

P. O. Box 96596
WINDHOEK

Mr. Teofilus Nghitila
Executive Director
Ministry of Environment and Tourism
P/Bag 13306
Windhoek

ATT: Ms. Saima Angula,
Department of Environmental Affairs

2019-05-02
Ester

Dear Ms. Angula,

**RE: APPLICATION FOR AN ENVIRONMENTAL CLEARANCE CERTIFICATE -
ONGULUGUMBE G5 BORROW PIT**

I refer to our earlier discussion regarding the proposed construction of a 17km gravel road by Community members between Ongulugumbe and lipanda, Omusati Region.

The residents of Ongulugumbe Village in Omusati Region have volunteered to construct a gravel road, which would link them to the national road network. Since 2015, community members have been busy on this road. The reason why we decided to use our personal resources to construct the road is because for so many years we have been victims of floods whenever there are heavy rains in southern Angola and northern Namibia. Due to the flood situation, residents of Ongulugumbe, as well as nearby villages, struggle to access national roads such as Oshakati – Okahao (MR111) and Oshakati – Ruacana (MR92).

The proposed road between Ongulugumbe and lipanda will enable villagers to access MR111 immediately and in the long run MR92. So far villagers have managed to do the following towards the construction of this road: surveying, road design, procurement of construction equipment, debushing, sampling and testing of gravels, and clearing of explosives by NAMPOL, among others.

Phase 1 of this project will target the 11km section between Amupolo junction (S17°48'08.99"; E015°15'04.02") on the Ogongo - Omulimbalimba gravel road (D3648) and ends at Fanuel Kaunambili Shingenge Primary School. In the event that phase 1 is completed and there is no Government road between this school and lipanda, volunteers will embark on a 2nd phase, which is a continuation up to lipanda Primary School. By then, hopefully there will be a Government road between lipanda and Eengolo Primary Schools so that villagers have direct

A. I.

access to Outapi, the Regional and Commercial Capital of Omusati Region. Phase 2 is about 6km. Apart from centre line demarcation and preliminary debushing, not much work has been done by volunteers on this 6km section.

Phase 1 of the project will necessitate approximately 70 000 ton of G5 gravel, mainly for top layers (subbase and wearing course) but also partly for the SSG which will be a mixture of G5/G6 and weaker material. The proposed G5 borrow pit located at (S17°46'08.05"; E015°12'28.32") will be the main G5 borrow pit to be used during phase 1. In the past, the proposed site has been used by villagers as a source of building sand. Material for fill and SSG (G8/G7) will be excavated along the road. Some of the pits generated along the road will be positioned in such a way that they become a ditch. A minimum of 30 000 ton of G8/G7 material will be required for fill and SSG.

On behalf of the Ongulugumbe Community, I therefore hereby sincerely request your good office to issue me with an Environmental Clearance Certificate to cover the main G5 borrow pit as well as any accessory aspects of this 17km gravel road construction project. During phase 1, a total of approximately 7661m³ of water will be used for the compaction of road layers.

I have attached hereto the completed "Pro forma Environmental Contract for sand mining", Google Earth maps for the proposed borrow pit area, a letter from Roads Authority, and Laboratory results for material from the proposed borrow pit.

Should there be any aspect of this application which is not clear, please do not hesitate to contact the undersigned.

Stripping of overburden at the proposed site is expected to start in April 2019. Your urgent assistance in this matter will therefore be highly appreciated.

Yours Sincerely,



Abraham Lilende
PROJECT COORDINATOR



Date



REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

Tel: +264 61 284 2111

Fax: +264 61 229 936

Department of Environmental Affairs

Cnr of Robert Mugabe & Kenneth Kaunda Street Private Bag 13306, Windhoek

PRO FORMA ENVIRONMENTAL CONTRACT FOR SAND MINING

Village/town	Region	Constituency
ONGULUGUMBE	OMUSATI	OGONGO

Affix Revenue stamps here

Environmental Management Act, 2007 (Section 32)

PART 1 A: DETAILS OF APPLICANT

1. Name (person or business): ABRAHAM ILENDE

2. Business registration/identity no. 75102200135

3. Correspondence address: P.O. BOX 96596, WINDHOEK

4. Name of contact person: ABRAHAM ILENDE

5. Position of contact person: PROJECT COORDINATOR

6. Telephone or cell phone number: 0811223810

7. Fax number: —

8. Email address: a.ilende@yahoo.com

NB: The completion of this questionnaire is a requirement under Section 20(1) of the Environmental Management Act no. 07 of 2007. Therefore it must be filled in as truthfully and reliably as possible. It must be noted here that the proponent is accountable for any wrong and misleading information that may be provided in this questionnaire. From this perspective, any person who completes this questionnaire must read and sign the declaration on the last page of this questionnaire.

