ENVIRONMENTAL MANAGEMENT PLAN FOR THE ONGOING SAND MINING ACTIVITIES FOR THE ORANJEMUND TOWN COUNCIL, //KARAS REGION

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DOCUMENT INFORMATION

Project Name	Ongoing Sand Mining activities in Oranjemund
Location	Oranjemund
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Report Type	Environmental Management Plan (EMP)
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TABLE CONTENTS

LIST OF ABBRECIATIONS

DEA:	Department of Environmental Affairs
DoF:	Directorate of Forestry
DRP:	Decommissioning and Rehabilitation Plan
EAP:	Environmental Assessment Practitioner
ECC:	Environmental Clearance Certificate
ECO:	Environmental Control Officer
EHP:	Environmental Health Practitioner
EIA:	Environmental Impact Assessment
EMA:	Environmental Management Act
EMP:	Environmental Management Plan
FEL:	Front-End-Loader
GPS:	Global Positioning System
I&APs:	Interested and Affected Parties
MAWLR:	Ministry of Agriculture, Water and Land Reform
MEFT:	Ministry of Environment, Forestry and Tourism
MURD:	Ministry of Urban and Rural Development
ORTC:	Oranjemund Town Council
TLB:	Tract-Loader-Bucket

1. INTRODUCTION AND BACKGROUND

The Oranjemund Town Council (ORTC) herein after referred to as the proponent was issued with an ECC for the Sand mining Activities on area within its Townlands. The ECC was issued on 2021-02-09 and expired in 2024-02-09. Sand is an important element for township development (construction of roads housing, landscaping, etc), and it is one of the key building blocks for socio-economic development, and hence sand mining is inevitable (cannot be avoided).

As such, the Oranjemund intends to continue with the sand mining activities and require a new ECC for continued operations. In line with the Environmental Management Act 07 of 2007 and its Regulations for February, the ORTC has appointed Green Gain Consultants cc to update the Environmental Management Plan (EMP) and subsequently apply for the renewal of the expired ECC.

The purpose of the EMP report is to proactively address potential problems before they occur. This will ensure that unnecessary damage to the environment during the mining period is avoided. Moreover, mitigation measures will be implemented to minimize environmental degradation. The EMP provides environmental guidelines to be followed throughout the lifespan of the sand mining activities and comprise of the following:

a) Environmental Aspects,

b) Management Objective,

c) Mitigation Measures / Actions Required,

2. SCOPE AND OBJECTIVES OF THE EMP

The Environmental Management Plan study report includes an impact assessment and their mitigation measures of the proposed project following:

The field investigations (site assessment) ,

- Identifying and involving all stakeholders in the Environmental Management Plan report process by expressing their views and concerns on the proposed project;
- Identifying all potential significant adverse environmental and social impacts of the project and recommend mitigation measures to be well described in the chapters in this report.
- Coordination with the proponent, regarding the requirements of law of Namibia's Environmental Management Act (No. 7 of 2007) and other relevant policies and administrative framework.
- A review of the policy, and relevant legislation
- To provide overall assessment information of the social and biophysical environments of the affected areas by the proposed development.

This environmental management plan (EMP) aims to take a proactive route by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigating measures might be included if necessary.

The objectives of this project are as follow:

- To recommend the activities for mitigation of pollution like air, water, soil, noise, ecology and social affect.
- To ensure that sand extraction will be carried out in a sustainable way.
- To provide employment opportunities to the locals

The project activities influencing the following environmental attributes have been studied and their impacts on the following attributes have been assessed.

- Air Environment
- Water Environment
- Land Environment
- Noise Environment
- Biological Environment
- Socio-Economic Environment

3. DESCRIPTION OF ACTIVITIES

3.1. Locality

The sand mining borrow pit is located within the town boundaries, on the outskirts of the town's built-up area.

