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APP: 001175

Sand Miners Association

EIA Scoping Report for Sand Mining in the Swakop River

PROJECT NO: 2017 / 090 / F

Building towards better **Safety
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12th May 2022
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Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen	Project No: 2017 / 090 / F
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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	Definition
CTAN	Costal Tourism Association of Namibia
EAPAN	Environmental Assessment Professionals' Association of Namibia
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
MAFW	Ministry of Agriculture, Forestry and Water Affairs
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NP	National Park
NNNP	Namib-Naukluft National Park
TOC	Terms of Reference

1. INTRODUCTION

National Environmental Health Consultants CC (NEHC CC) has been appointed by the **Sand Miners Association (SMA)** to conduct the Environmental Impact Assessment (EIA) process in terms of the:

- Environmental Impact Assessments are regulated by the Ministry of Environment and Tourism (MET) in terms of the Environmental Management Act, 7 of 2007.
- This Act was gazetted on 27 December 2007 (Government Gazette No. 3966).
- The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

The **Sand Miners Association** consists of the following member companies:

- Coastal Precast and Paving (CPP Suremix);
- The Baard Group;
- Premier Operational;
- Strydo Operational;
- Refuse Solutions;
- Coastal Cement Works;
- Nambrick and Concrete;
- QE Operational;
- Erongo Quarries; and
- Quality Sand and Stone.

The **Sand Miners Association** have been mining sand from the Swakop River, for many years. The sand mining activities are conducted within the Swakopmund Municipal boundaries, about 20km east-northeast of Swakopmund, just north of the plots, located at Nonidas.

The sand which is being mined by the **Sand Miners Association**, is entirely used for Operational purposes throughout Swakopmund, Long Beach and Walvis Bay. It is widely known that Operational cannot be performed without sand. With the steadily increase of Operational, over the years, within and around Swakopmund, Long Beach and Walvis Bay, the stretch of the Swakop River, which had been previously utilized for sand mining activities, have been depleted of sand.

To accommodate the current demand for sand, to be used during Operational projects, the **Sand Miners Association** had to obtain an alternative source or area, from which sand can be derived, to meet and satisfy the demand of sand, needed for Operational activities.

The Ministry of Environment, Forestry and Tourism (MEFT): Directorate of Regional Services and Parks Management, granted the **Sand Miners Association**, permission to mine sand on a temporary basis at a new location within the Swakop River, on the boundary of the Dorob National Park and the Namib-Naukluft National Park, within the parks. The MEFT's provisional permission, is subject to the pending submission and approval of an Environmental Impact Assessment and an Environmental Management Plan (EMP) to the MEFT, in order to obtain an Environmental Clearance Certificate (ECC).

An Environmental Scoping Report (EIA) and an Environmental Management Plan (EMP) on the proposed sand mining activity, which is the subject of this report, was carried out to ensure that it will comply with the relevant requirements for the approval of the Ministry of Environment, Forestry and Tourism.

The Environmental Scoping and Environmental Management Plan Reports were done quantitatively, consisting of descriptions of the operations, processes and activities to be carried

out. The purpose of these assessments was to assess the current environmental status and standing of the proposed area for the sand mining activities, to determine the potential impact of said sand mining activities on the surrounding and receiving environment and to ascertain all the possible and potential health, safety and social impacts, associated with the proposed sand mining activities.

It must be borne in mind that the **Sand Miners Association** has previously conducted these sand mining activities in and around the Swakop River, and that the proposed new area for the sand mining activities are within the vicinity, where the previous sand mining operations were conducted.

2. PROJECT MOTIVATION

In essence this project entails the mining of sand to be used in Operational projects. The Operational industry makes use of sand for plastering, the making of concrete, brickmaking and the layering of foundations. The proposed sand, which is to be mined by the **Sand Miners Association**, will be used to cater to and to provide sand for Operational projects in the coastal towns of Swakopmund, Walvis Bay and Long Beach.

As briefly discussed above, over the years, there has been a steadily increase in the undertaking of Operational projects, which consequently, increased the usage and demand for sand, to be used in Operational projects, as no Operational project can be undertaken nor completed to fruition without an adequate amount of sand, to satisfy the need of the specific Operational project.

Considering the above, it is imperative that the **Sand Miners Association** be granted approval to continue with their sand mining activities, because, without which, Operational projects will be left incomplete and new Operational projects cannot be undertaken. The sand being mined by the **Sand Miners Association** indirectly provides housing for Namibian residents, as the sand is being used for the building of homes and houses, as well as the building and erection of companies and businesses, and those companies and businesses in turn, create new employment opportunities for Namibian residents. In addition, the approval of the proposed sand mining activities, will allow the current employees of the **Sand Miners Association** to retain their employment.


Thus, it can easily be construed that the proposed project will potentially benefit the entire country, albeit directly or indirectly. This potential economic benefit this proposed project holds for the country as a whole, is not without its challenges. The **Sand Miners Association** will be confronted with the challenge of contributing towards the achievement of these benefits, whilst at the same time, attempting to prevent and or to mitigate the potential negative social and environmental impacts thereof. This proposed project is definitely viable.

Although, the proposed sand mining activities does pose some serious risks to the receiving environment, the prohibition of sand mining activities will not be economically or practically feasible, as the sand is absolutely necessary and vital for any and all Operational activities. The overall benefits of allowing the proposed sand mining activities outweighs any possible disadvantages thereof.

3. PROJECT DESCRIPTION

3.1. Introduction

As illustrated hereinabove, the proposed sand mining operations are of vital importance to cater to and to meet the demand of the Operational needs throughout the coastal towns of Walvis Bay, Long Beach and Swakopmund. It is important to note that the **Sand Miners Association** has been mining sand in the previous location in the Swakop River, situated approximately 20km east-northeast of Swakopmund, since early 2015.

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Before any sand mining operations commence, the relevant area, where the sand mining operations are to be conducted, is cleared of vegetation, by making use of front-end loaders. These front-end loaders are also utilized in the scraping and excavation of the sand and to tip the sand at the various transfer points, where-after they remain on site. At the transfer points, the finer sand is then loaded onto tipper trucks which transports the finer sand to Swakopmund and Walvis Bay for further distribution. In order for the tipper trucks to travel to and from the site, they will travel along the B2 highway to an established gravel access road, located approximately \pm 20km outside of Swakopmund, which links the sand mining site with the B2 highway.

A new area with a total of roughly 57ha were identified for the **Sand Miners Association** for the continual conduction of the sand mining operations and the lifespan of the project is estimated at 15 (fifteen) years.

The related Environmental Impact Assessment process will include: a screening phase and a scoping phase, which will include an Environmental Impact Assessment as well as an Environmental Management Plan.

3.2 Details of the project developer

Business Registration:	Sand Miners Association, Registration No: CC/2016/16463
Location of Activity:	Swakop River, In the Municipality of Swakopmund
Scale and Scope of Activity:	Measuring 57ha ²
Nature of Activity:	Mining and excavation of sand
Contact person:	Mr. Simon van Zyl
Designation:	Project Manager
Phone:	+264 81 271 4062
E-mail:	simon@cppsurremix.com

3.3 Proposed Site

A total area of approximately 57ha were identified for the **Sand Miners Association** in the Swakop River, in order to conduct their sand mining activities. The Swakop River is located within the municipal boundaries of Swakopmund.

