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ENVIRONMENTAL SCOPING REPORT (ESR)

(Current Gravel Mining Activities by Lüderitz Town Council, 2025)

FOR THE PROPOSED GRAVEL MINING ON THE OUTSKIRTS OF THE TOWN OF LUDERITZ, PART OF THE NAMIB NAUKLUFT PARK, KARAS REGION

Prepared for:

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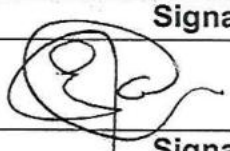
DOCUMENT INFORMATION		
Title	Environmental Scoping Report Proposed Gravel mining at on the outskirts of Lüderitz, part of the Namib Naukluft Park, Karas Region	
ECC Application Reference number	**APP- 007182**	
Listed Activity	**Activity 3: Mining and Quarrying Activities:** 3.2 The Other forms of mining or extraction of any natural resources whether regulated by law or not	
Location	Lüderitz, Karas region	
Proponent	El Sonador Investment cc P.O. Box 1196 Lüderitz Contact: Mr. Henry Van Taak, 0814499661 E-mail: manjarovantaak@yahoo.com	
	Signature	**Date**
		08/05/2026
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ABBREVIATIONS

DEA	Department of Environmental Affairs
DSR	Draft Scoping Report
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
EIA	Environmental Impact Assessment
EIF	Environmental Investment Fund
EMA	Environmental Management Act (No. 7 of 2007)
ESMP	Environmental and Social Management Plan
ESR	Environmental Scoping Report
GRM	Grievance Redress Mechanism
I&APs	Interested and Affected Parties
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
SM	Site Manager
TEC	Tortoise Environmental Consultant

1. INTRODUCTION

1.1 Demand for gravel

Lüderitz requires gravel in-order to meet the demand for developmental activities. One (1) site has been identified for possible Gravel mining, located on the outskirts of the town of Lüderitz, adjacent to the current gravel mining activities for the Lüderitz Town Council, located within the Namib Naukluft Park, (figure 2.3 – 2.5).

GPS coordinates: Latitude -26.69980 and Longitude 15.358375

1.2 Gravel mining rationale

To supply the General Construction Industry, such as:

- Road construction
- Building industry
- Filling

1.3 Proponent – El Sonador Investment cc

El Sonador Investments CC is a fully Namibian-owned company based in Lüderitz, it specialises in construction, renovation, and sand mining. The company is managed by three directors with a combined experience of over 30 years in the construction and mining sectors, ensuring strong technical oversight and operational management.

The company's core activities include residential and commercial construction, building renovations, and the extraction and supply of sand for construction purposes. Within the context of this Environmental and Social Impact Assessment (ESIA), El Sonador Investments CC seeks to undertake controlled gravel mining operations within the Namib Naukluft Park to support local construction demand.

The company aims to conduct its sand mining activities in accordance with Namibian environmental legislation and best practices, while minimizing ecological disturbance and contributing to local economic development through job creation and skills transfer.

1.4 EIA Regulation

The EIA is regulated by the Environmental Management Act, 2007 and the EIA Regulations No. 30 of 2012, which is administered by the Ministry of Environment Forestry and Tourism (MEFT), through the Department of Environmental Affairs (DEA), which is headed by the Environmental Commissioner (EC).

1.5 Environment versus Economic Development

Namibia's economy is highly dependent on a healthy environment and striking a balance in meeting demands for economic development and maintaining biological diversity remains a priority. Therefore, it is of utmost importance that the environment and development

sectors should work together and identify synergies to ensure that natural resources are utilized acceptably and sustainably.

The aim of undertaking environmental assessments is to mitigate negative impacts that would otherwise compromise socio-economic development.

For a dry country like Namibia, rivers are very important for the ecosystem, ecological process, water supply and underground water recharge. The aim of environmental assessments is to guide the sustainable utilization of natural resources and to mitigate negative impacts that would otherwise compromise the environmental integrity and future ecosystem benefits.

1.6 EIA Process

An Environmental Impact Assessment (EIA) is a process of identifying, predicting, evaluating and mitigating the effects (negative impacts) of a proposed project on the natural and human environment.

The EIA process aims to apply the principles of environmental management, reduce negative impacts and provide an opportunity for the public to comment on the proposed activity.

The EIA Process entails the assessment and description of the study area, recommended site or affected environment. The EIA further investigates and identifies potential impacts that may arise from the proposed activity.

For every impact that is deemed significant, mitigation measures will be developed and will be outlined in the Environmental and Social Management Plan (ESMP).

2. PROJECT INFORMATION

2.1 Project locality

The proposed gravel mining will take place near the Luderitz town in the Namib-Naukluft park.

