine any changes with respect to baseline characteristics. This should be done by a qualified and experienced hydrogeologist.								
Cost & Source of Funding	600,000.00 – 800,000.00	AfDB Funding								
Target		10	15	20	30	40	60	80	90	100
Status of Target / Target to be achieved										x

<b>Performance Indicators</b>	Underground water levels should not reduce to below critical levels as specified by Ministry of Agriculture, Water and Land Reform.
<b>Verifiable Indicators and Means of Verification</b>	Measurement of water levels and quality as per the Groundwater Monitoring Program by the Project Hydrogeologist and critical levels as specified by Ministry of Agriculture, Water and Land Reform.
<b>Responsible Entity</b>	Ministry of Works and Transport
<b>Monitoring Entity</b>	Ministry of Agriculture, Water and Land Reform
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract

Without knowing the required construction volume and limited information available on the groundwater availability, the significance of the impact is thus considered **high**. Water abstraction at each borehole will be felt locally and for medium-term duration as it will take place during the entire pre-construction/construction period.

By applying the proposed mitigation measures it can be expected to reduce the impact significance to **medium**, which is however subject to further investigation and assessment. The proposed mitigation measures therefore may contribute to reduced adverse impacts on human health and the environment by reducing groundwater abstraction, as required by IFC PS3 and PS4, as well as OS3 and of OS4 of the African Development Bank Standards.

## 9.2 LOCAL LIVELIHOOD AND ECONOMIC ACTIVITIES (LAND USE AND OCCUPATION)

The study area is predominantly confined to the 60m railway reserve with some deviations into adjacent commercial farmlands, of limited extent. In addition, the railway line passes through the towns of Omaruru, Kalkfeld and Otjiwarongo. Land use along the larger part of the railway line is 'commercial agriculture', which includes cattle farming and game farming, as well as tourism with conservation. Information relating to land use and economic activities is presented in section 5.4 of Chapter 5: Baseline Conditions.

Commercial agriculture, game farming, conservation and tourism play a very important role within the area and larger Region's economy. The proposed Project will have direct and indirect effects on the mentioned activities during construction through the loss of land, nuisances and criminal activities. Poaching, theft and feld fires, either as a direct or indirect result of construction activities is currently of great concern and was raised by the I&APs as of great concern considering the increase in number of outsiders and duration of the construction period. Loss of cattle and game, either through poaching and/or feld fires results in huge financial losses within the area per year.

The Project, as presented in Chapter 4 of this ESIA, is expected to have very little effect and/or change on the development potential and land use of the affected area. Almost all activities associated with the pre-construction and construction phases will be held inside the existing servitude, which is already used for railway. Small pockets of land, where the railway line deviate onto adjacent private commercial land, will result in a permanent change from ‘agriculture’ to ‘railways’, but is in use and extent negligent (less than 0.1% of the land). Borrow pits will also result in a change in land use, from ‘agriculture’ to ‘borrow pits’ to eventually becoming a gravel dam after rehabilitation.

**Table 9-2:** Land Use Change, Loss of Land and Loss of Income

IDENTIFIED RISK		LOS OF INCOME & LAND								
Objective	Loss of income due to loss of land or change of land use should not negatively impact the affected land owners’ socio-economic income, i.e., loss of land per registered land portion should not exceed 10 ha.									
E & S Risk and Impact	Loss of income due to loss of land or use there of									
	Status (+ or -)	Negative								
	Scale	Regional (RPA)								
	Duration	Permanent for railway / Medium for borrow pits								
	Frequency	Continues								
E & S Management Results / Implementation Requirements	Avoid the loss of land of more than 10 ha per registered land portion.									
	Scale / Location	Regional (RPA)								
	Duration	Permanent for railway / Medium for borrow pits								
	Frequency / Timing	Continues								
Technical & Operational Requirements		All land affected by the railway alignment and activities should be surveyed and extent determine, to limit land loss per registered land portion to a maximum of 10 ha.								
Cost & Source of Funding	5,000,000.00 – 10,000,000.00	AfDB Funding								
Target		10	15	20	30	40	60	80	90	100