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand that the environmental clearance certificate may be suspended, amended or cancelled if any information given above is false, misleading, wrong and incomplete.

Abraham Ilende

Signature of applicant

ABRAHAM ILENDE

Full name in block letters

PROJECT COORDINATOR

Position

on behalf of

ONGULUGUMBE COMMUNITY

15/02/2019

Date

PART 1 B: DRAW PLAN OF THE PROPOSED SITE INDICATING SURROUNDING FEATURES:

PLEASE SEE ATTACHED GOOGLE EARTH MAPS
 BORROW PIT LOCATION: (S 17° 46' 08.05"; E 015° 12' 28.32")

- NB: The Plan must include**
- Latitude and longitude of the area
 - Thematic map for land uses in proximity of the proposed site (and the surrounding 1 km)
 - Water bodies such as rivers, lakes, ponds etc.
 - Any forest area, natural reserve and game reserve etc.
- Note: The name of each area on map must be provided*

PART 2 A: CONSENT BY VILLAGE HEADMEN, TRADITIONAL AUTHORITY OR PRIVATE FREEHOLDER

For Village Headman

1. Name of TA headman/freeholder: Frída Komeya

2. Postal address: P.O. Box 299 Okahao

3. Telephone or Mobile no.: 0813628828 Komeya

4. Email address (if applicable): _____

THE HEADWOMAN
 FRIDA KOMEYA
 19 FEB 2019
 ONGLUCHIMBE VILLAGE
 OMUSATI REGION
 CELL 081 362 8828

For Traditional Authority or Freeholder

1. Name of TA headman/freeholder: Amunyerwa

2. Postal address: P.O. Box 731, Okahao

3. Telephone or Mobile no.: 0811282057 / 0816021125

4. Email address (if applicable): samunyerwa@gmail.com

MIN. OF LOCAL GOVT. &
 TRADITIONAL AUTHORITY
 ST. HEADMAN: OMUTHITU - CIRCUIT
 29 MAR 2019
 REPUBLIC OF NAMIBIA
 OMUSATI REGION

Comment and recommendation by the traditional authority /private freeholder (landowner)
THE OTA HAS NO RESERVATION IN RECOMMENDING THIS PROJECT SINCE IT WILL BENEFIT THE COMMUNITY.

Stamp and signature of representative: K. Kande Date: 10 2019 - 2019

PO BOX 2, OKAHAO
 TEL: 085 252087
 FAX: 085 252087

PART 2 B: CONSENT BY REGIONAL COUNCIL OR LOCAL AUTHORITY

For regional council or local authority represented by Chief Regional Officer (CRO) or Chief Executive Officer (CEO)

1. Name of CRO/CEO: Servasis Keshindi

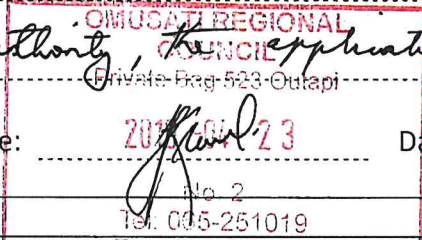
2. Postal address: POst Box^{es} 5 / Private bag 523
Outapi

3. Telephone or Mobile no: 065-251019

4. Email address (if applicable): info@omusatic.gov.na

Comment and recommendation by the Chief Regional Officer or Chief Executive Officer

Based on the recommendation of Ongandja Traditional Authority, the application is supported.



Stamp and signature of representative: [Signature] Date: 23 April 2019

NB: The completion of this questionnaire does not revoke provision 93 of the Environmental Management Act No. 7 of 2007 for the Environmental Commissioner to decide whether an activity requires an assessment but complements the process. Therefore a full environmental impact assessment (EIA) process may be required depending on the magnitude of the proposed project.

PART 3: GENERAL DESCRIPTION OF THE PROJECT

Please tick the appropriate answer with an (✓).