The proposed area for the sand mining activities is situated roughly 50km outside of Swakopmund in an east-north-easterly direction. The area where the sand mining activities are to be conducted, is located on the boundaries of the Dorob National Park and the Namib-Naukluft National Park, and is located within these National Parks.

Access to the proposed sand mining site will be gained by utilizing the route along the B2 highway, which links with an established gravel road, leading directly to the site of the proposed sand mining operations. See option 1 below.

Access roads: see FIG. 3.4.4

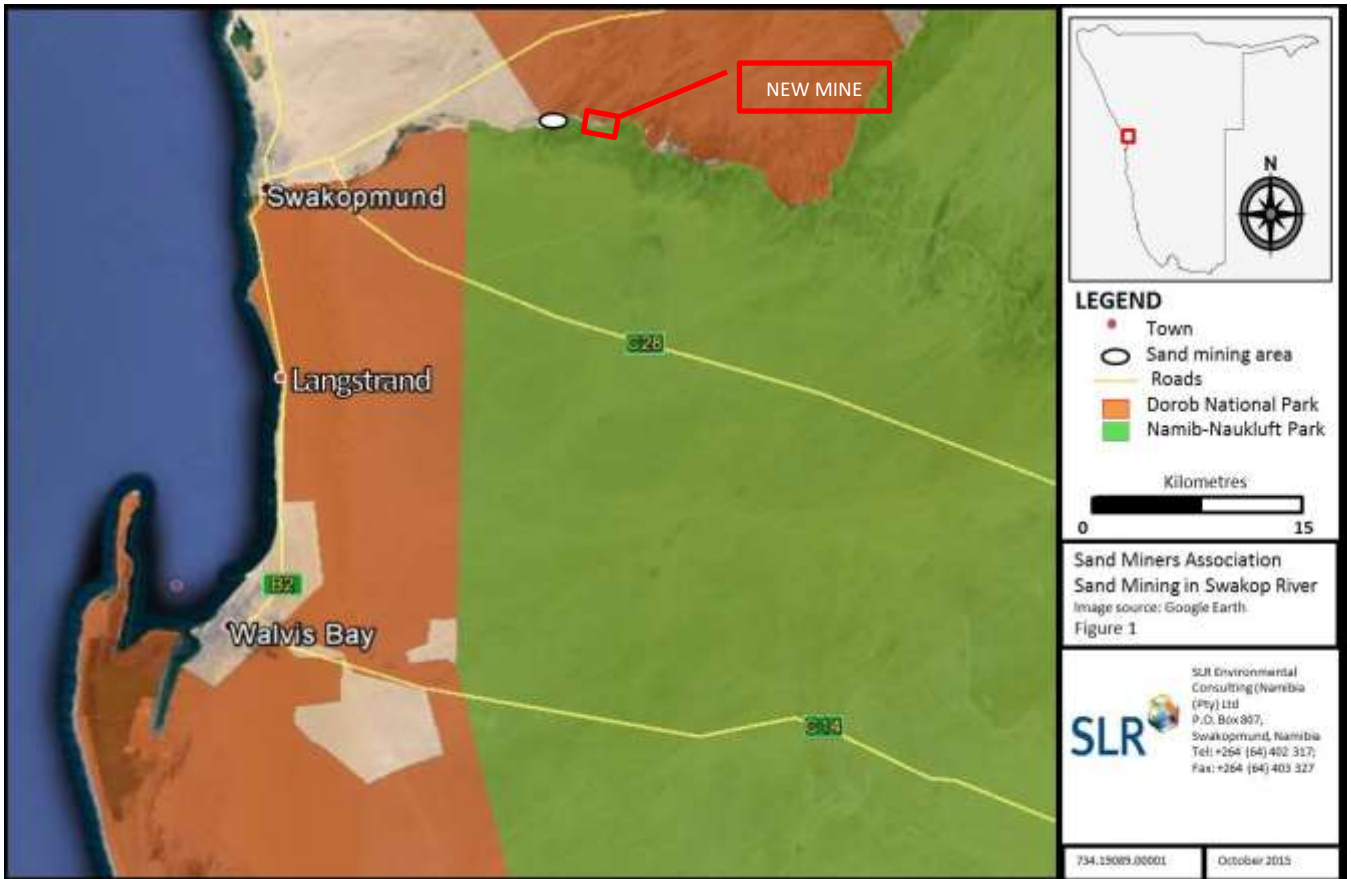


FIGURE 3.3-1: REGIONAL SETTING OF THE SAND MINE

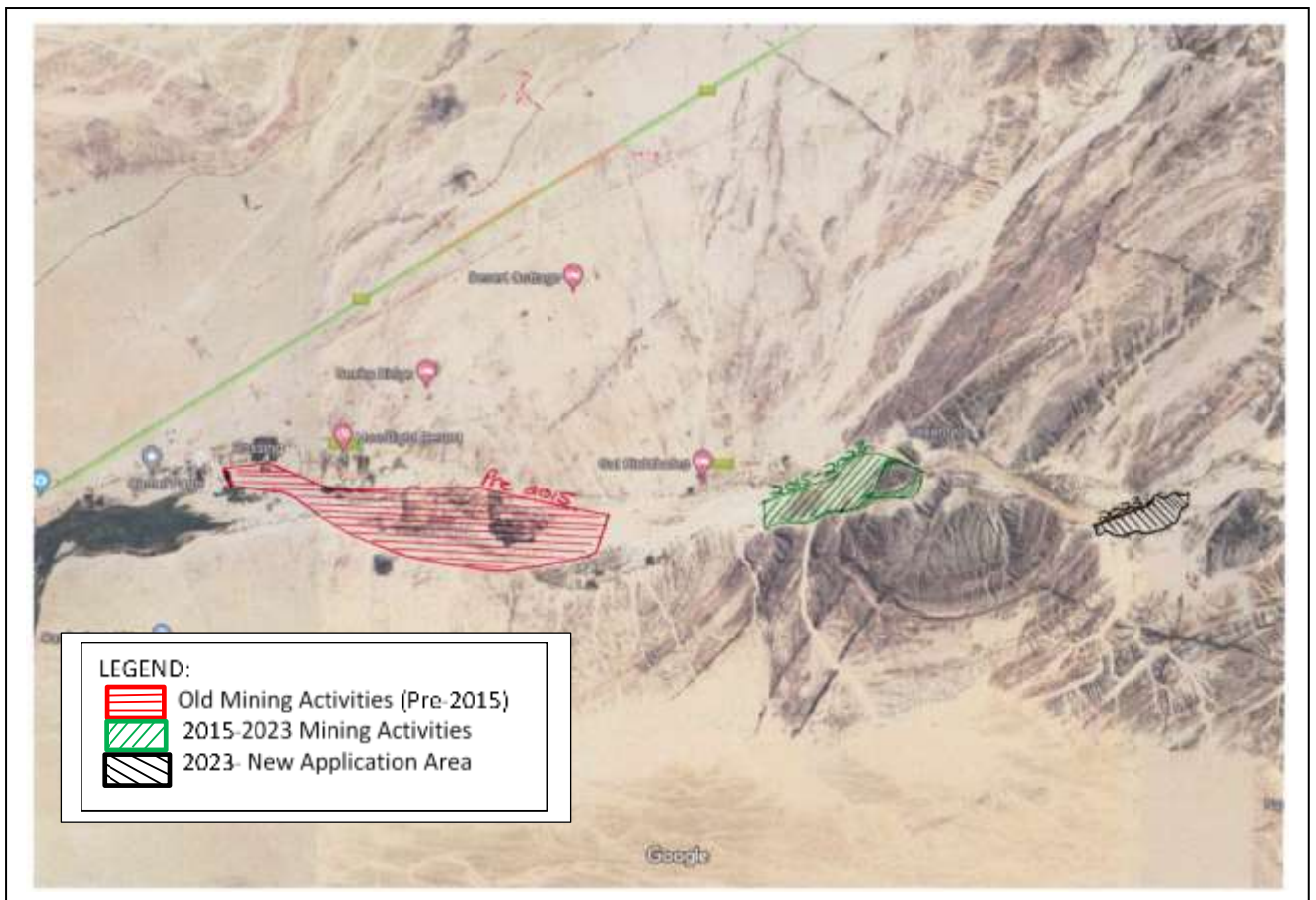


FIGURE 3.3-2: LOCAL SETTING OF THE SAND MINING ACTIVITIES