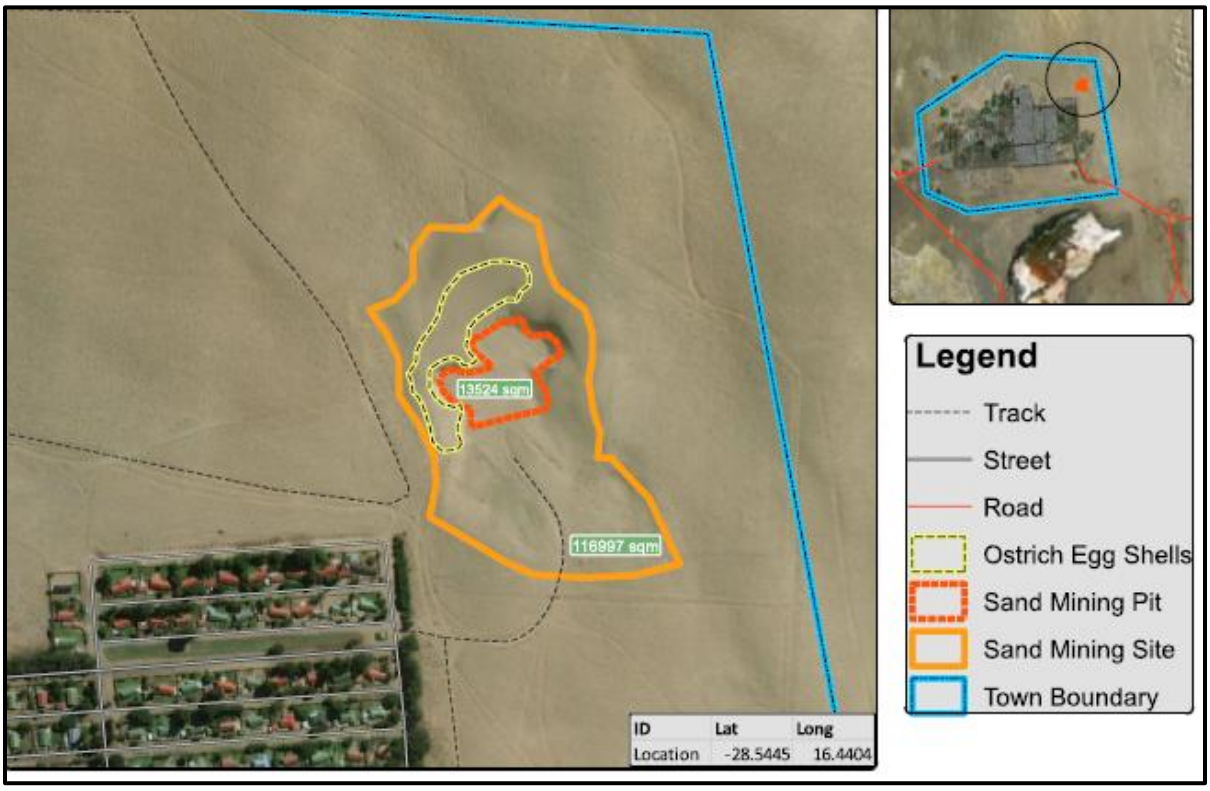

Figure 1 Locality map for Sand Mining Activities (Source: TEC, 2021):

3.2. Site Description

The sand mining area is located within the Tsau //Khaeb (Spergebied) National Park (TSNP) which has a land size equal to 26,000 km2 x 100 = 2,600,000 ha (2.6 million ha). The affected area is only 11.7 ha / 2,600,000 ha = **0.000005%** for which biodiversity loses may occur.