Figure 2-1: Current Gravel Mining Activities – Luderitz Town Council

Figure 2-2: Current Gravel Mining Activities – Lüderitz Town Council

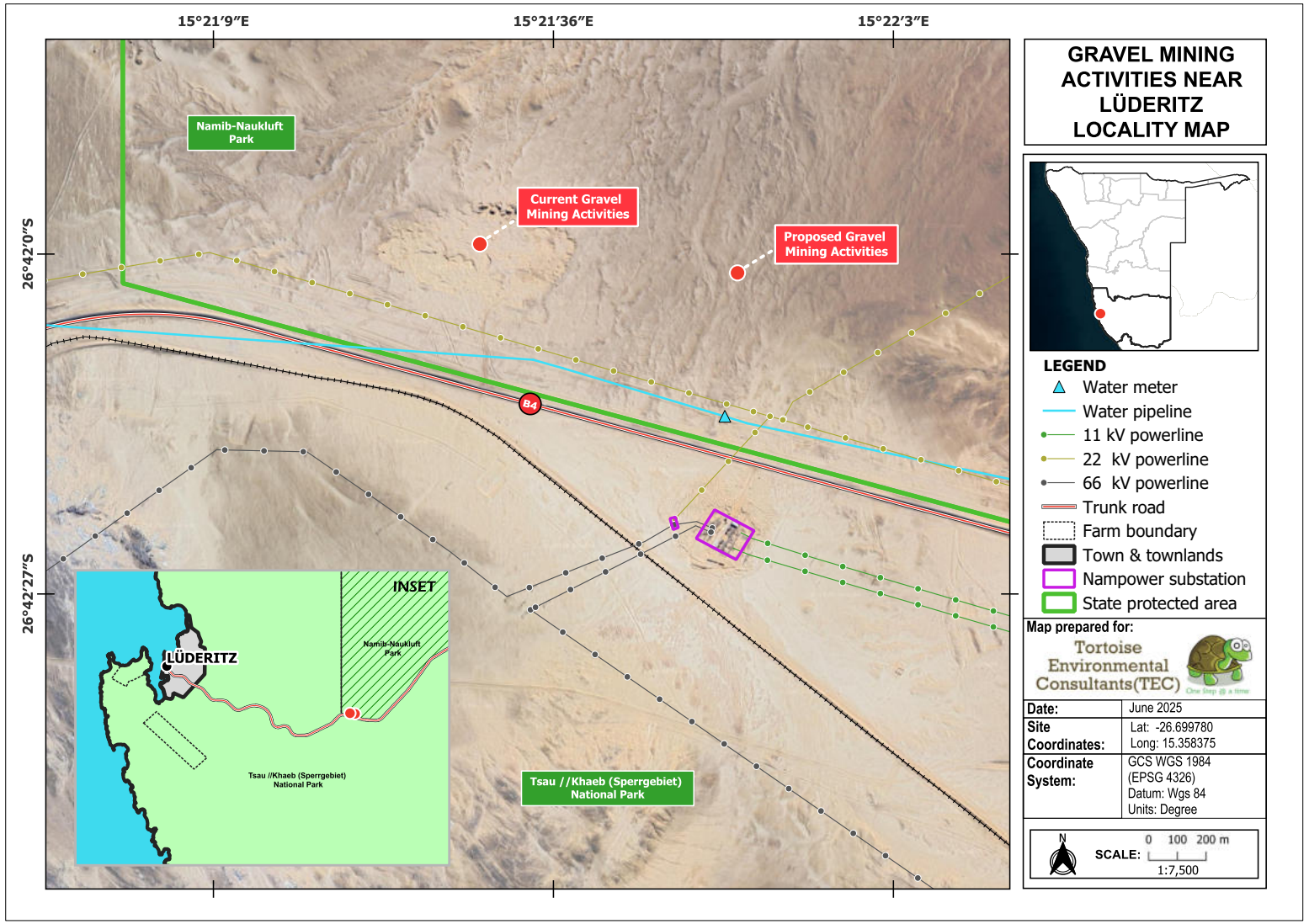

Figure 2-3: Location of the Current and Proposed Gravel Mining Sites

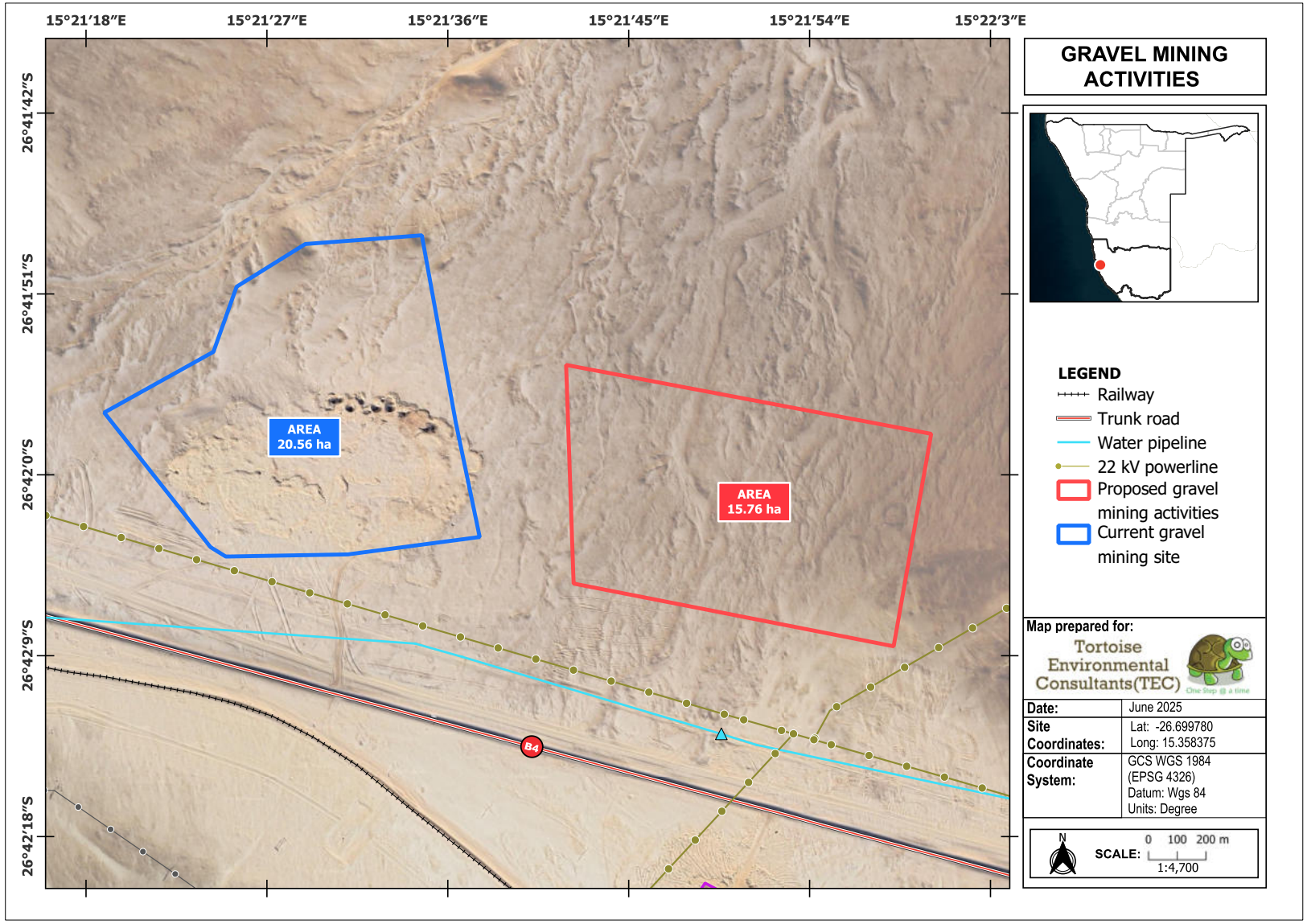

Figure 2-4: Layout and positioning of the Current and Proposed Gravel Mining Sites

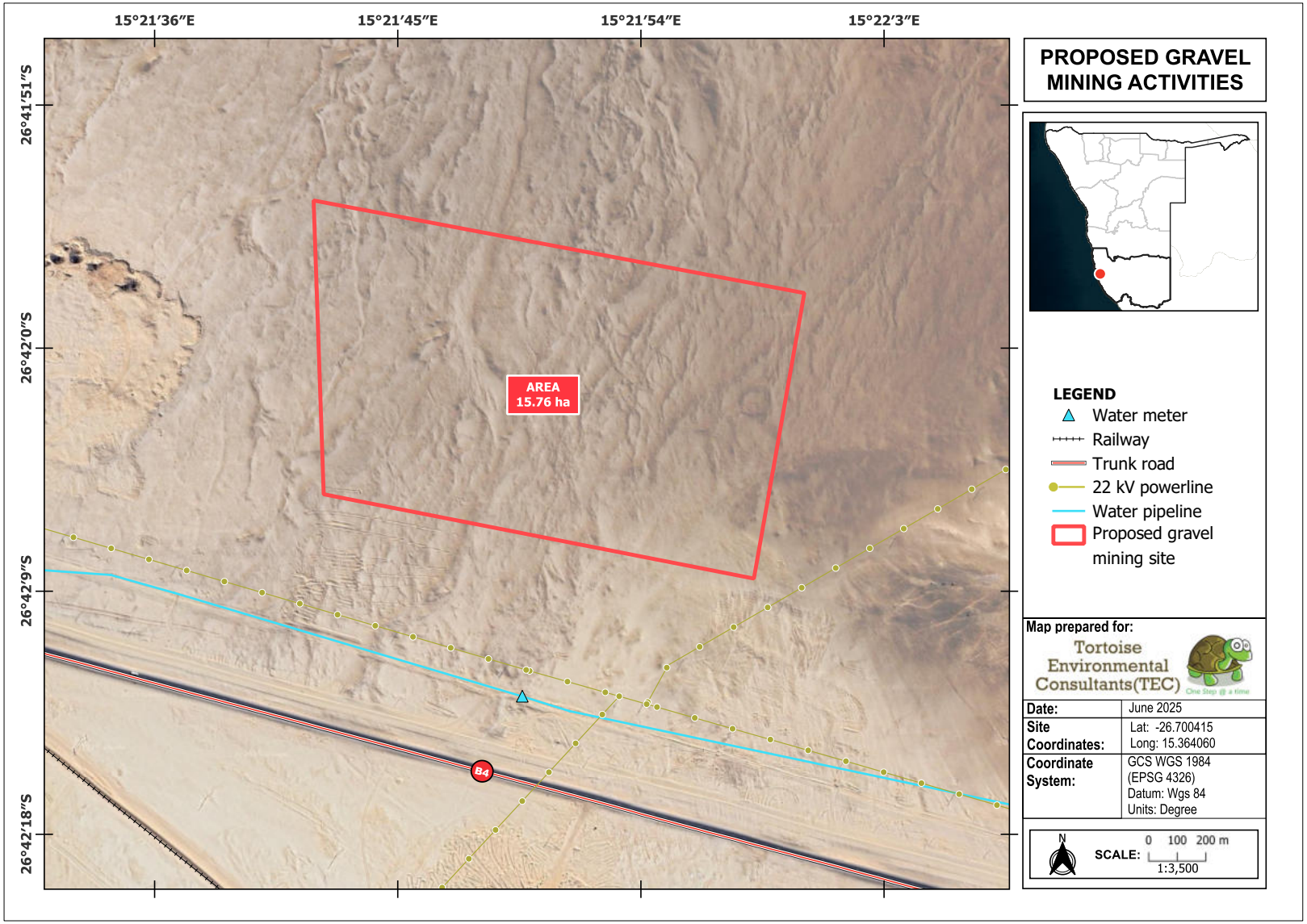

Figure 2-5: Proposed Gravel Mining Site – El Sonador Investment cc

2.2 Proposed Gravel Mining Site – El Sonador Investment cc

2.2.1 Surface Area

15.76 ha

2.2.2 Estimated Volume

Approximately 850,000 m^3

2.3 Sand Mining - Process

2.3.1 Sand mining machinery

The sand mining process entails the use of modern gravel mining equipment such as:

- Front loader / JCB / TLB (to load the sand in the tipper trucks)
- Tipper / Dump trucks (to transport sand)

The proponent would like to engage in the following socio-economic activities

- To supply General Construction industry

2.3.2 Sand mining – Phases

In order to limit environmental damages, it is recommended that the gravel mining should be conducted in phases.