1. General information:

Name of the site:	<u>ONGULYAKUMBE G5 BORROW PIT</u>
Size of the site (hectares):	<u>1 ha</u>
Tenure of operation (years):	<u>3 yrs</u>
Expected cost of the project:	<u>± N\$ 1.5 Mil</u>

2. Sourcing of sand:

Activity site	Yes	No
River/floodplain		
Lake/reservoir		
Agricultural land		
Seaside Watercourse		
Homestead/crop fields		
Others, please specify: <u>COMMUNAL LAND</u>		

3. What is: (a) the **intended use** of sand and (b) the **scale and volume of proposed sand mining**:

Intended use of sand	Tick mark (✓)
Household-building activities	
Commercial housing construction	
Commercial road construction	
Commercial bulk sale	
Others	✓

Scale and total volume of proposed sand mining (Unit)	Tick mark (✓)
<100 m ³	
100–500 m ³	
500–1000 m ³	
>1000 m ³	✓

4. Location sensitivity details

(a) Is the proposed activity site near/in the following installations?

Important installations	Yes/no	Name	Distance (m)
Public utility (i.e. schools, colleges, hospitals, picnic spots, bridges etc.)	NO		
Tourist site / worship area / graveyard	NO		
Governmental installations (e.g. police stations, government, building, defense installations, etc.)	NO		
Protected area	NO		
Any other installation nearby? Please specify:	NONE		

Note: Sustainable sand mining guidelines state that the proposed area should be away from these important installations. Guidelines also specify certain distances as per the sensitivity of the area.

Remarks if any:

THE PROPOSED BORROW PIT IS LOCATED IN A COMMUNAL AREA. NO VITAL INSTALLATIONS NEARBY.

(b) Land use pattern of site lease

Land type	Area (hectare)
- Private land	
- Government land	
- Other (specify) COMMUNAL	1
- Total	1

(c) Is the project likely to affect local community member(s)?

Yes

No

(d) If the answer is yes, does the proposed project involve people relocation?

Yes

No

(e) If the answer is yes

Number of affected people

Types of compensation

(f) Was compensation provided to affected people?

Yes

N/A

No

If the answer is yes, describe the compensation and other amenities provided.

Section 44 of Environmental Management Act No. 7 of 2007, and Sub-Regulation 21 provide guidance on consultative procedures and methods that must be followed during the environmental assessment process for listed activities. This is necessary to allow the public (Interested and Affected Parties) to give input on how best to avoid and/or mitigate potentially negatives impacts.

5. Public consultations:

(a) Were public consultations held?

Yes

No

If the answer is yes, please attach proof with the application.

If the answer is no, please refer to the EMA Regulation 21—conduct and attach proof.

(b) Are the project concept note and/or activities shared with members of the community?

Yes

No

If the answer is yes, provide a copy of the concept note.

If the answer is no, please consult community and attach proof

(c) Are there any other mines located adjacent to the proposed project site?

Yes

No

If the answer is yes, provide the name and type of the mines within a radius of 1 km.

(c) Attach a No Objection Certificate from the concerned authority with the application

attach a copy of the permit / licence with the application.

(c) **Water**

Source of water

THE PIT WILL GENERATE ITS OWN WATER

Quantity of water used (m³ / day)

0.3

(d) **Employment:**

- Total employment potential from proposed mine: _____

- Types of employment: Contract

7

Daily wage

8

Permanent

2

(e) **Fuel requirement**

Quantity of fuel (litre/day):

500

If fuel is stored at site, describe the safeguard measures that would be undertaken

NO FUEL STORAGE ON SITE. FUEL WILL BE TRANSPORTED FROM ~~THE~~ NEARBY SERVICE STATIONS.

9. Road construction:

(a) Describe the road connectivity from the proposed site.

THE PROPOSED BORROW PIT IS LOCATED 1.8 km FROM THE ROAD WHICH COMMUNITY MEMBERS ARE BUSY CONSTRUCTING.

(b) Will proposed site require construction of new roads?

Yes

No

If the answer is yes,

Length of the road (km)

1.8 km

Type of road constructed

GRAVEL

Number of trees to be cut during the construction

A FEW MOPANE BUSHES

PART 5: ENVIRONMENTAL MANAGEMENT PLAN

Sand mining is a listed activity as per the Environmental Management Act No. 7 of 2007 and it may not be undertaken without a valid Environmental Clearance Certificate. Therefore, it is recommended that an Environmental Management Plan section of this application is completed or a detailed separate EMP submitted.