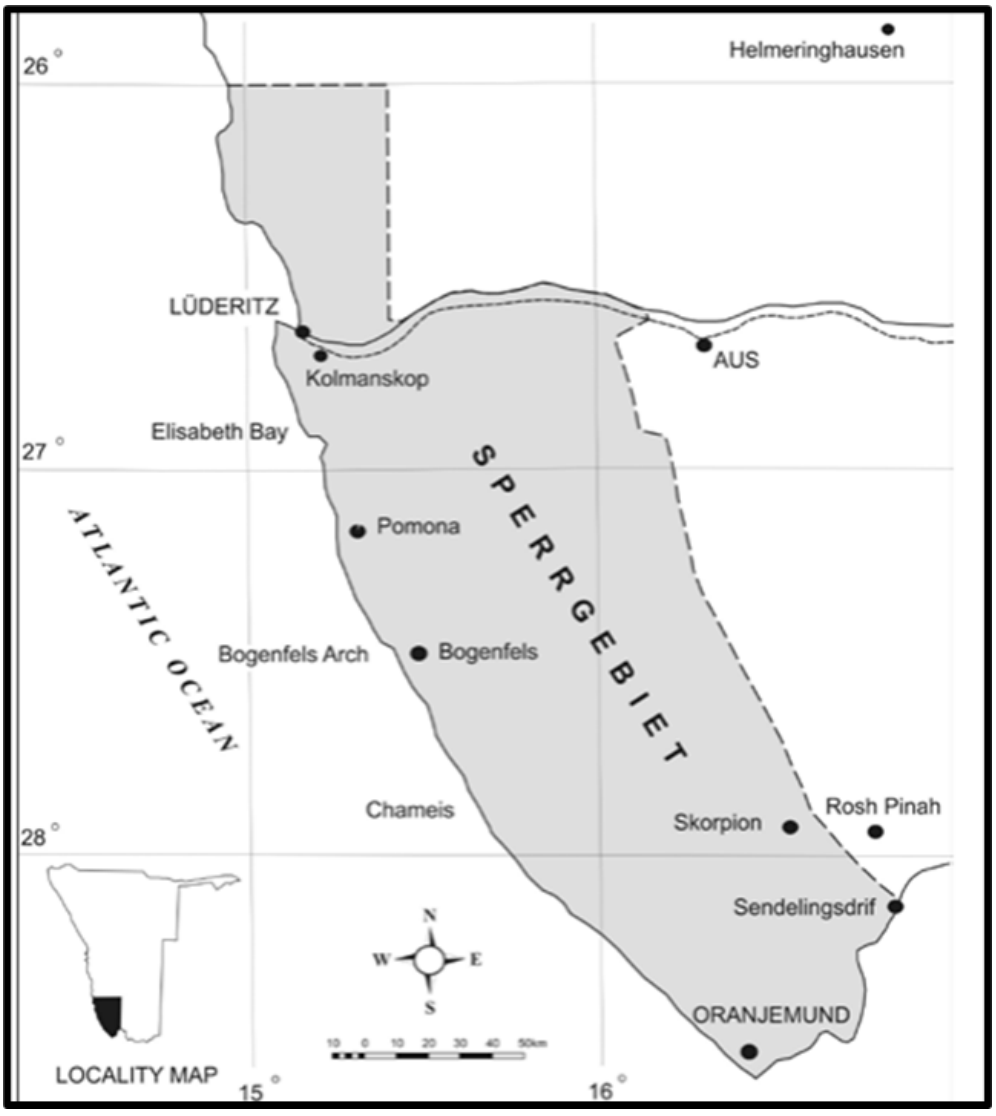

Figure 2:map of TSNP

There is no vegetation within the sand mining area and its immidiate surrounding. Wildlife species such as gemsbok, springbok and ostrich occur in and around the town of Oranjemund, with minimal or no apparent disturbance from the sand mining activities.

3.3. Operational procedures

The sand mining site measures 116,997 m2 / 10,000 = **11.7 ha** and the existing borrow pit (mined area), measures 13,524 m2 / 10,000 = **1.4 ha**

Figure 3: Sand mining site overview

The sand mining activities are done through an opencast mechanized mining project to excavate sand in its existing form for direct usage as a construction material for infrastructure development. The process of obtaining sand from the site follow a basic procedure as follows

- **Excavation** by means of mechanized equipment (TLB or Frond-End Loader) to excavate sand from designated areas, typically on a phased basis.
- **Loading** of the excavated sand into trucks or dumpers
- **Transportation** of mined sand directly to buyers or at the construction site using only designated routes.