The sand mining phases should be defined in accordance with the following elements:

- Specific area to mined,
- Season / Time of the year,
- Quantinty of material to be taken out,
- Harvesting technique

2.4 Socio-Economic Capacity

The proposed economic activities (sand mining, transportation and supply to the construction construction industry) have potential to create significant employment opportunities at different levels (un-skilled, skilled, qualified).

3. COMPLIANCE AND LEGAL FRAMEWORK

This chapter outlines the regulatory framework.

3.1 Compliance to the EMP

The EMP is binding to the proponent, and all contractors / sub-contractors. This implies that every entity that may have any kind of engagement or involved in/with the sand mining activities should comply with the EMP throughout the project lifespan. Non-compliance may have serious consequences e.g License withdrawal.

3.2 Environmental Management Act (No.7 of 2007)

Section 27 of the Environmental Management Act 2007 (Act No. 7 of 2007) (EMA) provides a list of activities that may not be undertaken without an Environmental Clearance Certificate (ECC) (herein referred to as: listed activities). The proposed mining activities triggers the following listed activities.

The EMP should conform to the provisions of the Environmental Management Act (EMA), Act No. 7 of 2007 and EIA regulations of 2012 (Government Notice: 30).

The EIA Regulations defines a '*Management Plan*' as:

"…a plan that describes how activities that may have significant impacts on the environment are to be mitigated controlled and monitored."

3.3 EMP Requirements

Table 3-1: EMP Requirements as outlined in Section 8 of the EIA Regulations

Requirement
(j) a draft management plan, which includes – *(aa) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;* *(bb) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and* *(cc) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.*

3.4 Listed Activities

The proposed project triggers a number of Listed Activities as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) (herein referred to as the EMA) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) (herein referred to as the EIA Regulations).

Listed Activities may not be undertaken without an Environmental Clearance Certificate (ECC), and hence an Environmental Impact Assessment (EIA) is required. The EIA entails the development of the EIA Scoping Report and Environmental Management Plan (EMP) which should be submitted to the MET as part of the application for the ECC.

Table 3-2: Listed Activities triggered by the proposed project

Listed Activity	Activity Description	Relevance to the proposed project
Activity 3: Mining and Quarrying Activities:	3.2 The Other forms of mining or extraction of any natural resources whether regulated by law or not	The project entails mining of gravel.

3.5 Legal Framework Relevant to the EMP

In addition to the EMA and the Environmental Assessment Policy, there exists a host of legal and policy documents and guidelines that must be considered when undertaking an EIA as indicated in table 5.3, below.

The proponent has the responsibility to ensure that the mining activities conform to all relevant National developmental plans and legal framework.

Table 3-3: Policies, Plans and Strategies

Policy / Plan	Relevancy/Summary	Applicability to the Proposed Project
5th National Development Plan (NDP) and Vision 2030	Outlines the country's national development ambitions, in line with the Harambee Prosperity Plan, and Vision 2030. NDP5 incorporates the principles and recommendations contained in the Stockholm Declaration on the Human Environment (1972) and associated Action Plan, as well as Agenda 21 which merged from the Convention on Biological Diversity, Rio De Janeiro (1992).	The proposed project is a development that forms part of the bigger picture of achieving economic progression, social transformation and environmental sustainability.

Table 3.2: National Statutes

National Statutes	Relevance/Summary	Applicability to the Proposed Project
Environmental Management Act, 2007 (Act No. 7 of 2007)	Promote sustainable use of natural resources based on the principles of environmental management. Regulates environmental clearance certificate for listed activities	Provides the framework for the EIA and development of mitigation measures outlined in the EMP
Pollution Control and Waste Management Bill (in preparation and adopted as best practice)	Intent to repeal the outdated Atmospheric Pollution Prevention Ordinance (11 of 1976).	Aim to regulate and prevent the discharge of pollutants into the environment (land, air and water).
Water Resources Management Act, 2013 (No. 11 of 2013)	Came in force in August 2023. Provide framework for managing water resources based on the principles of integrated water resource management (IWRM)	Section 44 – Regulates water abstraction licenses Section 68 – Prevent water pollution. Section 69 and 72 regulates and licensing of wastewater treatment plants and effluent discharge
Soil Conservation, (Act 76 of 1969) and Amendment (Act 38 of 1971)	Makes provision for the prevention and control of soil erosion	Through vegetation removal there may be the risk of affecting soil quality.
Forest Act 12 of 2001 Forest Act Regulations 2015	To provide for the protection of the environment and the control and management of forest.	Provision for the protection of protected or endangered plant species.
National Heritage Act, No. 27 of 2004.	The Act provides for the protection and conservation of places and objects with heritage / archaeological significance.	Potential for chance find of cultural heritage or archaeological artefacts
Public and Environmental Health Act (Act No. 1 of 2015)	The Public Health Act aims to protect the public from nuisance or other condition liable to be injurious or dangerous to health	The proponent should ensure that the workers are provided with protective gear to safeguard their wellbeing.
Labour Act No. 11 of 2007	Occupational Health is aimed at the promotion and maintenance of physical, mental and social wellbeing of workers in all occupations.	Prevent or manage work-related hazards and maintain healthy standards at the workplace and protection of workers against exploitations

4. RECEIVING ENVIRONMENT

The environmental baseline for the proposed project has been collected through a desktop study as well as a site assessment.

The assessment is categorised into two categories, the socio-economic aspect and physical and biological environment.

4.1 Socio – Economic Profile

4.1.1 Population and Demography

//Karas region is in the southern part of country, and it is geographically the largest region in Namibia, it covers a size of 161,395.01 km^2 and comprises of seven (7) constituencies (Namibia Statistics Agency , 2022).

The region's name comes from the local Nama word for "Quiver Tree," which is a symbol of the area.

According to the 2023 CENSUS data, the region has a population of 109,893 with Lüderitz having a population of 16,156 people (Namibia Statistics Agency, 2023).

