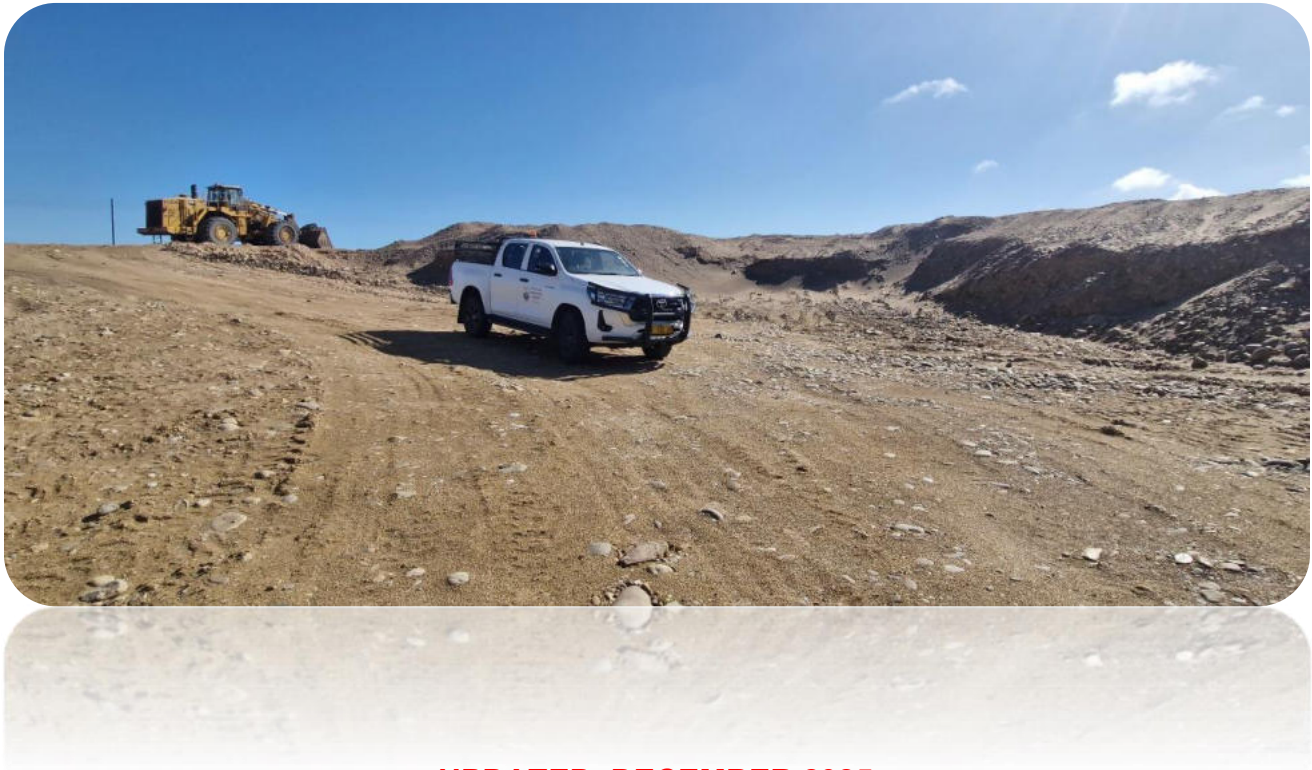


ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATION OF GRAVEL (BASE MATERIAL) MINING ACTIVITIES FOR THE ORANJEMUND TOWN COUNCIL, //KARAS REGION



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Prepared by:

GREEN GAIN CONSULTANTS CC

P.O. Box 5303

WALVIS BAY

CEL: +264 811422927

E-MAIL: info@greengain.com.na



Prepared for:

Oranjemund Town Council

P. O. Box 178

Oranjemund

Tel: +264 63 233 500

DOCUMENT INFORMATION

Project Name	Operation of Gravel (Base Material) Mining Activities for the Oranjemund Town Council
Location	Oranjemund
Proponent	Oranjemund Town Council P.O. Box 178 Oranjemund Contacts. Mr. Gideon Nantinda / Mr. Festus Nekayi Environmental Department Tel: +264 63 233 500 health@ormdtc.com.na
ECO (2025 - 2028)	Green Gain Consultants cc Address: P. O. Box 5303, Walvis Bay Contact: Mr. Joseph K. Amushila Cell: 0811422927 Email: info@greegain.com.na
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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
OTC:	Oranjemund Town Council
TLB:	Tract-Loader-Bucket

1. INTRODUCTION AND BACKGROUND

Oranjemund is a unique, formerly closed diamond-mining town in southwestern Namibia, located at the mouth of the Orange River bordering South Africa. The area around Oranjemund has been regarded as a restricted area under the Declaration Diamond Area No.1 until withdrawn by the Government Notice No. 97 of 2000. The mining of gravel or base material is one of the key activities of the town operations as it provides essential raw material (aggregates) for the construction industry and infrastructure development, such as roads and buildings.

The Oranjemund Town Council (OTC) in collaboration with Namdeb Diamond Corporation (Pty) Ltd (NAMDEB) has been mining gravel mining for local infrastructure development in support of the "OMD 2030" initiative. Gravel mining Activities have been carried out from various sites within its Town and Townlands. The gravel mining activities are guided by the Operational Environmental Management Plan (OEMP) of 2019. OTC was issued with an Environmental Clearance Certificate (ECC00620) for the mining activities of gravel/base materials, valid from 2020-05-11 to 2023-05-11.

Since the ECC has expired, the OTC has appointed Green Gain Consultants cc to update the EMP and apply for the renewal of the expired ECC. Green Gain Consultants cc has also been appointed to perform the role of the Environmental Control Officer (ECO) for the period July 2025 to June 2028. During this period, the ECO will assist OTC in implementing the EMP and conduct compliance monitoring and reporting for gravel mining activities in Oranjemund.

This document constitutes an updated EMP, which provides details of mitigation measures to manage environmental impacts associated with gravel mining activities. The implementation of the EMP will ensure that unnecessary damage to the environment during the mining period is avoided and to minimize the overall environmental degradation. The EMP provides environmental guidelines to be followed throughout the lifespan of the gravel mining activities and comprise of the following:

- a) Environmental Aspects,
- b) Management Objective,
- c) Mitigation Measures / Actions Required,
- d) Responsible party

2. SCOPE AND OBJECTIVES OF THE EMP

The EMP was updated upon compliance monitoring and field investigations or site assessment that was conducted with the following objectives.

- 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.

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 proposed new gravel mining burrow pit is located on the western part of the town, next to Oranjemund Extension 5 & 6 on the coordinates displayed below