<b>Status of Target / Target to be achieved</b>									X
<b>Performance Indicators</b>	Land to be taken-up by borrow pit and used for railway realignment should be surveyed and not be more than 10 ha per registered land portion.								
<b>Verifiable Indicators and Means of Verification</b>	Land survey diagram								
<b>Responsible Entity</b>	Ministry of Works and Transport								
<b>Monitoring Entity</b>	Ministry of Agriculture, Water and Land Reform								
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract								

Given that very little land will permanently be loss to railway use and that borrow pits will change to gravel dam use, while these are located adjacent to and in close proximity to the railway servitude, it will be easily compensated and avoid land fragmentation (i.e., creating uneconomical agricultural land). The anticipated impact intensity is considered low for the loss of land. The extent will be on land around and near the existing railway servitude so it will be local, while duration will be permanent. The pre-mitigated significance of the impact and in specific relating to the loss of land would be **low**, while the significance to loss of animals would be **medium**. Rehabilitation of borrow pits as per agreement with owner and/or regulatory requirements and reuse as ground dams will ensure the impact significance reducing to **low**.

### 9.3 GENERAL HEALTH, SAFETY AND SECURITY

The existing railway in its current state is generally considered as a safety risk due to various derailments that has taken place in the past. Although one of the Project's core objectives is to increase safety and reliability, it also carries some health and safety risks for the surrounding communities, all of which are presented below. Avoidance and mitigation measures to minimize these potential health and safety risks are presented in Table 10.2-1 of the ESIA Report (February 2023).

The surrounding community, i.e. farmers, is already subject to various forms of crimes (i.e. animal theft, poaching, trespassing and illegal wood collection; etc.) and is concerned about an increase in activities and workers that is expected to further escalate the situation.

This section addresses the overall well-being of the residents and communities affected, i.e., aspects to health, safety and security.

The pre-construction and construction activities expected to potentially affect general health, safety and security are:

- Dust and resulting nuisance generated during the construction phase may affect the health of residents and/or local communities depending on the locality, especially if they are vulnerable to respiratory issues;
- The residents in the vicinity of the Project will be negatively affected by nuisance (such as noise, dust, vibrations);
- Increased transportation and circulation, traffic management and the presence of temporary construction facilities and construction work sites may represent a safety risk for work site employees and local workers and residents through the following:
  - increase safety risk for pedestrians (civil or employees) and road users;
  - increase risk of collision between construction vehicles and wildlife/cattle; and
  - Increase risk of traffic accidents on highways. Traffic safety prevention is an important element to be managed according to IFC EHS Guidelines.
- Impacts on individual well-being and in specific those considered vulnerable such as women and Indigenous People (covered in Sections 8.2.14 and 8.2.15 respectively of the ESIA Report, February 2023).
- The influx of workers and job seekers can bring the following risks to the communities and people:
  - Increased crime in surrounding communities, either through crimes directly perpetrated by newcomers (e.g., assault, theft, poaching, etc.) or indirectly through their engagement in illegal activities such as drug use and prostitution;
  - Increased transmission of sexually transmitted infections (STIs) and HIV/AIDS. Prevention of these infections need to be managed, as per the IFC EHS Guidelines and OS5 of the African Development Bank Standards;
  - Possible tensions and conflicts with local communities, as these people will be considered outsiders competing for employment;
  - Increased waste generation and sanitation problems, having health implications to farm and wild animals, as well as communities; and
  - Increased pressure on local natural resources and services (e.g., social, health, etc.).