4.1.2 Historical background of Lüderitz

Lüderitz is a historic harbour town located along the harsh but unique coastline of the Karas Region. While it has a modern port, the town is best known for its strong tourism appeal, rooted in its rich colonial and diamond mining history.
Founded in 1883 as a trading post by Adolf Lüderitz, the town developed rapidly following the discovery of diamonds in 1908. This period of wealth is reflected in its preserved colonial architecture, such as the historic Goerke Haus, and nearby sites like Kolmanskop, now a popular tourist attraction.

Lüderitz is surrounded by environmentally and historically significant features, including the restricted diamond of the Sperrgebiet National Park, diverse coastal wildlife (seals, penguins, flamingos), and scenic landmarks such as Bogenfels. The area also offers marine and heritage tourism experiences, including visits to islands, bird sanctuaries, and historic exploration sites like Dias Point.

4.1.3 Livelihoods

Livelihoods in Lüderitz are shifting from a traditional dependence on fishing, diamond mining, and tourism toward a fast-growing green economy (Copper Quall Global , 2025) & (The Namibian , 2025). Key activities now include small-scale fishing, aquaculture (such as abalone and proposed salmon farming), as well as major infrastructure developments like port expansion and green hydrogen projects (The Namibian , 2025).

4.2 Biodiversity and Ecology of the area

4.2.1 Succulent Karoo

The proposed site falls within within the Succulent Karoo Biome, which is renowned for its high species richness, of which 13.5% are endemic (means restricted to a particular area and does not occur anywhere else in the world, and it is one of the 35 globally recognized biodiversity hotspots (Burke, 2006).

Due to the high species richness and high level of endemism, the Succulent Karoo biome is fragile to developmental activities, because lack of control and reckless developmental activities can cause irreversible damage to the environment (particularly endemic plant species) (Tortoise Environmental Consultants, 2016). Therefore, the Succulent Karoo requires special attention, and precautionary measures should be applied to minimise negative impacts (Tortoise Environmental Consultants, 2016).

4.2.2 Climatic Conditions and Rainfall

The Succulent Karoo stretches along the coastal strip of southwestern Namibia and South Africa's Northern Cape Province, where the cold Benguela current offshore creates frequent fogs (Tortoise Environmental Consultants, 2016).

The Succulent Karoo climate and particularly the area surrounding the town of Lüderitz is very arid and is dominated by prevailing wind as a result of its proximity to the South Atlantic high-pressure system. In particular, the area around Lüderitz is characterised by prevailing wind throughout the year (more than 180 days per annum) and wind is very important for rehabilitation of the borrow pit (Tortoise Environmental Consultants, 2016).

The Succulent Karoo is characterised by low winter rainfall (average 40-90 mm per year). The amount of rainfall may vary from year to year. Because rain falls in the colder half of the year, the effect of evapo-transpiration is reduced and plants and animals can thrive at relatively low rainfall levels that would be too low to support similar populations in areas where the rain falls in summer. Lüderitz is located in the transitional zone between the summer and winter rainfall (Tortoise Environmental Consultants, 2016).

4.3 Physical environment

4.3.1 Topography and landscape

Lüderitz is defined by an arid, stark landscape where the Namib Desert meets the Atlantic Ocean. It is characterized by rocky coastlines, sandy bays, and high winds, with Lüderitz peninsula's inland area consisting of desolate, barren sand dunes, and coastal plains featuring very sparse vegetation.

5. IMPACT ASSESSMENT METHODOLOGY

5.1 EIA Methodology

The EIA methodology applied to this EIA has been developed using the Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008); international and national best practice; and over 20 years of combined EIA experience. The method of each step in the EIA process is described in the next sections.

5.1.1 Screening

As per the Draft Procedures and Guideline for Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) (Ministry of Environment and Tourism, 2008), the determination of a proposal and if it triggers a Listed Activity in the EMA is the first stage of the EIA process. The proposed project triggers several Listed Activities as per Section 1.4 and therefore an ECC is required.

5.1.2 Alternatives Considered

As stipulated in the Environmental Management Act (EMA) and EIA regulations, alternatives should be considered during the project design, to determine if an alternative site (different locality) or alternative project (different project) would yield better socio-economic benefits.

- **No-go alternative**

  The assessment of alternatives must at all times include the 'No-go' option as a baseline against which all other alternatives must be measured. The implication of the 'No-go' alternative on the socio-economic environment of the study area will simply be that none of the positive or negative impacts associated with the proposed activity will be realised. As the 'No-go' alternative is the baseline against which the other impacts are measured no impacts would result. For the sand mining project, the "No-go" alternative is therefore not a viable option.

5.1.3 Scope of Assessment

The Scoping Process is a fundamental stage in the EIA process. Through a high-level assessment, the likely effects and severity of effects as a result of the development and operations of a proposed project can be identified. Any likely significant effects are taken forward for further assessment (detailed EIA). This stage is important in the EIA process to enable the assessment to be concise and focus on key issues that are central to efficient decision making.

If no likely significant effects are anticipated, a detailed EIA is not undertaken and a Scoping Report detailing the high-level assessment is submitted as part of the ECC application.

As there was uncertainty around the potential effects and their severity, a scoping process was undertaken for the proposed development. The Draft Procedures and Guideline for Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) (Ministry of Environment and Tourism, 2008) were followed to undertake the scoping stage.

The baseline environment that could be affected by the project was reviewed and potential effects on receptors identified. Receptors under the following aspects were considered (Ministry of Environment and Tourism, 2008):

- Geology and soils
- Topography
- Groundwater and surface water resources
- Environmentally sensitive areas
- Air quality
- Sound levels
- Socio-economics
- Infrastructure services
- Cultural resources
- Project Economics

Embeded mitigation and industry best practice measures were considered in the review and conclusion drawn identifying those effects that needed to be assessed further due to the potential severity and significance.