3.4. Need and desirability of the activities

Sand is an important element for township development (construction of roads housing, landscaping, etc), and it is one of the key building blocks for socio-economic development, and hence sand mining is inevitable (cannot be avoided).

Sand has become a very important mineral for our society due to its many uses. It can be used for making concrete, filling roads, building sites, brickmaking, sandpapers, reclamations, and etc. This proposed Sand Mining project is an economic activity mainly for brick making, construction etc. It has the potential to create more than or about fifteen (15) employment opportunities at different levels (unskilled, skilled, qualified). The land is currently undeveloped with old existing sand mining pits.

Individuals and private companies are increasingly demanding sand for construction purposes, and this has placed immense pressure on sand resources. It is a practice that is becoming an environmental issue as the demand for sand increases in industry and construction.

4. POLICY AND OTHER RELEVANT LEGISLATIONS

The following are the legal instruments that govern or advocate Sand Mining Activities:

SUBJECT	INSTRUMENTS AND CONTENT	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	*General human rights – eliminates discrimination of any kind* *The right to a safe and healthy environment* *Affords protection to biodiversity*	*Ensure these principles are enshrined in the documentation of the exploration project*
Environmental Management Act EMA (No 7 of 2007)	*Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.*	➢
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 487	*Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).*	➢
Forestry Act No 27 of 2004	*Provision for the protection of various plant species*	*Some species that occur in the area are protected under the Forestry Act and a permit is therefore required to remove the species*
Hazardous Substances Ordinance 14 of 1974:	*Control of substances which may cause injury or ill-health or death of human beings because their toxic, corrosive, irritant, strongly sensitizing or flammable nature*	*The waste generated on site and at the campsite should be suitably categorised/classified and disposed of properly and in accordance with the measures outlined in the Ordinance and Bill*
The Nature Conservation Ordinance (No. 4 of 1975)	*Prohibits disturbance or destruction of protected birds without a permit. Requires a permit for picking (the definition of "picking" includes damage or destroy) protected plants without a permit*	*Protected plants will have to be identified during the planning phase of the project. In case there is an intention to remove protected species, then permits will be required*
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	*Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). Prohibits the removal of and transport of various protected plant species.*	*Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.*
Convention on Biological Diversity, 1992	*Protection of biodiversity of Namibia*	*Conservation-worthy species not to be removed if not absolutely necessary.*
Water Act 54 of 1956 **Water Resources Management Act 24 of 2004**	*The Water Resources Management Act 24 is presently without regulations; therefore the Water Act 54 is still in force* *The Act provides for the management and protection of surface and groundwater resources in terms of utilisation and pollution*	*Obligation not to pollute surface water bodies*

National Heritage Act 27 of 2004	*Section 48(1) states that "A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object*	*Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the National Heritage Council for relocation*
Labour Act 11 of 2007	*Details requirements regarding minimum wage and working conditions (S39-47).*	*Employment and work relations*
Health and Safety Regulations GN 156/1997 (GG 1617	*Details various requirements regarding health and safety of labourers.*	*Protection of human health, avoid township establishment at areas that can impact on human health.*
Public Health Act 36 of 1919	*Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."*	*The Ruacana Town Council should ensure that all contractors involved during the construction, operation and maintenance of the proposed project comply with the provisions of these legal instrument*
Water Act 54 of 1956	*The Water Resources Management Act 24 of 2004 is presently without regulations; therefore the Water Act No 54 of 1956 is still in force:* *Prohibits the pollution of underground and surface water bodies (S23(1)).* *Liability of clean-up costs after closure/ abandonment of an activity (S23(2)).*	*The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon spills during operation and maintenance.*

5. MANAGEMENT PRINCIPLES

These guideline principles will form the basis for environmental management on site. Should these principles require modification or additions during the project this should be done at the discretion of the responsible person, who will ensure that any modifications are communicated, explained to and discussed with all affected parties, the contractors, service providers, and any affected party who requests this information).