ENVIRONMENTAL CONSERVATION

Conservation of flora (including cultivated crop fields, riverine ecosystems and River flow Regime)	Proposed mitigation measures for conservation of flora
	NO FLORA, EXCEPT GRASS, IN THE PROPOSED SITE. TOP GRASS WILL BE DUMPED IN A NEARBY MAHANGU FIELD, TO BECOME COMPOST.
Conservation of fauna (including wildlife and livestock)	Proposed mitigation measure for conservation of fauna
	THE AREA WILL BE FENCED OFF SO THAT LIVESTOCK DO NOT FALL INTO THE PIT. PIT WALL SLOPES WILL BE GENTLE (≈ 4 IN 1).
Rehabilitation of mined site (including borrow pits, tracks and roads)	Proposed measure for rehabilitation and resettlement
	PART OF THE PIT WILL BE BACKFILLED. HOWEVER, A PORTION OF THE PIT WILL BE UTILIZED BY COMMUNITY MEMBERS FOR AQUACULTURE.

ENVIRONMENT PROTECTION

Air pollution	Proposed mitigation measures for air pollution / dust control
	DUST GENERATED BY SAND IN THE UVAMBO BASIN IS GENERALLY CLEAN AND FREE OF TOXIC PARTICLES. NEVERTHELESS, EXCESSIVE DUST WILL BE SUPPRESSED BY USING A 14 CUBIC WATER TANKER.
Protection of water resources	Proposed mitigation measures for water-pollution control and prevention and for conservation of water resources
	WE WILL ENSURE THAT NO OIL OR LUBRICANTS ARE USED TOO CLOSE TO WATER SOURCES.
Noise	Proposed mitigation measures for noise
	THERE WILL BE NO NIGHT SHIFTS OR WEEKEND SHIFTS, WHEN PEOPLE ARE RESTING.

ENVIRONMENT PROTECTION Continues.	
Health and safety of workers	Proposed measures for safety and health ONLY EXPERIENCED OPERATORS & DRIVERS WILL BE ALLOWED IN THE PIT AREA. SAFETY GEAR, NO ALCOHOL POLICY WILL APPLY.
Protection of archaeological and cultural site, if any	Proposed measures for protection of archaeological sites and cultural heritage of the project-affected area NONE IN THE AREA.
Waste management (i.e. general, mine and hazardous wastes)	Proposed measures for waste minimization and disposal NO WASTE WILL BE GENERATED DURING THIS SAND MINING OPERATION.
Amenities to workers	Details amenities proposed THERE IS A CAMP EQUIPPED WITH POTABLE WATER AND POWER FOR WORKERS FROM FAR AWAY PLACES. MOST WORKERS ARE HOWEVER FROM NEARBY HOUSES & MAY NOT NEED THIS.

EMP MONITORING, SITE CLOSURE AND DECOMMISSIONING	
EMP implementation records and reporting (attach record sheet)	
Financial provisions for rehabilitation, site closure and decommissioning	SAND HEAPS TO BE PUSHED BACK INTO THE PIT BY A LOADER. NO NEED FOR A SPECIAL F
Compensation measure and guidelines (with reference to relevant governing laws)	N/A