The findings of the scoping process are presented in chapter 6.

5.1.4 Detailed Impact Assessment

Through scoping, potential significant effects were identified. These potential effects are then considered further to determine the level of significance and identify additional mitigation required to avoid, reduce, or compensate for the effect.

5.1.5 Impact Significance

The level of significance is identified through the assessment process in order to understand the potential severity of the effect and identify appropriate mitigation. The significance of effect after mitigation is also considered during the decision-making.

The significance of an impact is determined by considering and measuring the temporal and spatial scales and magnitude of the project and the specific activities associated with the project.

5.1.6 Impact Assessment Criteria

For each impact, the **EXTENT** (spatial scale), **MAGNITUDE** and **DURATION** will be described. These criteria are used to ascertain the **SIGNIFICANCE** of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure/s in place. The mitigation described in the Scoping Report and EMP would represent the full range of plausible and pragmatic measures.

Table 5-1: **Assessment criteria for the evaluation of impacts**

CRITERIA	CATEGORY	DESCRIPTION
Sensitivity or importance/value of receptor	**High**	Of value, importance or rarity on a national scale, and with very limited potential for substitution; and/or Very sensitive to change, or has little capacity to accommodate a change.
	Medium	Of value, importance or rarity on a regional scale, and with limited potential for substitution; and/or Moderate sensitivity to change, or moderate capacity to accommodate a change
	Low	Of value, importance or rarity on a local scale; and/or Not particularly sensitive to change, or has considerable capacity to accommodate a change.
Extent or spatial influence of impact	**National**	Beyond a 20km radius of the site
	Regional	Within a 20 km radius of the site
	Local	Within a 2 km radius of the centre of the site
	Site specific	On site or within the boundaries of the property
	Zero	
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very Low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Zero**	Zero time
	Short Term	Up to 18 months
	Medium Term	0-5 years (after operation)
	Long Term	5- 10 years (after operation)
	Permanent	More than 10 years (after operation)
Probability	**Definite**	Estimated greater than 95 % chance of the impact occurring.
	Very likely	Estimated 50 to 95% chance of the impact occurring
	Fairly likely	Estimated 5 to 50 % chance of the impact occurring.
	Unlikely	Estimated less than 5 % chance of the impact occurring.

CRITERIA	CATEGORY	DESCRIPTION
	Zero	Definitely no chance of occurrence
Confidence	**Certain**	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
	Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
	Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.
Reversibility	**Irreversible**	The activity will lead to an impact that is permanent.
	Reversible	The impact is reversible, within a period of 10 years.

5.1.7 Impact Severity

Impact severity = impact significance. The impact significance is determined using a risk matrix **(below).**

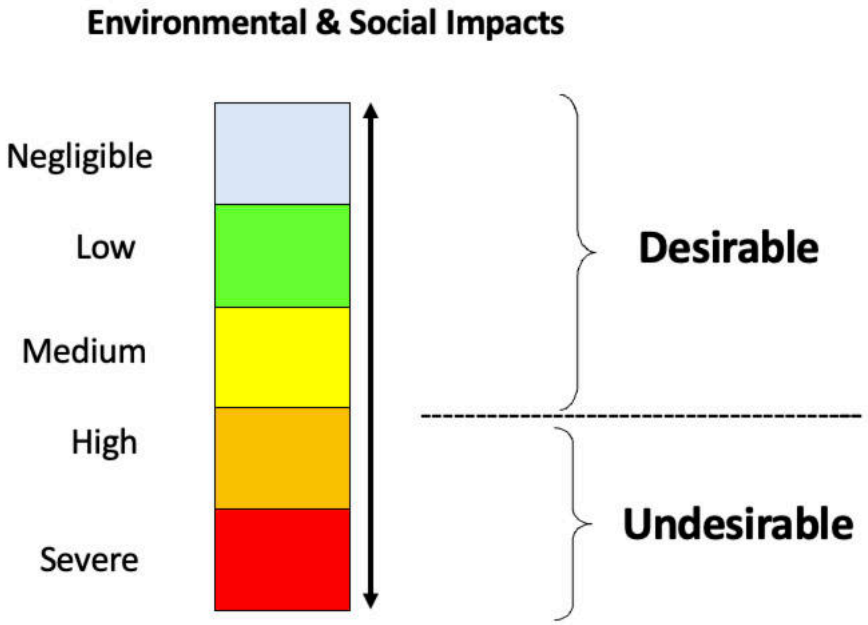

Figure 5-1: Impact Assessment Scale (Source: TEC, 2025)

5.1.8 Impact Significance

The significance of an impact is identified determined by qualifying the potential severity of the effect, before and after mitigation. The impact significance after mitigation should be considered during the decision-making process.

The significance of an impact is determined by assessing the magnitude of scale (both temporal and spatial.

Significance is not defined in the Namibian EIA Regulations, however the Draft Procedure and Guidance for EIA and EMP states that the significance of a predicted impact depends upon its context and intensity and qualified into the following categories, as guided by literature:

- **High**: effects associated with features or resources of national importance and, if lost, cannot be replaced, and thus likely to be key decision-making factors.
- **Medium**: effects associated with the features or resources of regional importance, but which are unlikely to be key decision-making factors.
- **Low**: effects considered to be local importance, but unlikely to be critical to decision-making factors.

Impact significance is determined by multiplying the potential severity of the effect, and qualitative assessment of the receptor sensitivity and magnitude of change. If effects garner a severity score, they are considered to be significant.

For significant impacts, supplementary assessments / Specialist studies may be required to further enhance understanding on the consequences (e.g through modelling or other assessment techniques) and identification of appropriate mitigation measures to reduce the effect.

5.2 Assessment of Cumulative Impacts

The Environmental Assessment Policy in Namibia requires cumulative environmental impacts to be considered in all environmental assessment processes.