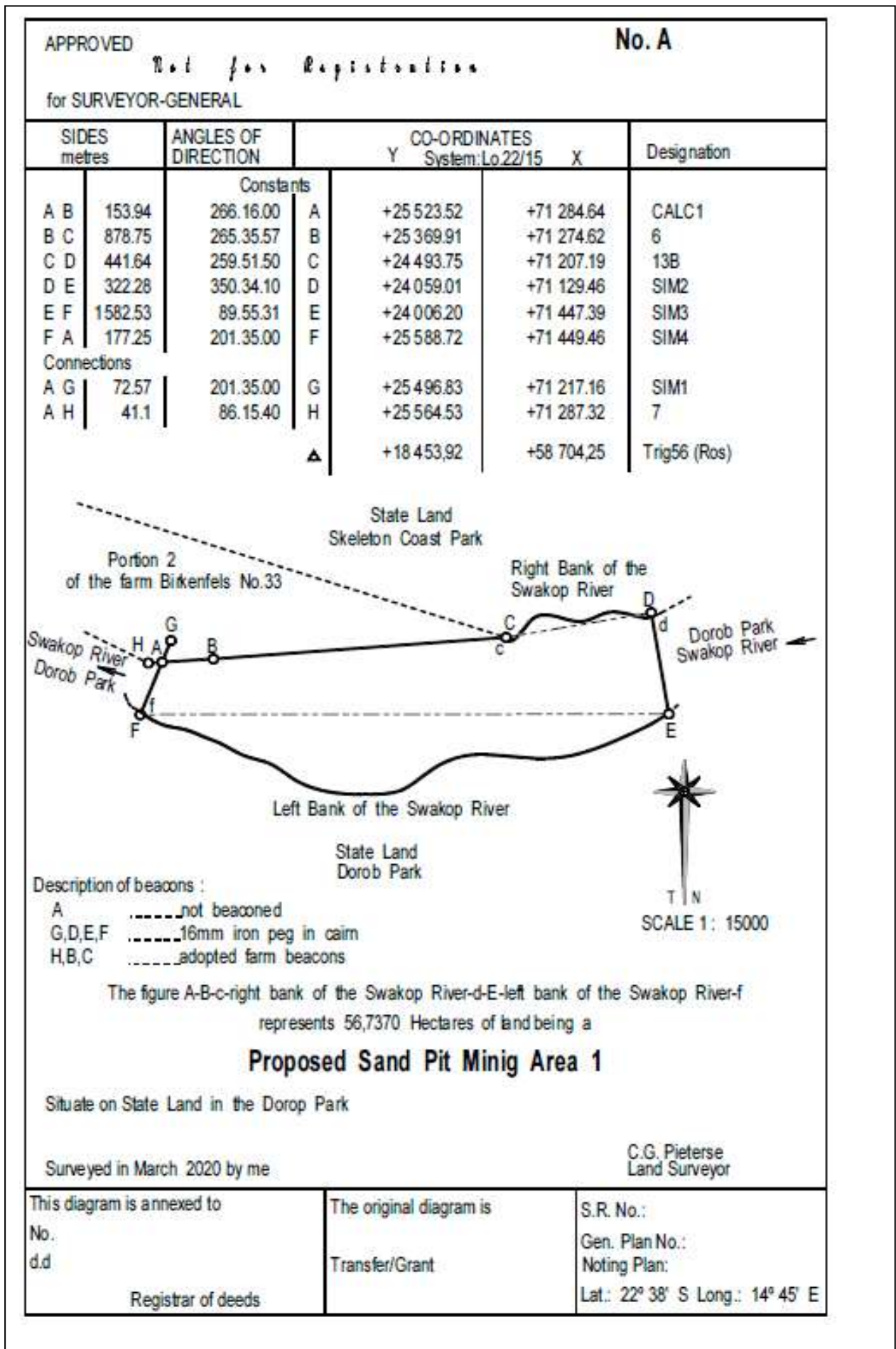


FIGURE 3.3-3: SURVEYED AREA OF THE PROPOSED NEW SAND MINE SITE

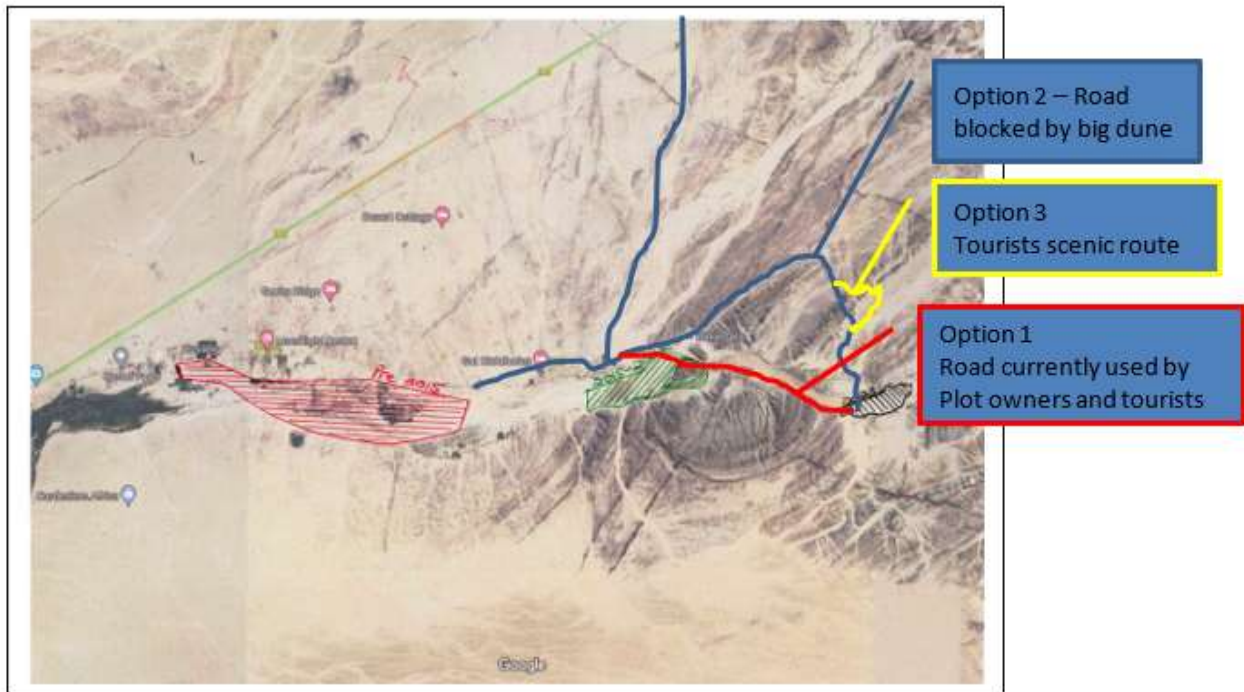


FIGURE 3.3.4 EXIT AND ENTRY ROADS FOR THE SAND MINING ACTIVITIES

Access roads:

- Option 1: This road is used by property owners alongside the river on a daily basis and some tourists. Property owners use the Sand Miner's equipment to keep this road accessible.
- Option 2: This is part of the D1901 road and then continues through the mountains. This road was originally considered to be the main exit and entry road, but the road has been blocked by a big dune that was blown in. At the moment this road cannot be used.
- Option 3: This part of the road is used extensively by tourists as a "scenic" road and thus not advisable to use.