**Table 9-3:** General Health, Safety and Security

IDENTIFIED RISK		GENERAL HEALTH, SAFETY AND SECURITY									
Objective	Ensure residents' and communities' safety and health are not compromised as a result of the project activities or related to the project										
E & S Risk and Impact	Status (+ or -)	Negative									
	Scale	Regional (RPA)									
	Duration	Duration of Project									
	Frequency	Continues									
E & S Management Results / Implementation Requirements	Implementation of an Emergency Response Plan to manage major incidents and Grievance Redress Mechanism (GRM) according to which incidence and accidents are addressed. Implement a Contractor's Code of Conduct according to which all construction workers need to comply.										
	Scale / Location	Regional (RPA)									
	Duration	Duration of Project									
	Frequency / Timing	Continues									
Technical & Operational Requirements		Monthly meetings with residents and communities to record and discuss incidents and improve mitigations. Gather baseline data on existing frequency and type of incidents within study area from Namibian Police and Farmers Union. Monthly incidents should not exceed baseline data or nature of incidents.									
Cost & Source of Funding	250,000.00 – 300,000.00	AfDB Funding									
Target		10	15	20	30	40	60	80	90	100	
Status of Target / Target to be achieved										X	
Performance Indicators		Incidents per month should not exceed that of the baseline incidents and nature of incidents should not change.									
Verifiable Indicators and Means of Verification		Police records and incidents recorded by farmers Union.									

<b>Responsible Entity</b>	Ministry of Works and Transport
<b>Monitoring Entity</b>	Namibian Police & Local Security Initiative (Farmers' Union)
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract

Of potential **high** significance is peoples' safety and security as a result of poaching, theft, trespassing and field fires, all associated with construction activities. Safety of farmers and their workers are increasingly threatened as more and more people trespass with the purpose to steal and poach. Overall, the post-mitigation impacts will range from **low** to **medium** and even **high** (in the instance of loss of life) in significance.

Adverse impacts on health, safety and security will therefore be minimized, as required by IFC PS4 and OS5, as well as OS5 of the African Development Bank Standards.

#### 9.4 LABOUR CONDITIONS

Based on the complaints received from residents within the Project having relevance to labour conditions and from a past monitoring visit (April 2021) to a section of the Project area, labour conditions and in specific the provision of proper basic services (i.e., toilets and eating areas) are not up to standard. The Project has the potential to have the following impacts on labourers during the pre-construction and construction phases:

- Poor health and safety conditions can create a dangerous work environment that will increase workers' risk of injuries, as well as physical and mental illnesses. Worker health and safety is an important aspect to be managed according to IFC EHS Guidelines and OS5 of the African Development Bank Standards;
- Risk of abuse by contractors hiring underage workers (child labour);
- High levels of casualization (informality) can lead to violation of workers' rights (e.g., in terms of work schedule and conditions);
- Lack of oversight of contractors, subcontractors, and suppliers of goods and services in the supply chain can lead to abuse of workers in those positions, including hiring of underage workers;
- Poor labour conditions can generate insecurity, fatigue, and stress, among others. These can have a ripple effect at the household and community levels, by increasing conflict and potentially act as triggers for social problems such as drug and alcohol abuse and GBV;
- The influx of workers and job seekers may negatively affect the social acceptability of the Project as surrounding communities have high expectations regarding the Project's role in promoting local employment and stimulating the local economy.

**Table 9-4:** Labour Conditions / Vulnerable People Abuse

IDENTIFIED RISK		LABOUR CONDITIONS / VULNERABLE PEOPLE ABUSE								
Objective	Ensure good health & safety conditions for workers at all times and places. Avoid the abuse by the vulnerable from workers and violence associated with alcohol abuse.									
E & S Risk and Impact	Status (+ or -)	Negative								
	Scale	Regional (RPA)								
	Duration	Duration of Project								
	Frequency	Continues								
E & S Management Results / Implementation Requirements	Implement a Contractor's Accommodation Strategy and Plan, which links with the Occupational Health and Safety Plan (OHS), as well as an Emergency Preparedness and Response Plan (EPRP).									
	Develop and implement a Grievance Redress Mechanism for workers and residents and establish a safe and ethical reporting environment that allows for anonymous reporting.									
	Implement a strong Code of Conduct with training programmes focussing on issues such as alcohol abuse, gender violence and abuse, responsible finances, etc.									
	Scale / Location	Regional (RPA)								
	Duration	Duration of Project								
	Frequency / Timing	Continues								
Technical & Operational Requirements		Continues follow-up education and sessions with communities. Frequency and nature of incidents during project time lime should not increase, but should be decreased. Monthly police records and survey should be evaluated and done to monitor frequency and nature.								
Cost & Source of Funding	50,000.00 – 100,000.00	AfDB Funding								
Target		10	15	20	30	40	60	80	90	100
Status of Target / Target to be achieved										X