PART 6: OBLIGATIONS AND COMPLIANCE

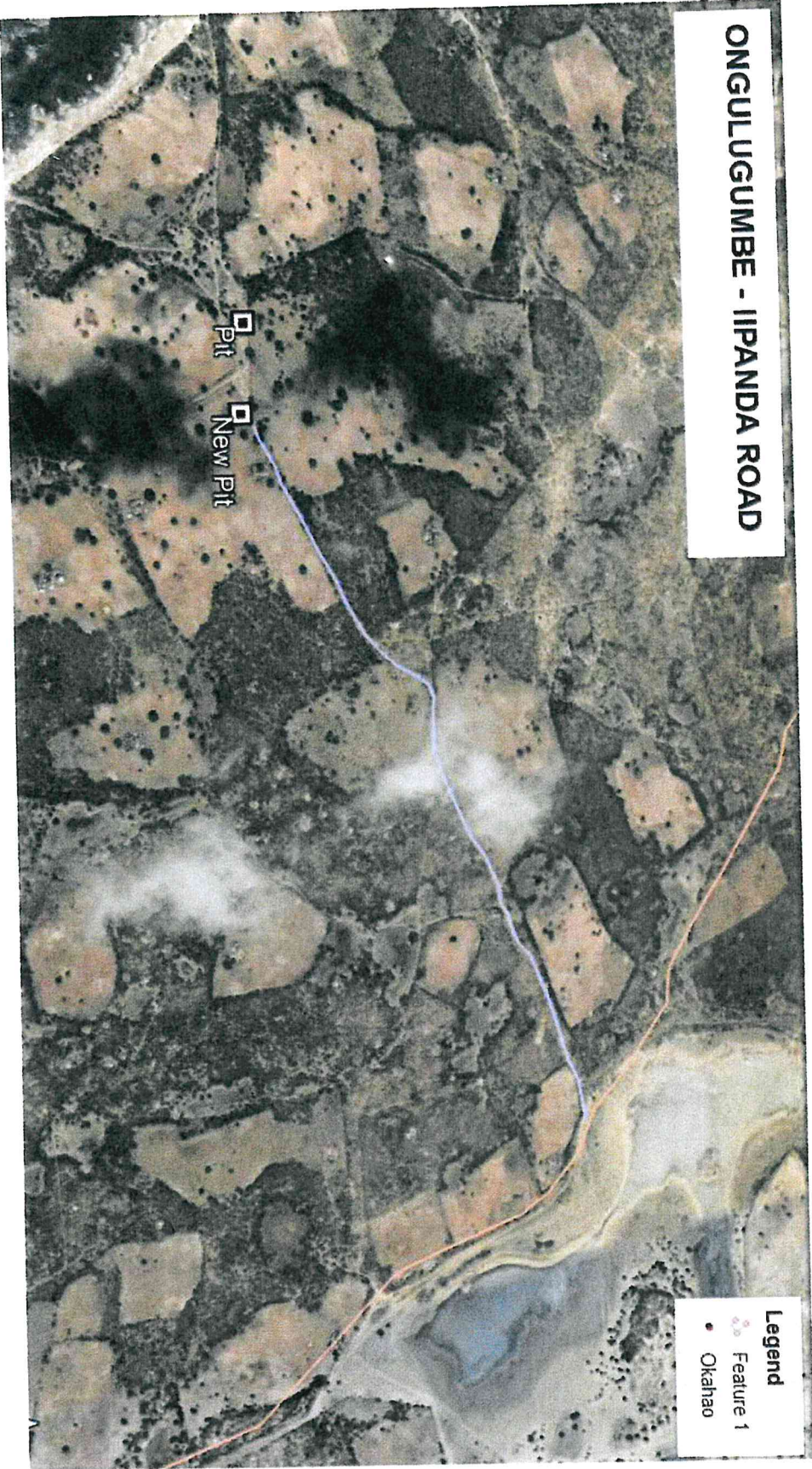
The proponent recognises that its sand mining operations may have significant impacts on the environment. Accordingly the proponent undertakes that during the course of its operations it will take every practicable step necessary to ensure the mitigation of such impacts. In doing so it will comply with the obligations identified in the EMP and approved by the Ministry of Environment and Tourism represented by the Environmental Commissioner.

SIGNED AT WINDHOEK on this 15th day of February 20 19

For the proponent: *Ash de*
(duly authorised thereto)

For the Government of Namibia:
 Mr. T. Nghitila
 Environmental Commissioner
 Ministry of Environment and Tourism

ONGULUGUMBE - IIPANDA ROAD



Legend

- ◆ Feature 1
- Okahao

Pit

New Pit

Environmental Management Plan (EMP) for Ongulugumbe G5 Borrow Pit, Omusati Region

Prepared for

Ongulugumbe Community

by:

Giesberta N. Shaanika

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Residents of the Ongulugumbe Village intend to construct a 17km gravel road to link them to the national road networks. The project was necessitated by the fact that Ongulugumbe and other neighboring villages often fall victim of the floods that take place in northern Namibia after heavy rainfalls are experienced. This usually disrupts transport services and these villages are often cut off from the region's commercial capital Outapi and other urban centres on which they rely for basic needs, such as medical services among others. This project is therefore a collective effort from the residents to improve access to the Oshakati-Okahao road (MR111) and Oshakati-Ruacana road (MR92). The community has identified a borrow pit (herein referred to as Ongulugumbe G5), to source about 70 000 tons of G5 material (gravel) required for the subbase and wearing course layers of the road, while filling sand will be sourced from alongside the road.