The environmental operational procedures and environmental issues are identified and managed, under different phases of the project. The different phases are:

- Operational Phase; and
- Decommissioning Phase

5.1. Environmental Issues to be managed

5.1.1. Pre-mining Phase of the new pits to be designed

- The Ministry of Environment and Tourism (MET) must be notified:
- Within 30 days, of change of ownership / developer.
- Of any change of address of the owner / developer.
- One month prior to commencement of operation with the mining activities.
- The owner / developer must ensure to comply with the conditions described in the Record of Decision.
- If required by the Record of Decision, advertise the authorisation for one day for two consecutive weeks in two local newspapers.
- Records of all environmental incidents must be maintained, and a copy of these records be made available to the Ministry of Environment and Tourism (MET) on request throughout project execution.

5.1.2. Operational Phases

Unless otherwise indicated, the responsibilities of the construction contractor(s) and service providers will adhere to specified EMP actions for the construction phase (clearance and fencing). During the operational phase, Oranjemund Town Council will ensure that the following actions are implemented by establishing accountability and responsibility between the different role players.

6. ROLES AND RESPONSIBILITIES

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP.

6.1. Competent Authority

The Department of Environmental Affairs: Ministry of Environment, Forestry and Tourism (MEFT) is responsible for the review of the EMP documents it is the competent authority.

The role of the applicant is as follows:

Oranjemund Town Council as it is the applicant, should hire suitably qualified person(s) and assign them with the responsibility to ensure implementation of the EMP, and should:

- Know the contents and implications of the EIA and monitor the implementation of EIA findings using the EMP.
- Revise the EMP as required and inform the relevant parties of the changes.
- The applicant should review report regarding the implementation of the EMP and make payments to the Contractor if the EMP is being implemented in a satisfactory manner.
- Give warnings and impose fines and penalties on the Contractor if the Contractor neglects to implement the EMP satisfactorily**.**
- Protect the environment and rehabilitate the environment as prescribed in the EMP.

6.2. Project Manager

The Applicant will appoint the Project Manager. The role of the project manager will be:

- Liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting the conditions documented in the environmental clearance certificate.
- Bear the overall responsibility for managing the project contractors and ensuring that the environmental management requirements are met.
- Inform the contractors of the EMP and Environmental clearance certificate obligations.
- Approve all decisions regarding environmental procedures and protocols that must be followed.
- In consultation with the Environmental Control Officer (ECO) has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- Maintain open and direct lines of communication between the proponent, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters.
- Attend regular site meetings and inspections where required.

6.3. Environmental Control Officer

An Environmental Control Officer (ECO) should be employed by the Contractor. This person should be available for the duration of the mining period and should have appropriate training and experience in the implementation of the EMP and overseeing mining process and activity. The responsibilities of the ECO include the following: Assist the Project Manager and Contractor in finding environmentally responsible solutions to challenges that may arise.

- Conduct environmental monitoring as per EMP requirements.
- Monitor performance of the contractors and ensure compliance with the EMP and associated method statements.
- Maintenance, update and review of the EMP.
- Liaison between the contractors, authorities and other key stakeholders on all environmental concerns.
- Validating regular site inspection reports which are prepared by the Contractor's Environmental Officer (EO).
- Checking the EO's record of environmental incidents as well as corrective and preventative actions taken.
- Checking the EO's public complaints register in which all complaints are registered and actions taken thereof.
- Issuing site instructions to the contractors ECO for corrective actions required.
- Assisting with the resolution of conflict.
- Communicate all amendments of the EMP to the relevant stakeholders.
- Conduct monthly audits to ensure that the system for implementing the EMP is effective.