<b>Performance Indicators</b>	Increase in monthly incidents during project life time.
<b>Verifiable Indicators and Means of Verification</b>	Monthly police records and survey should be evaluated and done to monitor frequency and nature.
<b>Responsible Entity</b>	Ministry of Works and Transport
<b>Monitoring Entity</b>	Namibian Police & Local Security Initiative & Ministry of Health and Social Services
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract

Considering the legacy of less than internationally required standards of labour conditions in Namibia, the Project has the potential to negatively affect workers' physical and mental health, lead to abuse of workers, and trigger social problems such as drug and alcohol abuse and GBV – all of which are impacts of high intensity. The intensity of impacts created by the influx of workers and job seekers on the social acceptability of the Project considered medium. The extent will be local as workers (both local and non-local) will most probably be settled within the closest urban centre. Most impacts will last throughout the pre-construction and construction phase (medium term), but social problems may persist and be long-term. Overall, the impact significance on labour conditions is considered to be **medium**.

By providing good working conditions, the Project will provide positive benefits to workers and surrounding communities and avoid becoming an important trigger to social problems in the area. Mitigation measures proposed will ensure workers' rights are respected, avoid worker abuse, and create a safe working environment. Maximizing local employment and providing local training will also reduce impacts. The post-mitigation impact significance can be reduced to **low**. Adverse impacts on self-employed and business-based livelihoods will therefore be minimized, as required by IFC PS2 and OS5 of the African Development Bank Standards.

## 9.5 BULK INFRASTRUCTURE

The bulk infrastructure and services assessed are roads, rail, electricity, water and sewage, which are presented in Section 5.4.7 of the ESIA Report (February 2023).

### **Roads**

The majority of construction activities will remain within railway servitude and will therefore not directly affect the surrounding road network, apart from being used for transportation of goods and materials. Direct impacts can be expected at the road-rail crossings appearing along the railway line, but is limited in extent.

The main impacts on roads will therefore come from the transport of material, equipment, and goods, as well as temporary work at under and overpasses. Considering that the majority of goods, i.e., aggregate, sleepers, ballast and rails will be transported via the existing railway line, only gravel and soil from borrow pits and workers will be transported via road. Of the two

mentioned, it is expected that gravel and soil transport from borrow pits will be limited. The greatest impact is expected from the transportation of workers to and from the site, which is considered minor.

The extent of the impact will be local as only roads in close vicinity to the Project will be affected, while the impact will be felt throughout the construction phase (i.e., medium-term). The impact on existing roads is considered to be of **low** significance. The proposed mitigation measures will ensure that impact significance is further reduced, but expected to remain at **low**. Ensuring regular maintenance and repair of gravel roads used during construction will ensure that the duration of impact is reduced.

### ***Rail***

The existing railway line will remain in place for the duration of the Project construction period and will only be decommissioned once the construction phase has been completed. At this stage it is not known if the Project will be done in sections and commissioned and/or as one complete project.

The majority of the new railway alignment will be along the existing railway line, with some crossings at strategic localities to ensure longer curvatures. The existing railway will be used to transport the bulk of goods to the site.

The Project is not expected to have a direct impact on the existing infrastructure per say, but will have an impact on the current operations as the daily schedules will have to provide for transportation of material, equipment and goods within the existing daily schedules. Making use of the existing railway to transport material, equipment and goods might cause interruptions and delays to other scheduled deliveries. The extent of such impact is expected to be National and of medium-term duration. The intensity thereof is expected to be **high** and requires proper planning with TransNamib not to cause delays to other deliveries. However, given the low frequency of trains per day, the significance is considered **low**.

Commissioning of the new railway and decommissioning of the old railway, either in sections or in its entirety, will have to be planned and close monitored not to cause delays in the current schedules and services of TransNamib.