In order to construct and operate the proposed borrow pit, an Environmental Clearance Certificate (ECC) is required in terms of the Environmental Management Act (Act No. 7 of 2007) and its 2012 EIA Regulations. It was against this background that the residents have completed a Pro-forma Environmental Questionnaire for sand mining and are hereby applying for an ECC to cover Ongulugumbe G5 and associated accessories, in order to see successful completion of Phase 1 of this road. Accordingly, the present document details the Environmental Management Plan (EMP) and the management actions required to avoid or reduce the impact of this project on the environment.

1.2 Project components

The project components covered by this EMP consist of construction or development and operation of the borrow pit, which will take place in parallel and thereafter, post-operation.

1.2.1 Development and operation of the borrow pit

- Sand stripping of overburden
- Mining of gravels using 26 ton excavator to produce a medium sized open cast.
- Loading and hauling
- Transportation to the road construction site

1.2.2 Construction of the road

- Obtaining sand from alongside the road
- Transporting construction material from the borrow pitting site to the centerline
- Construction, concrete works and leveling of the 17km long road.

1.2.3 Closure and rehabilitation

- Decommissioning of works following the depletion of the quality G5 material
- Rehabilitation of mined out sites

2 The Environmental Management Plan (EMP)

The 2012 EIA Regulations define a ‘management plan’ as: “...a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored.” In which case, potential impacts of the project to the environment must be identified, followed by measures to prevent or reduce such impacts. The implementation of this EMP therefore allows responsible persons to convert mitigation measures into actions and through monitoring, auditing, review and corrective action, ensures conformance with the overall aims and objectives. These objectives are provided below:

- Ensure compliance with the conditions of the Environmental Certificate granted by the Directorate of Environmental Affairs (DEA);
- Propose practical measures to prevent, minimise, mitigate or rehabilitate adverse impacts;
- Conserve significant aspects of the biophysical and social environments;
- Protect human health and ensure safety of workers and the public;
- Propose a plan to monitor and manage project implementation, in such a way that the project is environmentally sustainable.

2.1 Stakeholder engagement

The project was initiated in 2015, and there has been involvement from all relevant interested and affected parties. Various stakeholders to this project have been identified and were consulted and engaged as necessary. The general community is well informed as they are the executors and implementers of this project. The Ongandjera Traditional Authority as well as the Ongulugumbe Headwoman are also well informed and have been involved in facilitating the acquisition of official documents pertaining to the project. **Table 1** summarizes relevant stakeholders.

Table 1: Project stakeholders

Level of engagement	Stakeholder	Contact
National	Ministry of Environment and Tourism (MET)	Theofelus Nghitila Toivo Mufeti Toivo.Mufeti@MET.gov.na
Regional	Omusati Regional Council	Gervasius Kashindi info@omusatirc.gov.na
Parastatals	Roads Authority (Opuwo/Outapi)	Jackie Rutz rutzj@ra.org.na
Local Authority	Ongandjera Traditional Authority	Ester O. Nantinda
	Ongulugumbe Village Council	Mrs Frieda Komeya
General public	Ongulugumbe residents and neighboring villages	Representative and Project Manager: Abraham lilende

2.2 Identified impacts and management objectives

Some impacts that the project can potentially have on the environment were identified and some management objectives were listed as summarized in **Table 2**.