3.4 Brief Process Description

3.4.1 Background

As discussed hereinabove, the **Sand Miners Association** intends to conduct sand mining operations at the proposed site. The sand mining activities will be achieved with the quarrying and excavation of sand.

3.4.2 Quarrying and Excavation

It has been indicated that the proposed area, where the sand mining activities are to be conducted, will be cleared of vegetation, with the use of front-end loaders, prior to the commencement of any sand mining activities. These same front-end loaders are used to scrape and excavate the sand, as well as to tip the sand at the various transfer points. It is at these transfer points, where the sand gets passed through sand screens, to get to the finer sand. The finer sand is then loaded onto tipper trucks, ranging between 10 – 40m³. Once the tipper trucks have been loaded, they transport the finer sand to Swakopmund, and from there, the finer sand is distributed further within Swakopmund and to Walvis Bay and Henties Bay.

The **Sand Miners Association** excavates an estimate of ± 37 000m³ of sand, per month. Consequently, there are about 100 truck trips made every day to transport the sand from the site.

3.5 Transport Routes and Mechanisms

Considering that the front-end loaders, are stored on site, after operating hours, they do not need to leave or access the proposed site. They do however, have to travel from the sand mining area, to the various transfer points to load the tipper trucks, which are being used for the transportation of the finer sand from the site to Swakopmund. In order to achieve this, the tipper trucks will use the B2 highway to an established unpaved/ gravel access road, which links the sand mining site with the B2. The established unpaved/ gravel access road, is roughly ± 20 km outside of Swakopmund. Road maps will be included in this report.

All the vehicles related to and associated with the sand mining activities, are required to use the existing access road, from the sand mining site, heading in a northerly direction, towards the B2, from where they turn westwards, onto the B2, to Swakopmund.

The proposed project will include the following surface infrastructure:

- The Security Hut, at the entrance to the site, and
- The ablutions facility, which has been erected at the security hut.

4. DESCRIPTION OF THE SAND MINING ACTIVITIES

4.1 Personnel

Each member company of the SMA has one or more truck drivers and ± 5 loader operators on site. One security officer mans the security hut at the entrance to the site.

The maximum number of people at any given time on site is approximately 15.

4.2 Working Hours

The working hours are Monday 7:00 to 17:00 and Saturdays 7:00 am until 13:00. No work is done on Sundays and public holidays.

4.3 Waste Management

The only waste created on site is the coarse material from the screening process, which is re-used to stabilize the riverbed where the trucks are loading sand; as well as small volumes of domestic waste from the operators.

4.4 Fuel and Other Hazardous Substances

No fuel is stored on site. The trucks fill up with fuel in town and the front-end loaders on site are filled with fuel by means of 20-liter containers or diesel bowsers which the trucks bring to site every day.

4.5 Sanitation

A toilet will be erected at the gate house.


4.6 Water Supply and Management

No water is used during the performance of the sand mining operations and therefore, water supply and management is not necessary.

4.7 Waste Management

4.7.1 Sewage

At the present there is no existing Town Council sewage connection point available to

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service the sand mining area. The **Sand Miners Association** will however, erected an ablution facility at the security hut.

Sewage will be treated by means of a containerised sewage system. The final effluent from the SMA will meet all legal specifications for effluents currently applicable in Namibia in terms of the Water Resources Management Act, 11 of 2013.

The sewage produced at the site stems mainly from ablution and toilet flushing. The total quantity of domestic effluent production is estimated to be between 0.5 to 1m³/day. The grey water is disposed of into the environment via a soak away.

The total fresh water consumption for domestic purposes on site is approximately 5l of water per person per day. Consumption of water, with a maximum of 15 people on site equates to 75L/day.

The sewage system of the site will cater for 15 people working a twelve-hour shift.

4.7.2 Other waste

It is predicted that two types of waste will be generated as a result of the sand mining activities, being domestic waste and coarse material. It is anticipated that there will be very small volumes of domestic waste if any. Coarse material, is however, created on site, as a result of the screening process, which is applied to obtain finer sand. The coarse material is however, reused to stabilize the riverbed, where the front-end trucks are loading sand.

4.8 Employment and Housing

As indicated hereinabove, the **Sand Miners Association** consists of 10 (ten) member companies. Each member company has one driver on site and approximately 6 (six) loaders on site. Additionally, there is one security guard on site.

Thus, there is about 20 drivers (twenty), 6 (six) front end loader operators and one security guard employed by the sand mining operations. It is however, important to note, that there is a maximum amount of 15 employees on site, on any given day at any given time.

Housing will not be provided for employees on-site, employees are currently being transported to the site from the nearby towns.

The anticipated labour compliment for the full sand mining operation is detailed in Table 4.8.1.

TABLE 4.8.1 Labour compliments:


Post	Number
Security Guard	1
Truck Drivers	20
Loader operators	6
Total	27

**Positions for health and safety staff are not included.*

4.9 Socio-Economic

The sand mining operations has been performed since early 2015. Consequently, these sand mining operations will not create any new employment opportunities, as all the employees currently employed for the performing of the sand mining activities, are all, already existing employees.

Therefore, there will be no migration of job seekers, which will eliminate any possible pollution of the environment and any possible disruption of the socio-economic lives of the local

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people. The proposed sand mining activities, will however, continue to contribute to the improvement of the living standards of the nearby community.

The proposed sand mining activities, which are the subject of this report, undoubtedly has tremendous potential to provide secondary spin-off employment as well as to create additional secondary employment opportunities. The current labour requirements have been sourced from the nearby coastal towns of Swakopmund, Walvis Bay and Henties Bay.

4.9.1 Potential Socio-Economic Impacts

Within the accepted broad definition of the term “*environment*” that applies to Environmental Impact Assessments, it is required to assess potential socio-economic impacts as part of this study. Herein, the potential socio-economic factors associated with this proposed project, are listed below, with comments as to their relevance and significance to this particular project.

4.9.2 Changes in employment opportunities

When regard is had to the fact that the current employees have already been employed for quite some time, and have been employed on a permanent basis, no changes in employment or employment opportunities are foreseen herein.

4.9.3 Secondary business opportunities

As discussed hereinabove, the sand mining operations will potentially provide secondary employment and business opportunities. The sand being mined at the sand mining operations, are being used in Operational projects, which means that the sand mining operations are indirectly creating secondary business and employment opportunities for contractors and the Operational industry in the coastal towns of Swakopmund, Walvis Bay and Henties Bay, as a whole.