### ***Electricity***

A network of high-tension electricity lines (rural areas) and low-tension (urban areas) electricity transmission lines exists along the Project alignment. High elevation high-tension electrical lines (NamPower & CENORED) cross the Project servitude. There is also a network of municipal distribution lines along the railway servitude within the urban centres, with some crossings of the railway servitude.

None of the electricity lines either within the urban centres or rural parts will be affected by the Project as the railway alignment within the urban centres will not deviate and existing rural crossings are sufficient and do not require adjustment. Accidental damage and power outages will have a **high** intensity as it will affect the regional area, but be of short duration.

The direct impact is considered to be of **low** significance, while the impact as a result of damage and power outage is considered **medium**. Coordination with NamPower, CENORED and the applicable municipality is required during construction works close to electrical infrastructure and notification of affected users of planned power interruptions ahead of time will reduce the intensity of the impact from medium to **low**.

### **Water**

Bulk water infrastructure from NAMWATER do exists, but limited to a few places along the railway line and crossings of the railway servitude. None of the infrastructure will be directly affected by the proposed railway alignment, i.e., requiring relocation. Accidental damage and water interruptions will have a **high** intensity as it will affect the regional area, but be of short duration.

Water infrastructure within the urban centres exists, although not located along within the railway servitude. Water infrastructure is expected to cross the railway servitude and thus require consultation with the authorities and caution during construction activities. Given that no deviation is expected within the urban centres, no excavations are planned, i.e. little change of damage to water infrastructure is expected.

The direct impact is considered to be of **low** significance, while the impact as a result of damage and interruptions considered **medium**. Coordination with NAMWATER and the applicable municipality is required during construction works close to water infrastructure and notification of affected users of planned water supply interruptions ahead of time will reduce the intensity of the impact from medium to **low**.

### **Sewage**

Sewage infrastructure is limited to the urban centres. Sewage infrastructure within the urban centres exists, although not located along within the railway servitude. It can be expected that there will be sewage infrastructure crossing the railway servitude and thus require consultation with the authorities and caution during construction activities. Given that no deviation is expected within the urban centres, no excavations are planned, i.e., little change of damage to water infrastructure is expected.

The direct impact is considered to be of **low** significance, while the impact as a result of damage and interruptions considered **medium**. Coordination with NAMWATER and the applicable municipality is required during construction works close to water infrastructure and notification of affected users of planned water supply interruptions ahead of time will reduce the intensity of the impact from medium to **low**.



**Table 9-5:** Bulk Infrastructure

IDENTIFIED RISK		INTERRUPTION TO BULK SERVICE SUPPLY								
Objective	Avoid any interruptions to bulk water and electricity supply									
E & S Risk and Impact	Status (+ or -)	Negative								
	Scale	Regional (RPA)								
	Duration	Duration of Project								
	Frequency	Multiple								
E & S Management Results / Implementation Requirements	Implement a Pre-Construction Infrastructure Survey and Status Report with an Interruption Schedule to be communicated to all I&APs. Report should identify those bulk infrastructure subject to potential damage during construction, highlight existence of bulk infrastructure and plan avoidance before construction commences.									
	Scale / Location	Regional (RPA)								
	Duration	Duration of Project								
	Frequency Timing /	Multiple								
Technical & Operational Requirements		No damages to bulk water and/or electricity infrastructure.								
Cost & Source of Funding	350,000.00 – 400,000.00	AfDB Funding								
Target		10	15	20	30	40	60	80	90	100
Status of Target / Target to be achieved										X
Performance Indicators		No interruptions to bulk water and electricity supply during the time of the project as a result of the project activities.								
Verifiable Indicators and Means of Verification		Frequency of incidents.								
Responsible Entity		Ministry of Works and Transport								

<b>Monitoring Entity</b>	Bulk service suppliers (NAMPOWER; NAMWATER; CENORED)
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract

## 9.6 SOCIAL ACCEPTABILITY

Social acceptability of the proposed Project plays a crucial role within the overall success of both the assessment process, implementation during construction and long-term operation thereof. Continuous interaction, communication and distribution of information on a regular basis, throughout the different project phases, are instrumental to social acceptability.