Table 2: Aspects of the environment and management objectives

Environmental Aspect	Management Objective
Land and Soil (contamination)	<ul style="list-style-type: none"> To conserve the soil resources on site. To minimise soil degradation through contamination.
Vegetation	<ul style="list-style-type: none"> To limit the impact on the vegetation in the gravel and sand mining areas, as well as in the area delimited for road construction. Protection of the rare and endangered species on these sites.
Groundwater(Impact on groundwater quality and levels due to potential over-abstraction)	<ul style="list-style-type: none"> To ensure that the gravel and sand mining activities do not impact groundwater quality through contamination. To prevent impact on groundwater availability or lowering of water levels due to over-abstraction.
Air Quality (dust fallout)	<ul style="list-style-type: none"> To reduce the potential of dust deposition in and around Ongulugumbe Village. To minimize the impact of the excavation works on the overall quality of air.
Noise (Increased noise levels during development and operation of the borrow pit)	<ul style="list-style-type: none"> To minimise the noise impact on the surrounding environment.
Visual Aspects (Visual Intrusion/ Visibility/ Visual Exposure/ Sensitivity/ Impact on Sense of Place)	<ul style="list-style-type: none"> To reduce the visual impact caused by the mine activities on the surrounding area.
Storage of Diesel and Oil (Contamination issues associated with the storage of diesel, oils and chemicals)	<ul style="list-style-type: none"> Ensure that no contamination results from the stored diesel and oil on site. To ensure that all safety and environmental measures are in place during the storage and usage of hydrocarbon products on site.
Health and Safety	<ul style="list-style-type: none"> To ensure that the health and safety of the workers are not compromised.

Environmental Aspect	Management Objective
	<ul style="list-style-type: none"> • To ensure that the mining and excavation area has enough safety warnings and signage at all risk potential areas • Ensure that there is/are site workers that are responsible for the implementation of safety measures on site at all times.
Waste Management	<ul style="list-style-type: none"> • To minimize environmental degradation (pollution) • To ensure that there is enough waste management equipment on site to avoid environmental pollution.

2.3 Impact Management Strategy: Development and Operation of Ongulugumbe G5 borrow pit

These measures should be applied at every stage of the project from project initiation, through the implementation and operations phase until closure, to ensure minimal impact on the environment. The Project Manager is ultimately responsible for the implementation of this EMP. The Project Manager (PM) may delegate this responsibility at any time, as they deem necessary. The PM may also give training to all involved parties, to ensure accountability by each individual in the community. The subsequent section outlines strategies to be implemented per impact identified.

2.3.1 Land and Soil

- The clearing of land for mining and other construction activities will inevitably involve earthworks and lead to an increased risk of erosion. Therefore, disturbed land areas and slopes should progressively be restored, as close as practically possible, to pre-mining conditions.
- The borrow pit and its accessories must be reinstated after the project has reached completion.
- Project Manager must ensure that there is no soil contamination resulting from the stored diesel or oil, or from spillage from trucks.
- Ensure that drip trays are always used when vehicles, trucks are idle as well as under the diesel trailer to contain any potential spillages.
- Oil contaminated soil chunks must be cleaned up and dumped on a lined area, until they can be disposed off at the nearest hazardous waste site.

2.3.2 Air quality

- Water down the road surface in mining and loading areas for dust suppression as well as on haul and access roads.

- The Project Manager must ensure that the tip distance is minimal (i.e. drop height into truck and onto stockpiles) in order to minimize dust generation.
- To reduce emission of NO_x gases that could potentially pollute the air, minimize vehicles idling times, regularly maintain or service the vehicles and use only the required fleet.
- A speed limit of 60km/h for light vehicles and 30km/h for heavy vehicles must be maintained onsite to minimise the dust generated by vehicles.

2.3.3 *Ground water*

- The Project Manager must ensure that no contamination results from the stored diesel, oil and chemicals on site, which could potentially leak into the ground to pollute groundwater.
- Vehicles must have designated parking on site, which must have an impermeable liner to prevent pollutants from leaching into the ground and potentially contaminating groundwater
- Spills must be contained and remediated with no adverse impacts to surface or ground water resources
- If groundwater is being used onsite, a water Use Licence must be obtained for adherence to the Water Act and to prevent over-abstraction and depletion.

2.3.4 *Biophysical environment*

- The mitigation measures for reducing the loss of flora and fauna habitat during the various phases of the project.
- Vegetation clearing should be restricted to areas essential for the envisaged development. Unnecessary land clearing should be prevented. Give clear instructions to operators of all earth working machines and bulldozers.
- Conservation of indigenous trees.
- Ensure that worked out areas are demarcated and fenced off to keep animals out until they can be rehabilitated
- Ensure that speed limit of 60km/h for light vehicles and 30km/h for heavy is maintained onsite to prevent fatalities of fauna that may manifest from collisions with vehicles and earth moving equipment
- Discourage indiscriminate killing of perceived dangerous species (e.g. snakes and scorpions)
- Removal, modification and fragmentation of habitats must be minimized

2.3.5 *Socio-economic impacts*

- Although this project will not create jobs, given that it is a community project and the residents are volunteering, the borrow pit and the constructed road will upon completion be a contributor to the Namibian economy.