Cumulative impacts can arise when a single resource or receptor is affected by more than one impact or activity of the proposed project. For example, the view of a local resident's property could be altered through the construction phase of the proposed development and noise levels could increase due to excavation activities. In isolation, the impacts may be insignificant, however when combined, the impacts on the local resident may result in a significant impact.

Cumulative impacts may also arise as a result of the combination of two or more projects on the same receptor. The receptor could be affected by the same activities of these projects resulting in the same impact or by completely different activities resulting in different impacts. An example of this is as follows; dust generated during the construction stage of the proposed project may not cause a significant effect in isolation; however, a sensitive receptor (e.g. local resident) may be significantly impacted when dust from the proposed project is combined with noise generated from other projects.

A high-level cumulative impact assessment has been undertaken for the proposed project as part of the scoping phase as the anticipated effects are expected to be local and of minor significance. If effects were determined to be significant, a detailed EIA would be required.

5.3 Mitigation Measures

For each impact assessed during the scoping phase and detailed assessment, mitigation measures are identified to reduce and/ or avoid negative impacts. These mitigation measures are also incorporated in the EMP to ensure that they are implemented throughout the lifespan of the proposed project. The EMP forms part of the Scoping Report, and upon project approval, the implementation thereof, would become a binding requirement.

5.3.1 Mitigation Hierarchy

Actions to mitigate a potential impact can be done in as systematic manner as guided by what is referred to as Mitigation Hierarchy (Figure 4.1).

From the onset, the positive impacts of the proposed project should be **enhanced**, however, where an impact in is inevitable, the following sequence should be followed.

Impact avoidance: This step is most effective when applied at an early stage of project conceptualization and planning. It can be achieved by:

- Not undertaking certain projects or elements that could result in adverse impacts;
- Avoiding areas that are environmentally sensitive; and
- Putting in place preventative measures to stop adverse impacts from occurring.

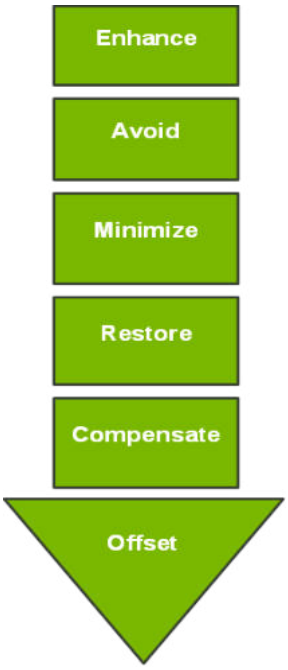

Figure 5-2 - Mitigation Hierarchy

Impact minimisation: This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- Scaling down or relocating the proposal;
- Redesigning elements of the project; and
- Taking supplementary measures to manage the impacts.

Impact compensation: This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- Rehabilitation of the affected site or environment, for example, by habitat enhancement;
- Restoration of the affected site or environment to its previous state or better; and
- Replacement of the same resource values at another location (off-set), for example, by wetland engineering to provide an equivalent area to that lost to drainage or infill.

6. ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT

6.1 Socio-Economic Impacts

Namibia has one of the highest unemployment rates in the world. According to the Namibia Statistics Agency (NSA, 2025), the official unemployment rate in 2024 is estimated at 37% of the labour force, and the majority (47%) of the unemployed is the youth (including graduates from Universities and Vocational Training Centres).

However, economists from independent institutions dispute the Government or NSA's estimate of 37%, arguing that NSA has changed the "Unemployment Definition" and that the unemployment rate in Namibia is much higher. In a Newspaper Article dated 01 February 2025, Tannan Groenewald from Cirrus Capital data and analytics, argues that if the broad definition of unemployment historically used is applied, only about 46.2 of the working-age population is employed and the true unemployment stands at 54.8%.

6.1.1 Employment opportunities

Impact category	The project will create Short-term Employment Opportunities for locals

Negative impacts	Key measures to maintain or improve +ve impacts
• High unemployment • Poor livelihoods	• Prioritise job opportunities for locals during the operational phase • Provide on-site training and fair wages

Before Project Commencement							After project commencement						
Impact type	Extent	Magnitude	Duration	Probability	Confidence	Significance	Impact type	Extent	Magnitude	Duration	Probability	Confidence	Significance
-Ve	Local	Medium	Medium-term	Very likely	Sure	High	+Ve	Local	Medium	Long-term	Definite	Certain	Low

Monitoring			
Monitoring Aspects	**Frequency**	**Responsibility**	**How**
• Number of new employment opportunities created	Quarterly	Contractor / Site manager	Employment records and database
• Number of local people employed			
• Compliance with labour laws		Ministry of Labour / Contractor	Labour inspection reports

6.1.2 Local economic growth

Impact category	Establishment of new businesses and increase in investment opportunities

Negative impacts	Key measures to maintain or improve +ve impacts
• Poor local economy, household incomes and livelihoods	• Improvement in household incomes and livelihoods • Stimulate micro-enterprises and increase demand for local goods.