4.9.4 Increased pressure on local services and infrastructure

The sand mining operations have been carried out in this area for roughly 7 (seven) years, thus, the pressure and impact on the local services have diminished and is no longer significant.

4.9.5 Conclusions

The socio-economic impacts associated with the scale of this project will not negatively affect the Town of Swakopmund. Consequently, the **Sand Miners Association’s** sand mining activities, will contribute positively towards the development of Swakopmund.

4.10 Electricity


No electricity will be utilized on the proposed sand mining site.

4.11 Health and Safety

The site must have a health and safety programme in place which complies with local legislation as well as with international best practices.

To achieve this, the **Sand Miners Association** will:

- Assess and respond to risks by identifying hazards to health and safety;
- Provide and maintain a working environment that is safe and in which risks to the health and safety of employees are managed;

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- Ensure an adequate supply of health and safety equipment and that the site is staffed with due regard to health and safety;
- Establish a health and safety policy;
- Prepare and implement Codes of Practice; and
- Provide health and safety training.
- Six (6) monthly environmental inspection reports

4.11.1 Occupational Health

The project will have an occupational health and medical surveillance programme in place, where pre-employment, periodical and exit medical examinations including x-rays and audiometric testing are undertaken and a full employee health record system is established and maintained.

Occupational health is a specialised field and it is recommended that this be outsourced to a qualified Occupational Health Practitioner who should conduct the pre-employment, periodic and exit examinations. Medical records must and will be kept both for current and former employees.

4.11.2 Occupational Hygiene

Occupational Hygiene is an applied science concerned with the identification, evaluation and control of environmental factors and stressors arising in or from the work-place and which may cause sickness, impaired health and well-being or significant discomfort to and the inefficiency of the employees. Through sound process design and engineering principles, coupled with maintenance of standards and equipment, occupational hygiene issues can be controlled.

In order to conform to internationally accepted Occupational Exposure Limits (OEL), a baseline risk assessment must first be performed, thereafter a survey should be carried out, to determine the exposure of the workforce, to pollutants which have been identified during the risk assessment.

As the monitoring and analysis of pollutants involves a number of expensive instruments, a properly equipped laboratory and especially qualified staff, it is suggested that this function be outsourced as well.

4.11.3 Codes of Practice / Standards

The site will have in place Codes of Practice (COP) or site standards which, with respect to the working environment, health and safety, will cover topics such as:

- Mobile machinery operation, maintenance and repair;
- Roadways, Operational, maintenance and use;
- Access to site;
- Waste disposal;
- Airborne pollutants, including dust;
- Noise and hearing conservation;
- Occupational health;
- Occupational hygiene monitoring;
- Environmental management; and
- Emergency procedures.

4.11.4 Health and Safety Training

All persons who are employed on the site will be trained, on all aspects of health and safety as well as the requirements of the COP's that are relevant to their occupation. There will be regular refresher training for both workers and

supervisors on health and safety. Responsibility for safety on site will be designated to appropriate supervisors and personnel.

4.11.5 Site Safety Program

Only suitably qualified and competent persons will be appointed to assume responsibility for health and safety. The Safety Officer position is a part time appointment. Participation by labour in health and safety matters will comply with labour regulations.

4.11.6 Risk Assessment

The employer must identify the hazards and assess the risks to the health and safety, to which employees may be exposed to. The employer must then determine how to eliminate or control or minimise the said risks. This is a formal, documented process which must involve all relevant persons, including the health and safety committee at the site.

There are a variety of risk assessment techniques available. The one used should be straightforward, relatively simple and easily understood by all the participants. The risk analysis matrix should be limited to Low, Medium and High categories for both probability and severity. One should avoid risk assessment systems that use complicated matrices and jargon.

The group who actually do the risk assessment should be chosen for expertise in the topic being assessed, this would include operators as well as any technical experts. Included therein, should be management (employer representation), employee representation, safety professionals, and where necessary the supplier or manufacturer, and a facilitator who should have appropriate technical knowledge.

Once the assessment team has been chosen, one must ensure that there is an understanding of the systems by all the participants. This is done by fully describing and discussing the systems. The systems are divided up into logical components for analysis. Any possible deviation or alternatives in design, installation or use is subject to a process of hazard identification. Each hazard is then assigned a probability of occurrence and a severity rating. The product of these is the "risk rating".


Methods of reducing the probability and/or severity are discussed and evaluated. Those considered appropriate are noted, and the rating process is then repeated. The process is documented and remedial action is taken on the design, installation or operation. Risk assessments must be reviewed periodically and, on any occasion, where there is a change of operation or equipment.

5 THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE SAND MINERS ASSOCIATION

5.1 Introduction

Environmental Impact Assessments are governed by the Environmental Management Act, 7 of 2007, and is regulated by the Ministry of Environment, Forestry and Tourism (MEFT). This Act was promulgated in the Government Gazette No. 3966 on 27 December 2007. The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations: Environmental Management Act, 7 of 2007 were promulgated on 6 February 2012 in Government Gazette No. 4878.

The following listed activities are relevant to the activities of the **Sand Miners Association**:

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5.2 Activities of the Sand Miners Association

Table 5.2-1 List of activities that requires Environmental Clearance Certificate.

No. 29 List of activities that may not be undertaken without Environmental Clearance Certificate Act, 7 of 2007	
No	ACTIVITY
	Mining and Quarrying Activities
3.2	Resource extraction, manipulation, conservation and related activities
	Water Resource Developments
8.8	Operational and other activities in water courses within flood lines
8.9	Operational and other activities within a catchment area.

5.3 Sand Miners Association – Environmental Impact Assessment Process

An application for the obtainment and approval of an Environmental Clearance Certificate herein, was submitted to the Ministry of Environment, Forestry and Tourism (MEFT): The Department of Environmental Affairs (DEA) for the activities relating to the sand mining operations, which are being conducted in the Swakop River.

NEHC CC is currently in the process of conducting the requisite EIA Scoping process, as required in terms of the Environmental Management Act, 7 of 2007. This process includes a screening phase and a scoping phase, which includes an Environmental Impact Assessment (EIA) and the compilation and production of an Environmental Management Plan (EMP).

The main purpose of this report is to provide information relating to the activities being conducted by the **Sand Miners Association** and to indicate which environmental aspects and potential impacts have been identified during the screening and scoping phases of this assessment. This Scoping Report was developed through combining previous EIA / EMP Report done by SRL Dated 2015 with this current updated EIA / EMP Report and in consultation with the relevant stakeholders, specifically the neighboring plot owners and the tourism industry in this area.

Considering the fact that the sand mining activities has been ongoing for many years, the related environmental and social impacts could be established, observed and identified by the environmental team, in consultation with the tourism industry within said area as well as the nearby land owners. The potential impacts of the sand mining activities, thus, could be assessed at the proposed new site, which assessment has been included in this report.

The overall objectives of the Environmental Impact Assessment (EIA) process is to:


- Provide an independent assessment of the potential environmental, social and economic impacts associated with the proposed project;
- Undertake public consultation,
- Identify and integrate sustainable development criteria; and
- Develop mitigation measures for identified potential impacts, where necessary.

An EIA is influenced by national legislation as well as by a range of guidelines. In this regard, the legislation applicable to this proposed project, will be discussed more fully hereunder.