- In the absence of formal remuneration, the workers and all residents who will partake in this project must gain intellectual resources from information sharing and trainings on material.
- During the implementation phase of the project, goods and services (personal protective equipment (PPE), spare parts, etc.) must be sourced locally as far as possible, so that the local community can benefit from the project.

2.3.6 Health and Safety

- Ensure the health and safety of labourers (borrow pit operation and road construction) are not compromised.
- Develop an Emergency Response and Procedures Framework for all safety incidences occurring on site. It should cover reporting of incidents onsite such as spills of hazardous material, accidents involving personnel or slope failures of the quarry. It must also include responsive action in case of an incident.
- The Project Manager must ensure acquisition of personal protective equipment (PPE) for all workers onsite. This includes inhalation protection, safety shoes and reflective clothing. Training must also be given on the use of PPE.
- To ensure that there are enough safety warnings at all risk potential areas around the quarry and along the road. This includes proper demarcation of mobile equipment routes.
- Ensure that worked out areas are demarcated and properly fenced off for safety reasons.

2.3.7 Waste Management

- A Waste Management Plan must be developed for the site, with details of different types of waste and procedures on disposing them off.
- Waste should be managed according to the waste management hierarchy (prevention, reduction, re-use, recycling, disposal).
- All domestic and general waste produced on a daily basis should be cleaned up and stored in containers for proper disposal at the nearest licensed waste disposal site.
- No waste may be buried, burned or disposed to land on site, outside of the approved waste disposal facility.
- The construction site should be kept tidy at all times. Construction laborers should be sensitized to dispose of waste in a responsible manner and not to litter.
- Construction vehicles must be inspected regularly to prevent oil leakages that could generate hazardous waste.
- Vehicles must also be equipped with drip trays to contain any leakages that could potentially contaminate soil and water.

- Cleaned up oil or hydrocarbon spillages must be treated as hazardous waste and should be stored on lined or impermeable surfaces and disposed off in hazardous waste containers, before its taken to an appropriately licensed facility off-site.
- No waste may remain on site after the completion of the project

2.3.8 Noise

- The noise impact associated with the construction and operation of the mine should be kept minimal as it can be a nuisance to receptor outside the project area.
- Noisy equipment should be shut down when they are not in use (when not needed) to avoid unnecessary noise on site.
- Ensure that workers operating in noisy areas are equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure
- Regularly maintain equipment and vehicles to minimize noise.
- Heavy machinery and large vehicles should preferably operate during daylight hours only (i.e. between 08h00 and 17h00).

2.3.9 Cultural heritage sites

- The culturally significant sites that may occur in the project area should be avoided.
- If any of such sites are uncovered during operations, the project Manager must consult the appropriate office (Traditional Authority Office, Namibian Heritage Council (NHC), National Forensic Laboratory, Namibian Police etc.) to seek advice. GPS coordinates should be obtained and contact responsible authority.
- Given that the area was used as battlefield during the national liberation struggle for Namibia's Independence, there is potential for presence of landmines. Clearance must be given by the Namibian Police Force to rule out any such occurrences.
- Workers must be cautioned about touching any unknown or unfamiliar remains during operation phase.

2.4 Management Strategy: Closure and Rehabilitation

According to The Chamber of Mines of Namibia (2010) rehabilitation is not just about making an area neat but also about setting a disturbed ecosystem on a trajectory back to recovery so that it can be sustainably used in the future.

The quarry must be fenced off to avoid the risk of people and animals falling in prior to rehabilitation. The decommissioning and rehabilitation of the quarry will include removal of any excess material. To reduce visual impact and safety risk of the open cast, the quarry will be rehabilitated using topsoil on one side. The second part of the quarry will be used by the community for a future project as an aquaculture pond.

3 CONCLUSION

The impacts associated with the proposed sand mine can be reduced to acceptable levels. However, it is important that the impact management strategies provided in this EMP in compliance with the Environmental Management Act (Act No. 7 of 2007) and its 2012 EIA Regulations are implemented and monitored. It is therefore recommended that the project receive Environmental Clearance, provided that the EMP be implemented.

4 REFERENCES

The Chamber of Mines of Namibia. (2010). Namibian Mine Closure Framework. Windhoek: The Chamber of Mines of Namibia.