Before Project Commencement							After project Completion						
Impact type	Extent	Magnitude	Duration	Probability	Confidence	Significance	Impact type	Extent	Magnitude	Duration	Probability	Confidence	Significance
-Ve	Local	Medium	Medium-term	Very likely	Sure	High	+Ve	Local	Medium	Long-term	Definite	Certain	Low

Monitoring			
Monitoring Aspects	**Frequency**	**Responsibility**	**How**
• Income levels and livelihood improvements	Annually	Local authority Proponent	Household surveys and physical observations

6.2 Operational related impacts

6.2.1 Vegetation clearance

Impact source	Site clearance and excavation with heavy and mobile equipment						**Key Mitigation Measures:** • Adherence to site vegetation clearance checklist/procedure • i.e. avoid removal of protected tree species which do not directly affect the construction • explore option to relocate and replant some plants such as aloe plants							
Classification	Vegetation clearance													
Potential Negative Impacts: • Unselective removal of protected tree species on the project site														
Without Mitigation							**With Mitigation**							
Impact type	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**	**Impact type**	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**
-ve	**Definite**	**Local**	**Short-term**	**Severe**	**No**	**Medium**	**+ve**	**Definite**	**Site specific**	**Short-term**	**Low**	**Yes**	**Low**
Qualitative assessment							**Qualitative assessment**						
Monitoring Program													
Monitoring Aspects					**Frequency**		**Responsibility**					**How**	
• Number of trees species removal versus species saved • Number of trees or plant species relocated and successfully replanted					Weekly / Monthly		Site manager Authority (Environmental Compliance Officer)					Physical observations	

6.2.2 Risk of accidents and safety hazards

<table>
<tr><td colspan="2">Impact source</td><td colspan="5">Sand mining (excavation)</td><td colspan="7" rowspan="2">Key Mitigation Measures:
• Smoothen the pit edges to ensure that the angles are not steep sloped, but rather gentle sloped at less than < 30° slope angles.
• The mining site should be fenced off, demarcated and there should be warning signs.</td></tr>
<tr><td colspan="7">Potential Negative Impacts:
• Dangerous Vertical / Steep borrow pit slopes (>30°)
• Risk of animals and people falling into the pits (tipping slopes)
• Steep slopes make it difficult for animals and people to move in and out and the borrow pits
• Risk of drowning or getting stuck in mud (especially during rainy season)</td></tr>
<tr><td colspan="7">Without Mitigation</td><td colspan="7">With Mitigation</td></tr>
<tr><td>Impact type</td><td>Probability</td><td>Extent</td><td>Duration</td><td>Severity</td><td>Reversible</td><td>Significance</td><td>Impact type</td><td>Probability</td><td>Extent</td><td>Duration</td><td>Severity</td><td>Reversible</td><td>Significance</td></tr>
<tr><td>-ve</td><td>Definite</td><td>Local</td><td>Short-term</td><td>Severe</td><td>No</td><td>Severe</td><td>+ve</td><td>Definite</td><td>Site specific</td><td>Short-term</td><td>Low</td><td>Yes</td><td>Low</td></tr>
<tr><td colspan="7">Qualitative assessment</td><td colspan="7">Qualitative assessment</td></tr>
<tr><td colspan="14">Monitoring Program</td></tr>
<tr><td colspan="5">Monitoring Aspects</td><td colspan="3">Frequency</td><td colspan="4">Responsibility</td><td colspan="2">How</td></tr>
<tr><td colspan="5">• Steepness of borrow pit edges
• Safety measures (signage/ fencing)</td><td colspan="3">Monthly</td><td colspan="4">Contractor / Site manager
Authority (Environmental Compliance Officer)</td><td colspan="2">Physical observations
Community feedback</td></tr>
</table>

6.2.3 Dust

Impact source	Excavation with heavy mobile equipment and transportation of sand	**Key Mitigation Measures:** • Adherence to site standard/safe operating procedure (cover trucks when transporting sand) • Identify and implement appropriate Personal Protective Equipment (PPEs) as a result resort to prevent or reduce exposure to workers • Dust suppression • Speed limit as per existing site policy
Potential Negative Impacts: • Employee exposure to contaminated dust • Dust emission to environment with potential increase background dust emission		

Without Mitigation							**With Mitigation**						
Impact type	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**	**Impact type**	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**
-ve	**Definite**	**Local**	**Short-term**	**Severe**	**No**	**High**	**+ve**	**Definite**	**Site specific**	**Short-term**	**Low**	**Yes**	Low
Qualitative assessment							**Qualitative assessment**						

Monitoring Program			
Monitoring Aspects	**Frequency**	**Responsibility**	**How**
• Dust fallout and dust chemical analysis • Workers exposure to dust • Community dust complaints	Weekly / Monthly	Contractor / Site Manager Authority (Environmental Compliance Officer)	• Laboratory analysis • Use of respirable dust samplers, PPE audits • Complaint registers

6.2.4 Noise from Earthmoving Equipment

Impact source	Excavation works	**Key Mitigation Measures:** • Where possible, install silencer in machinery exhaust to reduce noise levels • Avoid working late at night or under bad weather (heavy rain or wind) • Provide earmuffs to workers in high-noise zones • Prevent abnormal noise from earthmoving machinery *(below the recommended noise levels of -85dB (A)).*
Potential Negative Impacts: • Abnormal and excessive noise is not just a nuisance, but can lead to health issues (hearing, poor sleep, fatigue, etc)		

Without Mitigation							**With Mitigation**						
Impact type	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**	**Impact type**	**Probability**	**Extent**	**Duration**	**Severity**	**Reversible**	**Significance**
-ve	**Definite**	**Local**	**Short-term**	**Severe**	**No**	**High**	**+ve**	**Definite**	**Site specific**	**Short-term**	**Low**	**Yes**	**Low**
Qualitative assessment							**Qualitative assessment**						

Monitoring Program			
Monitoring Aspects	**Frequency**	**Responsibility**	**How**
• Noise levels (dB) near machinery • Worker exposure • Community complaints on noise	Monthly	Contractor / Site Manager Authority (Environmental Compliance Officer)	• Decibel meter readings • PPE compliance audits • Maintain log of complaints

8. CONCLUSION

The environmental assessment employed standard EIA Methodology, National regulatory framework and best practices.

Appropriate mitigation measures have been identified for all social and environmental receptors.

On that basis, TEC recommends issuance of an ECC, on conditions that the management and mitigation measures specified in the ESMP are implemented and adhered to.

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9. APPENDICES

APPENDIX (1): ESMP

APPENDIX (2): Comments and Response Report