In line with the above various consultations of different means took place since project inception and throughout the ESIA process, whereby I&APs provided comment on the proposed Project. Details of the stakeholder engagement and comments received are presented in Chapter 6 of the ESIA Report (February 2023).

To date not a single objection against the proposed Project has been received from any I&AP or authority. Various comments and concerns were raised for consideration and attention to mitigate impacts, as addressed in this ESIA Report. Nationally, it can be argued that the proposed Project has a positive reception among the authorities and communities. The Project's social acceptance is primarily based on the need and desirability of the proposed Project build on the various socio-economic benefits expected over the short and long term.

As mentioned in section 2.6 of this ESIA Report, although stakeholders have not indicated any objection to the proposed Projects, a general concern about the successful operation of the new infrastructure, once construction has been completed, has been raised. This concern is based on various difficulties and challenges experienced by the neighbouring farm owners, as a result of the current ongoing upgrade activities, as well as the applicable authorities' inability to keep to agreements with respect to maintenance of fences and the railway servitude, poor management and upkeeping of supporting infrastructure, unreadable and lack of service.

The main concern raised during the 1<sup>st</sup> round of consultation with regards the new railway alignment is that it affected certain existing urban developments and potentially some agricultural infrastructure, as presented in section 7.1 of this ESIA Report. In terms of social acceptability, the MWT has demonstrated their willingness to adapt the Project to the needs identified by I&APs. The alternative to the proposed have been discussed and accepted, as presented in section 7.2 of this ESIA Report. Concerns applicable to the construction phase that were raised by the community relates to community health, safety and security. Very strong concern was raised towards expected increase in crime, especially theft, trespassing onto private property, poaching and veld fires. Insufficient ablutions and poor management thereof were another concern that affects the health of cattle and quality of meat. Noise and

visual nuisances were raised from the side of the tourism operators, which is considered a very fragile sector of the economy slowly recovering from the COVID restrictions.

During the second round of consultation, no specific request and/or concern has been raised by I&APs and/or authorities.

Considering the involvement and communication from the side of I&APs it can be argued that I&APs and authorities agree to the proposed Project, as long as it responds to the needs of the communities affected, i.e., do not result in short and/or long-term negative impacts. In addition to addressing the raised concerns, it is important to ensure that the needs of the communities are met and that continues consultation and distribution of information takes place. A grievance mechanism (see section 10.8 of the ESIA Report) will be put in place, as well as the appointment of an independent environmental consultant responsible to oversee the construction phase and monitor compliance with the ESMP. Continues consultation and communication through the proposed Stakeholder Engagement Plan (Appendix D to the ESIA Report) is required for implementation from the side of the appointed contractor.

Apart from contributing to increased cross-border trade and increased rail transport to the Walvis Bay Port from surrounding land-locked countries, with associated socio-economic benefits, the Project is seen as an opportunity to improve rail safety, which has been a huge concern and economic restriction. Employment creation is an important matter, as job opportunities are scares, especially for young adults and women.

I&APs clearly stated that they want to be actively involved throughout the implementation of the Project. A transparent and continuous communication with authorities and I&APs should provide social acceptability or at least, social acceptance.

**Table 9-6:** Social Acceptability

IDENTIFIED RISK		RESIDENTS' RESISTANCE
<b>Objective</b>	Avoid any objections and/or resilience to the project by the residents and/or community within the project area, BUT ensure support to the project	
<b>E &amp; S Risk and Impact</b>	<b>Status (+ or -)</b>	Negative
	<b>Scale</b>	Regional (RPA)
	<b>Duration</b>	Duration of Project
	<b>Frequency</b>	Multiple
<b>E &amp; S Management Results /</b>	Implement a Grievance Redress Mechanism (GRM) and transparent Stakeholder Engagement Plan according to which incidence and accidents are addressed. Establish and maintain good and positive relations with affected land owners, residents and communities. Ensure transparency and support to	