6.4. Contractor's Safety Officer

- Implement the recommendations given and satisfy the conditions in the RoD.
- Ensure that safety is practiced for all activities on site.
- Prepare and implement safety procedures
- Communicate all safety related issues.

6.5. Contractors

The contractor should appoint the Contactor's representative who is suitably qualified to implement the EMP. The responsibilities of the Contractor include:

- Compliance with the relevant legislation and the EMP.
- Preparation and submission to the proponent through Project Manager the following Management Plans prior to commencing work:
- Environmental Awareness Training and Inductions;
- Emergency Preparedness and Response;
- Waste Management; and
- Health and Safety.

Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement; the ECO is to provide the course content and the following topics, at least but not limited to, should be covered:

The importance of complying with the relevant Namibian, International and Best Practice Legislation.

- Roles and Responsibilities, including emergency preparedness.
- Basic Rules of Conduct (Do's and Don'ts).
- EMP: aspects, impacts and mitigation;
- Fines for Failure to Adhere to the EMP;
- Health and Safety Requirements.
- Record keeping of all environmental awareness training and induction presentations; and
- Attend regular site meetings and environmental inspections.

7. IMPACTS OF SAND MINING & MITIGATION

All development projects have an impact on surrounding environment. These impacts may be beneficial or adverse, depending on the improvement or the deterioration it brings about in the status of air, water, land, ecology, natural systems, socio-cultural lifestyles and economics of the local population.

7.1. The impacts of the Mining (Operational) Phase

The bulk of the impacts during this phase will have immediate effects (e.g. noise, dust and water pollution). If the site is monitored on a continual basis during the construction or operation phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management from the developer.

7.2. Historical Monuments

No ecological sensitive areas are present in the study area.

Mitigation measures

- During the mining activities, the contractor might come across archaeological features or objects that possess cultural values. If archaeological remains or objects with cultural values (e.g. Pottery, bones, shells, ancient clothing or weapons, ancient cutlery, graves etc) are uncovered at the project location or surrounding, it should be cordoned off and the relevant authorities should be contacted immediately.

7.3. Land environment

Project location does not fall under any forest land, and it is an already existing project in an open area with no fence. Mining of sand may cause a few environmental degradations due to the fact that there is no removal of vegetation such as plants, bushes in the project area.

Mitigation measures

- The site will be fenced off to prevent animals from entering the site and fall in the pits.
- There will be a security officer to control the site and illegal sand mining.

7.4. Water environment

There will be no change in the water quality as the site is far from the shallow pan which seems to be closer to the site. The major source of surface water pollution due to sand mining is insignificant.

- Mining activities will be restricted to 4m deep or 1 m above the groundwater table
- No diversion proposed. There will not be any adverse impact on flow pattern, surface water hydrology and groundwater regime.
- Wastewater discharge will not cause any harm to the environment since there will be portable bio-toilets to be used at the site hence, no sewage/liquid effluent will be generated, and contamination is also not expected due to percolation.

7.5. Water supply

This project will not require much water for operation, although it will require water for suppression and drinking water for few people who will be working on this project.

7.6. Air environment

Generally, major sources of air pollution from the sand mining projects are dust generated due to loading and transportation of the mined sand and wind erosion of exposed mined sand.

With this project, the quality of the air will not be altered by this project as it is a manual mining using simple instruments / tools, there will not be emissions into the atmosphere. The surrounding area will not have any change in the air quality due to the proposed mining activity.

Mitigation measure:

- Water suppression will be done on the haul road twice a day
- Dust protection masks should be provided to workers when working in dusty environments.
- All trucks, tractors will be covered by canvas sheet to prevent dust emission.

7.7. Noise pollution

The project site is currently not adjacent to any residential and industrial area therefore the project disturbance of residents is minimal.

Mitigation measures

- No work may be conducted on Sundays.
- The movement of vehicles are restricted to working hours or times agreed upon between the team and affected community.