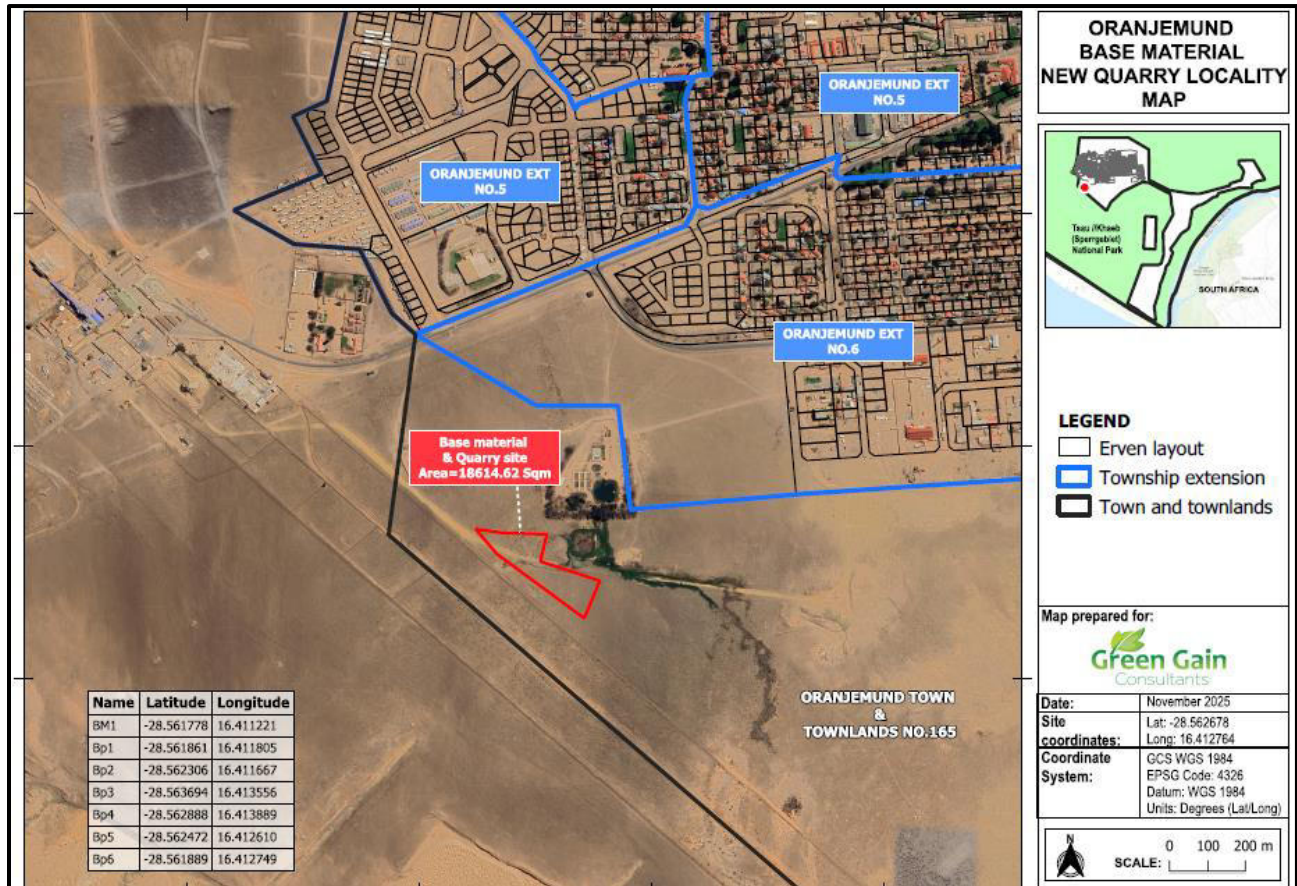


Figure 1 Locality map for Gravel Mining Activities

3.2. Site Description

The proposed new site is approximately 18.6ha in extent and is already disturbed by the NAMDEB operations. The site does not have any vegetation and the borrow pit has already been excavated about 2 meters high.



Figure 2: Site overview

3.3. Gravel mining operation procedures

The gravel mining process is taking place in a simplified method that involves using a tractor-backhoe-loader (TLB) to excavate overburdened material at a maximum depth of 1.5 meters. The excavated aggregate is loaded into haulage trucks by means of the front end and is transported straight to the site where it is required. No further processing is required for the mined material. only the required materials are excavated at a time and transported to the construction site.



Figure 3: Gravel mining pit

4. Site surrounding

The gravel mining area is located within the Tsau //Khaeb (Spergebiet) National Park (TSNP) which has a land size equal to $26,000 \text{ km}^2 \times 100 = 2,600,000 \text{ ha}$ (2.6 million ha). The affected area is only 18.6 ha for which biodiversity losses may occur.