<b>Implementation Requirements</b>	communities' concerns and questions, through effective implementation of the Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan									
	<b>Scale / Location</b>	Regional (RPA)								
	<b>Duration</b>	Duration of Project								
	<b>Frequency Timing</b>	Multiple								
<b>Technical &amp; Operational Requirements</b>		Monthly surveys with a 20% representation should be undertaken to establish residents' and communities' satisfaction and opinion towards the project and successful implementation of the Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan								
<b>Cost &amp; Source of Funding</b>	<b>350,000.00 400,000.00</b>	<b>–</b>	AfDB Funding							
<b>Target</b>		10	15	20	30	40	60	80	90	100
<b>Status of Target</b>							X			
<b>Performance Indicators</b>		60% of survey respondents should remain satisfied and have positive opinion towards the project, and successful implementation of the Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan								
<b>Verifiable Indicators and Means of Verification</b>		The % of the residents and community satisfied with the project and successful implementation of the Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan. Monthly surveys should be conducted.								
<b>Responsible Entity</b>		Ministry of Works and Transport								
<b>Monitoring Entity</b>		Office of the Ombudsman								
<b>Contractual Instrument</b>		Project ESMP; Loan Agreement; Contractor's Contract								

## 9.7 INSTITUTIONAL CAPACITIES

Institutional capacity and capability by the applicable authorities (i.e., Ministry of Works and Transport, and Ministry of Environment and Tourism) in executing this Project and specifically this ESMP is currently limited.

The Ministry of Works and Transport is responsible for sectoral policy and regulation, and has a mandate to ensure infrastructure development and maintenance on transport and state asset management through operational excellence and prudent management of resources. The Department of Transport within the Ministry is responsible for transport in the different modes, namely road, rail, air, and sea. Its mandate is to ensure the provision of safe and efficient transport services and infrastructure in the Country in balance with demand in the different modes. The Directorate Railway Infrastructure Management within the Department of Transport deals with railway network development, maintenance, rehabilitation, as well as modernization of rolling stock fleet.

The Ministry is the implementation authority of the Project, through the Directorate Transport. With no Environmental and Health Division within the Ministry, implementation of the environmental and health requirements is not possible and will have to be sourced out or alternatively such Division will have to be created, which is expected to take some time.

The Ministry of Environment, Forestry and Tourism's (MEFT) is responsible for safeguarding Namibia's environmental resources and to promote biodiversity conservation in the Namibian environment through the sustainable utilisation of natural resources and tourism development for the maximum social and economic benefit of its citizens. The Department of Environmental Affairs (DEA) under direct responsibility of the office of the Environmental Commissioner is responsible for policing and regulating of all listed activities requiring an environmental clearance certificate as provided for by Section 27(3) of Namibia's Environmental Management Act (No. 7 of 2007).

The office of the Environmental Commissioner with the Department of Environmental Affairs (DEA) stationed within Windhoek is the only office in Namibia responsible for environmental compliance. The office of the Environmental Commissioner is responsible for policing and regulating of all listed activities, as well as evaluation of all environmental impact assessments done throughout Namibia. With restricted capacity and resources, the responsibilities to evaluate environmental impact assessments effectively and efficiently within a timeous manner is understandably not achieved.

Strengthening of institutional capacity and capability building is crucial in the successful implementation of the ESMP by both the Proponent (Ministry of Works and Transport) and the monitoring Authority (Ministry of Environment and Tourism).

**Table 9-7:** Institutional Capacity & Capability

IDENTIFIED RISK		IMPLEMENTATION INABILITY
Objective	Successful management and implementation of the ESMP for the project	
	Status (+ or -)	Negative