- Well maintained vehicles will be used in order to reduce the noise during movement of vehicles.
- No work may be conducted on public holidays unless permission is given by the ORTC and the relevant affected community.

7.8. Sewage and grey water from temporary portable toilets on site

- Use of toilets instead of the veld must be strictly adhered to.
- Discharging of the portable units should be conducted at an existing suitable facility.

7.9. General waste

- The sand mining site should be kept tidy at all times. All domestic and general waste produced daily should be contained.
- No waste may be buried or burned.
- No waste is to be left uncontained, it should be stored in suitable containers, overnight.
- Waste containers (bins) should be emptied regularly and removed from site to the nearest official waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot if available
- No waste may remain on site after the completion of operations

7.10. Hazardous waste

- All sand mining machines and trucks should be maintained regularly to prevent oil leakages.
- Spilled oil or fuel should be treated as hazardous waste, disposed of as it occurs in the appropriate hazardous waste containers (sealable drums) on site, and removed off site at the end of each day.

7.11. Infrastructure:

The site services like rest room shelter, first aid box, drinking water & facilities will be provided to workers at the mine site.

7.12. Power

All the activities will be carried out by semi-mechanized method i.e. loading the trucks/trolley/carrying vehicles manually by the working people, excavators will be used for excavation. There is no power requirement for the project because excavators will run on diesel.

7.13. Flora and Fauna

- Large woody debris to be left undisturbed or replaced when moved and not be burnt.
- Conservation of biological diversity of plants, birds and animals. No hunting, trapping, fishing, or any other disturbance of any fauna species allowed without a required permit.

7.14. Terrestrial environment

As the mining site has not much vegetation, thus clearance of vegetation not really required. However, the trucks and tractors approaching the sand mining site will be directed where the least damage to plant is ensured.

7.15. Safety and Security

During the mining period/activity, earthmoving equipment will be used on site. This increases the possibility of injuries. Presence of equipment may encourage criminal activities (theft).

Mitigation measures

- The responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.
- The contractor is further advised to ensure that adequate emergency facilities, including first aid kits, are available on site.

7.16. Socio-Economic Environment

This project operation will provide livelihood to the poorest section of the society. Approximately 10-15 people shall work at mine site. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the sand mine lease area is not being used for any purpose by any section of the society in this region. Furthermore, the proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Mitigation measure

- Locals should be highly considered when hiring for temporary or permanent jobs.

8. DECOMMISSIONING PHASE

This phase contains elements that should be considered when sand mining activities have been completed by the holder of the mining rights. These management requirements are important to ensure that rehabilitation of the environment is optimized.

- Remove all waste, and any other remains from the site.
- Site should be turned into the water reservoir to collect and store rain water.
- Filing and dating of all reports (including photographic documentation of successful rehabilitation initiatives).
- A final site inspection to be conducted and documented 3 months after all activities associated with the sand mining initiative has been completed for each sand island.
- Allocate appropriate budgetary allowances for all possible rehabilitation activities and initiatives (including such requirements for a communication strategy).
- Develop a communication strategy which will clearly indicate future operations (i.e. will further mining activities be conducted or Application for a Sand Mining Rights be made).

9. ENVIRONMENTAL MONITORING PLAN

Environmental monitoring plan is part of the EMP performance assessment and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of monitoring performances against the objectives and documenting all environmental activities is part of internal and external auditing. This will be coordinated by the Environmental Control Officer (ECO) / External Consultant / Suitable qualified in-house resource person. Tables 3 outline the type of information that shall need to be recorded on a regular basis by the Environmental Control Officer (ECO) as part of the monitoring process of the activities and the effects.

Mitigation	Compliance	Follow-up action required	By whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the EMP on site?					
How effective is the awareness training?					
Do people understand the contents of the EMP?					
If not, where are the weaknesses?					
Ask 3 people at random various questions about the EMP.					