This report is the scoping report followed by an Environmental Management Plan (EMP). The main purpose of this scoping report is to generate terms of reference for the EIA that will enable the meaningful assessment of all the relevant environmental and social issues.

Taking the above-mentioned into consideration, this report will provide sufficient information to the MEFT to make an informed decision, regarding the sand mining activities, and whether an Environmental Clearance Certificate (ECC) should be granted and issued herein.

The Environmental Management Plan has also been attached to this report.

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5.4 EIA Scoping Process

The process that was followed to develop this Scoping Report and EMP process and the corresponding activities are outlined in **Table 5.4-1** below.

Table 5.4-1: Scoping process

Objectives	Corresponding activities
Project initiation/screening phase (July 2017 – November 2017)	
<ul style="list-style-type: none"> Identify environmental aspects and potential impacts internally. Identify possible mitigation measures to limit environmental aspects and potential impacts internally. Initiate the Scoping (including assessment) process. 	<ul style="list-style-type: none"> Project initiation discussions with the Sand Miners Association. Identify environmental and social issues and determine legal requirements. Meeting with MEFT (Mr. Damian Nchindo) during hand delivery of EIA Application. (03/11/2017)
Scoping phase (including assessment of impacts) (December 2017 – April 2022)	
<ul style="list-style-type: none"> Further identify potential environmental issues associated with the proposed project. Considering alternatives. Provide a description of the potentially affected environment. Assessment of potential environmental impacts associated with the proposed project. Develop management and mitigation measures. 	<ul style="list-style-type: none"> Site visits and focus group meetings neighboring plot owners, Coastal Tourism Association of Namibia (C-TAN) and MEFT: Directorate Parks and Wildlife. Compilation of Scoping Report and EMP. Distribution of Scoping Report to Interested and Affected Parties (I and AP's) for comment. Forward finalized Scoping Report with EMP and I and AP's comments to MEFT for decision-making.

5.5 Environmental Team

National Environmental Health Consultants CC (NEHC CC) is an independent consulting company that has been appointed by the **Sand Miners Association** to undertake the Environmental Impact Assessment and related processes. Johan Cornelissen, the Project Manager has approximately twenty-six (26) years of relevant experience in environmental management, conducting/managing EIA's, compiling EMP's and implementing EMP's and Environmental Management Systems. The relevant curriculum vitae documentation is attached in **Appendix F**. The environmental project team is outlined in **Table 5.5-1** below.

Table 5.5-1: The environmental project team

Team	Name	Designation	Tasks and roles	Company
Sand Miners Association	Mr. Simon van Zyl	Director	Responsible for the interface between the Sand Miners Association and the environmental team, and for ensuring the implementation of the EMP.	Coastal Precast and Paving
Sand Miners Association	Ms. Marlene Delpont	Finance		Coastal Precast and Paving
Project Management	Johan Cornelissen	Project Manager	Management of the process. Report Compilation.	NEHC CC
Project Management	Leonie Cornelissen	Project Assistant	Project administration, meetings, report compilation, etc.	NEHC CC
Specialist Input	Johan Cornelissen	Air quality specialist	Desktop air quality assessment	NEHC CC
Specialist Input	Johan Cornelissen	Environmental Noise	Desktop Environmental Noise assessment	NEHC CC

6. SCOPING METHODOLOGY

6.1 Information Collection

NEHC CC used various sources to identify the environmental issues associated with the sand mining activities of the **Sand Miners Association**. The main sources of information for the preparation of this Scoping Report include:

- Information relating to the sand mining activities provided by the **Sand Miners Association**, which includes:
 - Description of the existing sand mining operations;
 - Maps indicating the location of the current and planned sand mining areas, in the Swakop River, situated in the Swakopmund Municipal boundaries; and
 - Description of the associated activities.
- Site visits and inspections by NEHC CC;
- Literature research, consisting of:
 - Other EIA's and specialist studies done in the area; and
 - Atlas of Namibia.
- Input from Specialists in respect of:
 - Surface Water;
 - Groundwater;
 - Air quality; and
 - Environmental Noise.
- Consultation with neighboring plot owners, other key stakeholders and Interested and Affected Parties.

6.2 Scoping Report

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the sand mining activities might have an impact on the environment. Due to reasons mentioned in **Sections 4, 5 and 12**, these potential impacts could also be assessed and the findings presented in this report. Furthermore, management and mitigation measures are provided to avoid or reduce these impacts and the accompanying effects thereof.

Table 6.2-1 outlines the Scoping Report requirements contained in **Section 6** of the Environmental Impact Assessment Regulations promulgated in February 2012, in terms of the Environmental Management Act, 7 of 2007. The table includes reference to the relevant sections in the report.

Table 6.2-1: Scoping report requirements stipulated in the EIA regulation

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
a) the curriculum vitae of the EAP who prepared the report;	Appendix F
b) a description of the proposed activity;	Sections 3
c) a description of the site on which the activity is to be undertaken and the location of the activity on the site	Section 4
d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Sections 4 & 5
e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 6
f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including -	Section 5.3, Appendix B, Appendix C, Appendix D, Appendix E.
i. the steps that were taken to notify potentially interested and affected parties of the proposed application;	

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
ii. proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; iii. a list of all persons, organizations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and iv. a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	Sections 2, 7 & 10
h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any Operational, erection or decommissioning associated with the undertaking of the proposed listed activity;	Section 11
i) Terms of reference for the detailed assessment	Sections 3, 7.1
j) a draft management plan, which includes - i. 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; ii. 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 iii. 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.	Section 11 & 12 & EMP

6.3 Public Participation Process

The Public Participation Process for the proposed sand mining activities, is aimed to ensure that all persons, such as the nearby residents and authorities, as well as organizations that may be affected by, or interested in, the proposed sand mining activities were informed of the project and could register their views and concerns. By consulting with the I and AP's the range of environmental issues to be considered in the Scoping Report (including the assessment of impacts) has been given specific context and focus.

Included below is a summary of the people consulted, the process that was followed, and the issues that were identified.

6.3.1 Stakeholders

The following **Table 6.3.1** provides a broad list of stakeholders that are relevant to the proposed project. They were informed about the sand mining activities as well as the public consultation process.

Table 6.3.1: Stakeholders

Stakeholder Grouping	Organization
Government Ministries	<ul style="list-style-type: none"> • Ministry of Environment, Forestry and Tourism (MEFT): <ul style="list-style-type: none"> ○ The Department of Environmental Affairs ○ The Directorate of Regional Services and Parks Management ○ Directorate of Parks and Wildlife Management • Ministry of Water Affairs and Forestry

Stakeholder Grouping	Organization
Municipalities	<ul style="list-style-type: none"> • Municipality of Swakopmund
Neighboring Plot Owners	<ul style="list-style-type: none"> • Tannenhof 74 • Mr. Coimbra (next to Tannenhof) • Ellis' Vegetable Farm • Gut Richthofen • Owners of Plot 140 and 141 • Owners of plot WO 33 on Farm Birkenfels • Farm Gideon owner
Tourism	<ul style="list-style-type: none"> • Coastal Tourism Association of Namibia (C-TAN)
Other interested and affected parties	<ul style="list-style-type: none"> • Any other people with an interest in, or who may be affected by, the proposed project.

The full stakeholder database for this project is included in **Appendix D and G** of the report.