E & S Risk and Impact	Scale	Regional (RPA)									
	Duration	Duration of Project									
	Frequency	Continues									
E & S Management Results / Implementation Requirements	The responsibilities of the Proponent applicable to the ESMP for this project should be outsources to a qualified and experienced consultancy.										
	The Ministry of Environment, Forestry and Tourism should budget for a staff member of the Directorate of Environmental to be stationed at Otjiwarongo for the remainder of the proposed Project, i.e., 5 years. This person should be equipped and supported to enable effective and efficient on-site construction inspection, monitoring and reporting. This person should be well qualified and experienced in local and international legalisation and practises applicable to environmental monitoring and reporting.										
	In the absence of Namibian law to guide monitoring and related responsibilities by the Directorate Environmental Affairs, international laws will apply, to which the contractor must agree.										
	Scale / Location	Regional (RPA)									
	Duration	Duration of Project									
Frequency / Timing	Continues										
Technical & Operational Requirements		Ensure outsourcing of responsibilities of the Proponent. Establishment of a satellite office of the Directorate Environmental Affairs at Otjiwarongo with personnel and equipment. Applying international laws to monitoring.									
Cost & Source of Funding	7,500,000.00 – 8,500,000.00	AfDB Funding									
Target		10	15	20	30	40	60	80	90	100	
Status of Target										X	
Performance Indicators		Appointed consultancy to implement the responsibilities of the Proponent applicable to the ESMP for this project.  Established office for the Directorate Environmental Affairs in Otjiwarongo.									
Verifiable Indicators and Means of Verification		Signed contract appointing consultancy.  Physical office with personnel in Otjiwarongo.									

<b>Responsible Entity</b>	Ministry of Works and Transport / Ministry of Environment and Tourism
<b>Monitoring Entity</b>	Office of the Ombudsman
<b>Contractual Instrument</b>	Project ESMP; Loan Agreement; Contractor's Contract

## 10 CONCLUSION

Considering the nature and scale of the proposed Project against the sensitivity of both the natural and social receiving environments this ESIA concludes that there are both positive and negative impacts of different nature and scale, which can be avoided and/or mitigated to different levels of acceptability.

The proposed Project holds extensive socio-economic benefits and potential to enhance Namibia's strategy of becoming an International Logistics Hub for SADC Countries. Positive impacts are expected to be experienced from grassroot level and beyond the Project's study area, directly and indirectly contributing to socio-economic upliftment. The Project will contribute to the Government of Namibia's (GoN) vision to transform Namibia into a prosperous and an industrialized nation by the year 2030 by improving and expanding its regional transportation and trade links as expressed in national Development Plans (NDP4 and NDP5) and Vision 2030. Namibia's National Development Plan 4 propagated the vision of transforming Namibia as a whole nation into an international logistics hub for SADC region by 2025.

Impacts of different scale, nature and duration has been identified, assessed and mitigations proposed, so as to avoid or minimise the negatives on the receiving natural and social environments. Of greatest concern is without a doubt the impact on the underground water resource, both from a demand (construction waters) and quality point of view. For purpose of avoiding and/or mitigating any potential negative impact to the receiving community with negative socio-economic consequences, it has been recommended that a Groundwater Monitoring Program be implemented and monitored by a qualified and well experienced Hydrogeologist. Other negatives identified to be mitigated and monitored are general health, safety and security of the community, as well as the health and wellbeing of marginalised groups.

Institutional challenges expected relates to limited capacity with the Directorate of Environmental Affairs with the Ministry of Environment, Forestry and Tourism to monitor construction Implementation on-site. For this reason it is recommended that the Ministry of Environment, Forestry and Tourism appoint or relocate a staff member to an office within Otjiwarongo, located halfway in between the entire Project length. The staff member should be equipped with supporting equipment to become a satellite office of the Directorate of Environmental Affairs and primarily be responsible for this Project.

Based on the project information as provided by the Proponent, Consulting Engineers and specialist inputs, the nature and extend of the Project, setting the sensitivity of the receiving environment, the ESIA study concludes that there is currently no evidence indicating that any of the impacts identified are of such significance that it cannot be reasonably mitigated and that the proposed Project, as presented in this report, should not be allowed to continue. It is however required that the mitigations and recommendations as presented in the ESIA Report and this ESMP be implemented by the Proponent and appointed Contractors, along with the required management and monitoring plans.



Given this, it is not to say that there will be no further impact/s and potential threats as highlighted by the ESIA study. Construction, operations and decommissioning and closure activities need to be strictly controlled by the Proponent and Contractor/s, and monitored by the appointed specialist and applicable Competent Authority to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed in an effective manner.

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