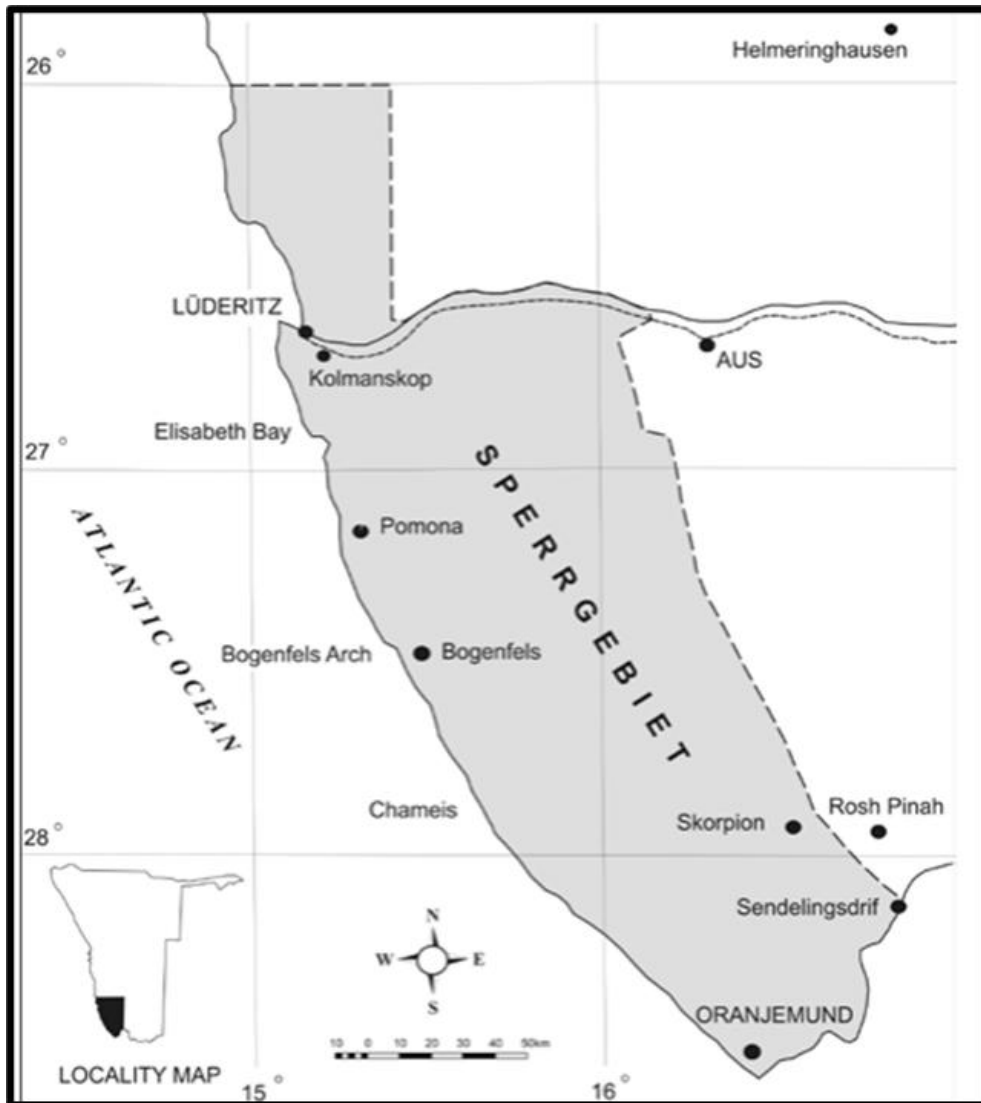


Figure 4:map of TSNP

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

5. POLICY AND OTHER RELEVANT LEGISLATIONS

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

SUBJECT	INSTRUMENTS AND CONTENT	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	<i>General human rights – eliminates discrimination of any kind The right to a safe and healthy environment Affords protection to biodiversity</i>	<i>Ensure these principles are enshrined in the documentation of the exploration project</i>
Environmental Management Act EMA (No 7 of 2007)	<i>Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.</i>	➤
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 487)	<i>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).</i>	➤
Forestry Act No 27 of 2004	<i>Provision for the protection of various plant species</i>	<i>Some species that occur in the area are protected under the Forestry Act and a permit is therefore required to remove the species</i>
Hazardous Substances Ordinance 14 of 1974:	<i>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</i>	<i>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</i>
The Nature Conservation Ordinance (No. 4 of 1975)	<i>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</i>	<i>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</i>
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	<i>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.</i>	<i>Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.</i>
Convention on Biological Diversity, 1992	<i>Protection of biodiversity of Namibia</i>	<i>Conservation-worthy species not to be removed if not absolutely necessary.</i>
Water Act 54 of 1956 Water Resources Management Act 24 of 2004	<i>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</i>	<i>Obligation not to pollute surface water bodies</i>

National Heritage Act 27 of 2004	<i>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</i>	<i>Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the National Heritage Council for relocation</i>
Labour Act 11 of 2007	<i>Details requirements regarding minimum wage and working conditions (S39-47).</i>	<i>Employment and work relations</i>
Health and Safety Regulations GN 156/1997 (GG 1617	<i>Details various requirements regarding health and safety of labourers.</i>	<i>Protection of human health, avoid township establishment at areas that can impact on human health.</i>
Public Health Act 36 of 1919	<i>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.”</i>	<i>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</i>
Water Act 54 of 1956	<i>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)).</i>	<i>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.</i>

6. 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

6.1. Environmental Issues to be managed

6.1.1. 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.

6.1.2. 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.

7. ROLES AND RESPONSIBILITIES

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

7.1. 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.

7.2. 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.

7.3. Environmental Control Officer

Green Gain Consultants cc has been appointed as an ECO for this project for the period July 2025 to June 2028. The responsibilities of the ECO will be to assist OTC in implementing the EMP by performing the following tasks.

- Update the EMP and ensure renewal of the ECC
- Monitor performance of the contractors and ensure compliance with the EMP and associated method statements.