6.3.2 Steps in the Consultation Process

Table 6.3.2-1 sets out the steps in the consultation process that were conducted during the EIA Scoping process.

Table 6.3.2-1: Consultation process with Interested and Affected Parties

TASK	DESCRIPTION	DATE
Notification - regulatory authorities and Interested and Affected Parties		
I and AP identification	The stakeholder database was created and has been updated throughout the EIA Scoping process, where required. A copy of the I and AP database is attached in Appendix G .	November 2017
Distribution of background information document (BID) and telephone calls	<p>BID's were distributed <i>via</i> email to the relevant authorities and I and AP's on the stakeholder database and hard copies were made available on request. Hard copies of the BID were also made available during the CALL FOR PUBLIC PARTICIPATION process.</p> <p>The purpose of the BID was to inform I and AP's about the sand mining operations which are currently being performed by the Sand Miners Association, the EIA (Scoping) process being followed, possible environmental impacts and means of providing input to the EIA (Scoping) process. Attached to the BID was a registration and response form, which provided I and AP's with an opportunity to submit their names, contact details and comments on the project.</p>	November 2017
Site notices	A site notice was erected at the site next to a dirt road in the river. A photo of the site notice is attached in Appendix B .	November 2017
Newspaper Advertisements	<p>Block advertisements were placed as follows:</p> <ul style="list-style-type: none"> • The Republikein (16th & 23rd November 2017); and • The Namib Times (14th & 21st November 2017). <p>Copies of the advertisements are attached in Appendix B.</p>	November 2017
Focus Group Meeting and submission of comments		

TASK	DESCRIPTION	DATE
Focus group meetings Submission of Comments	Focus group meeting was held with the Municipality of Swakopmund, which was also attended by an official from the Ministry of Environment, Forestry and Tourism, on 18 February 2022, and their concerns and issues raised, were incorporated herein. The minutes of these meetings as well as the attendance registers are included in Appendix D . In addition, comment forms and emails, with comments, were also submitted to NEHC CC, from various I and AP's.	February 2022
Comments and Responses	All comments received by email, fax, telephone conversations are attached in Appendix D . A Summary Issues and Response Report is attached Appendix E .	
Review of draft Scoping Report		
I and AP's and authorities (excluding MEFT) review of Scoping Report and EMP	The Scoping Report (excluding Appendices) was distributed to all I and AP's that are registered on the I and AP database via e-mail (where available).	February 2022
	Telephonic (follow-up) calls were made to a number of relevant I and AP's. An electronic copy (in CD format) of the full report (including the appendices) was made available, on request to NEHC CC. A hard copy of the report was also made available at their offices in Swakopmund.	February 2022
Comments on the Scoping Report	All comments received were considered and included into the final documentation submitted to the MEFT.	Still Pending
MEFT review of Scoping Report and EMP	A copy of the final Scoping Report, including the review commentary by the authorities and I and AP's, was delivered to the MEFT on completion of the public review process, for their review, consideration and approval.	Still Pending

6.3.3 Summary of issues raised

All issues that have been raised to date by I and AP's are provided in **Appendix E** of the Scoping Report. The issues raised pertain to:

- Impacts on water resources, in the form of water usage and water contamination;
- Waste, specifically, the ablution facilities;
- The usage of the 'plot road';
- Loss of access into the Swakop River;
- Impact on Tourism, equating to commercial concern;
- Noise;
- Social Responsibility;
- Rehabilitation of the previous sand mining area as well as the current and proposed new sand mining area;
- Dust; and
- The impacts on biodiversity, in particular on springbok and ostrich populations in the area.

7. LEGAL FRAMEWORK

7.1 Introduction

The environmental legal requirements are summarized below.

The Republic of Namibia has five tiers of law and a number of policies relevant to environmental assessment and protection, which includes:

- The Constitution;
- Statutory law;
- Common law;
- Customary law; and
- International law.

Key policies currently in force include:

- The EIA Policy (1995); and
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia, 1990, makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

The Environmental Management Act, 7 of 2007

Environmental Impact Assessments were introduced in the Environmental Management Act, 7 of 2007, which was promulgated and published in Government Gazette 3966, on 27 December 2007 and is regulated by the Ministry of Environment, Forestry and Tourism (MEFT). In addition to the Environmental Management Act, 7 of 2007, the Environmental Impact Assessment Regulations were promulgated and published in accordance with the Environmental Management Act, 7 of 2007, in Government Gazette 4878, on 6 February 2012. In accordance with the legal framework put forth by the relevant legislation discussed herein, certain activities have been identified, which may not commence without the obtainment of an Environmental Clearance Certificate, to be issued by the MEFT. The MEFT, however, will not issue an Environmental Clearance Certificate, without first having regard and considering the Environmental Impact Assessment.

The following activities (**Table 7.1-1**) are relevant to the proposed project. Please note that all activities which might be undertaken form part of the Environmental Clearance.

Table 7.1-1 List of activities that requires Environmental Clearance Certificate.

No. 29 List of activities that may not be undertaken without Environmental Clearance Certificate Act, 7 of 2007	
No	ACTIVITY
	Mining and Quarrying Activities
3.2	Resource extraction, manipulation, conservation and related activities
	Water Resource Developments
8.8	Operational and other activities in water courses within flood lines
8.9	Operational and other activities within a catchment area.

7.2 Applicable Laws and Policies

In the context of the proposed sand mining activities, there are several laws and policies currently applicable thereto, which are discussed hereunder.

7.3 The Constitution of the Republic of Namibia, 1990

The Constitution clearly stipulates that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.

7.4 The Water Act, 54 of 1956

It is important to note that the Water Act, 54 of 1956, was subjected to various amendments throughout the years, subsequent to being repealed as a whole by the Water Resources Management Act, 11 of 2013, but the Water Resources Management Act, 11 of 2013, is not yet enforced.

The Water Act, 54 of 1956, as amended and repealed, was aimed to provide for the management of the national water resources to achieve the sustainable use of water for the benefit of all water users. This Act was broadly used for the following purposes:

- For the administration and monitoring of the usage and conservation of water for domestic, urban, agricultural and industrial purposes;
- The supervision and management, to a certain extent, the usage of water originating from the ocean;
- To limit, regulate and control certain activities on or in water in certain areas; and
- The controlling of activities which may alter the natural occurrence of certain types of atmospheric precipitation.

The Line Ministry in this regard, is the Ministry of Agriculture, Water Affairs and Forestry.

7.5 The Regional Councils Act, 22 of 1992

In terms of the Act, Regional Councils are governed by the Ministry for Regional Local Government Housing and Rural Development (MRLGHRD). The Regional Councils are responsible for the planning and coordination of regional policies and priorities. Section 28 thereof, states that the powers, duties, functions, rights and obligations of regional councils include overseeing the general implementation of regional development activities. They, thus, have the power to undertake, with due regard to the powers, duties and functions of the National Planning Commission, the planning of the development of the region for which it has been established, bearing in mind:

- The natural and other resources and the economic potential of such regions;
- The general land utilisation pattern; and
- The sensitivity of the natural environment.


7.6 The Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007

In accordance with the aforementioned Act, the Ministry of Labour and Social Welfare, is the designated Ministry, responsible for the regulation and enforcement of the Act. The Act aims to *"promote and maintain the welfare of the people and to further a policy of labour relations conducive to economic growth, stability and productivity"*. It details basic conditions of employment, as well as health, safety and welfare requirements, employers must adhere to.