- Conduct environmental monitoring as per EMP requirements.
- Liaison between the contractors, authorities and other key stakeholders on all environmental concerns.
- Issuing site instructions to the contractors for corrective actions required.
- Assisting with the resolution of conflicts.
- Communicate all amendments of the EMP to the relevant stakeholders.
- Conduct regular audits to ensure that the system for implementing the EMP is effective and compile and submit biannual reports to MEFT

7.4. 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.

7.5. Contractors

The contractor should appoint the Contractor'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.

8. IMPACTS OF GRAVEL 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.

8.1. 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.

8.2. 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.

8.3. 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 gravel 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 gravel mining.

8.4. 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 gravel 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.

8.5. 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.

8.6. Air environment

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

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.

8.7. 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 OTC and the relevant affected community.

8.8. 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.

8.9. General waste

- The gravel 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

8.10. Hazardous waste

- All gravel 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.

8.11. Infrastructure:

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

8.12. 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.

8.13. 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.

8.14. Terrestrial environment

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

8.15. 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.

8.16. 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 gravel 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.

9. DECOMMISSIONING PHASE

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

- **Waste removal:** Remove all waste, and any other remains from the site.
- **Site Contouring and Shaping:** Re-grading the land to eliminate steep, unstable walls, creating gentle slopes, mounds, and berms to mimic natural topography.
- **Soil Management:** Replacing stored overburden (clay/subsoil) and topsoil to provide a growth medium for new vegetation.
- **Water Management:** Creating or enhancing seasonal water pockets, ponds, or wetlands, which can support amphibians and birdlife.
- **Revegetation:** Planting native trees, shrubs, and grasses to stabilize soil, prevent erosion, and restore habitat. Forbes are often included for pollinators.
- **Habitat Creation:** Leaving boulder piles and exposed gravelly areas for nesting animals like turtles and birds.
- **Monitoring:** Long-term follow-up to ensure vegetation success and habitat stability.
- Filing and dating 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 gravel mining initiative have been completed for each gravel 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 Gravel Mining Rights be made).

10. 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 ECO. Tables 3 outline the type of information that shall need to be recorded on a regular basis by the 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.					