7.7 The Water Resources Management Act, 11 of 2013

As indicated hereinabove, this Act, repealed the existing Water Act, 54 of 1956, with all its subsequent amendments. This Act, however, is not being enforced.

The Water Resources Management Act, 11 of 2013, at its core, aims to ensure that the water resources of the Republic of Namibia, are managed, developed, conserved, protected and used in ways and manners which are consistent with and promotes the fundamental principles, embodied in Section 3 thereof. The Act, however, contains provisions dealing with and

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regulating the control and protection of groundwater resources as well as water pollution control, in Parts 12 and 13, thereof, respectively.

The Line Ministry in terms of this Act, is the Ministry of Agriculture, Water Affairs and Forestry.

7.8 The Environmental Assessment Policy of Namibia, 1995

Environmental Impact Assessments (EIA) are aimed to ensure that prior to the commissioning and commencing with any development projects, that the environmental consequences and impacts of such development projects, are properly understood, considered and incorporated into the planning process of said development projects. All listed activities, policies, programmes and projects, albeit initiated by the state or the private sector, has to be subjected to the EIA process.

Apart from the requirements of the Environmental Assessment Policy, the following sustainability principles has to be taken into consideration:

- The Cradle to Grave Principle;
- The Precautionary Principle;
- The Polluter Pays Principle; and
- Public Participation and Access to Information Policy.

In this regard, the Line Ministry, is the Ministry for Environment and Tourism.

7.9 The Soil Conservation Act, 76 of 1969

The Soil Conservation Act, advocates for the prevention and the combating of soil erosion. The Act also promotes the conservation and improvement of soil and vegetation and the manner in which it is used, as well as the protection of water resources.

The Line Ministry in terms of this Act, is the Ministry of Agriculture, Water Affairs and Forestry.

7.10 The Draft Wetland Policy, 1993

In terms of this policy, any wetlands and its associated hydrological functions form a part, to be managed in such a way that their biodiversity, vital ecological functions and life support systems are protected for the benefit of all generations.

The Line Ministry in terms of this Policy, is the Ministry of Environment, Forestry and Tourism.

7.11 The Forestry Act, 12 of 2001

The Act provides that various plant species are to be protected. Consequently, prior to the clearing of certain protected plant species, a harvesting permit has to be obtained from the Directorate of Forestry.


The Line Ministry in this instance is, the Ministry of Agriculture, Water Affairs and Forestry.

7.12 The Draft Pollution Control and Waste Management Bill

As the Draft Pollution Control and Waste Management Bill has not formally been assented to, it is not yet in force and has no effect. It merely serves as a guideline.

Pollution control and waste management is essential in the achievement of environmental protection, as both pollution and waste pose a threat to human, animal and plant life as well as to ecological systems. In this regard and in terms of this Draft Pollution Control and Waste Management Bill, it can be construed that the proposed sand mining operations, which are the subject of this report, shall find application under Parts 2, 7 and 8 thereof.

Part 2 regulates and deals with air pollution. This part stipulates that no person shall discharge or cause any pollutant to be discharged into the air from a process except under and in

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accordance with the provisions, pertaining to an air pollution license, issued in terms of Section 23 thereof. Part 2 further sets out the procedures to follow, when applying for said air pollution license, the fees to be paid and the terms and conditions associated with such air pollution license.

Both Parts 7 and 8, deal with hazardous substances. Part 7 states that any person who sells, stores, transports or makes use of any hazardous substances or products containing hazardous substances, shall notify the competent authority thereof and the presence and quantity of those substances. On the other hand, Part 8, requires emergency preparedness by the person handling hazardous substances, through the implementation of emergency response plans.

7.13 The Public Health Act, 36 of 1919

Reference to this Act, includes and incorporates all the subsequent amendments made hereto.

In terms of Section 119 thereof, the presence of any nuisance on any occupied land is prohibited. In Section 122 the term nuisance is set out as follows:

- Any area of land kept or permitted to remain in such a state as to be offensive or liable, to cause any infectious, communicable or preventable diseases or injury or danger to health; or
- Any other condition which is offensive, injurious or dangerous to health.

It has been concluded that the potential impacts of the sand mining activities, are expected to include dust, air quality, noise nuisance and some form of smoke emissions.

The relevant Line Ministry in this regard, is, the Ministry of Health and Social Services.

7.14 The Hazardous Substances Ordinance, 14 of 1974

This Ordinance regulates the validity of licenses or registration referred to in Section 5. It deals with hazardous substances of Groups I to IV. However, while environmental aspects are not really explicitly stated, guidelines for the importing, storage, handling, etc. of hazardous substances are set out therein, and is regulated by the Drug Law Enforcement Unit (DLEU) of the Namibian Police Force, which forms part of the Ministry of Safety and Security.

7.15 The Nature Conservation Ordinance, 4 of 1975

The Nature Conservation Ordinance provides for the promotion and maintenance of ecosystems, essential ecological processes and the biodiversity of Namibia. It further aims to promote the mutually beneficial co-existence of humans with fauna and flora as well as to give effect to Namibia's international obligations, such as the Convention on Biological Diversity.


The Ordinance also recognizes that biodiversity must be maintained, and where necessary, rehabilitated and that essential and vital ecological processes and life supporting systems must be maintained.

7.16 The National Heritage Act, 27 of 2004

The National Heritage Act contains provisions for the conservation and protection of places and objects, which are considered and classified as a national heritage, and which are registered as such due to its significance.

In the event that any objects, with such a heritage significance, are discovered during the sand mining operations, the custodian thereof, will be informed immediately.

The National Heritage Council, will in this regard, serve as the custodian thereof.

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7.17 The Atmospheric Pollution Prevention Ordinance, 11 of 1976

The Ministry of Health and Social Services is responsible for the regulation of Atmospheric Pollution Prevention, as contemplated in the Atmospheric Pollution Prevention Ordinance, 11 of 1976. There are a number of sections of the aforesaid Ordinance which relates to 'Air Pollution Control Certification, Dust Control, Closure Certificates etc. The following sections, would thus, find application: **Sections 5(1), 7, 8(1), 11(1), (2), (3), 12(1), 13(1), (2), (4), (5), (6), 24(1), 25(1) and (2)**. At present, the Ministry does not grant any certificates as no procedures or guidelines exist. The best practice would be to notify the Ministry of the anticipated emissions.

7.18 The Namibian Water Corporation Act, 12 of 1997

This Act provides for the establishment of the Namibia Water Corporation Limited and established provisions regulating the relative and bulk water supply by the Corporation. The objects of the Corporation are to carry out efficiently, and in the best interests of the Republic of Namibia:

- The primary business of bulk water supply to customers by cost-effective, environmentally sound and sustainable means; and
- The secondary business of rendering water-related services.

The Line Ministry in this instance is, the Ministry of Agriculture, Water Affairs and Forestry.

7.19 Park Rules and Regulations

In light thereof that the proposed sand mining operations, are to be conducted in an area, situated within the boundaries of both the Dorob National Park as well as the Namib-Naukluft National Park. Therefore, the rules and regulations of these National Parks, must be abided with. For a copy both the Park's rules and regulations, see internet website: [www.met.gov.na/files/files/Dorob Park Regulations.pdf](http://www.met.gov.na/files/files/Dorob%20Park%20Regulations.pdf) and <https://national-parks.org/namibia/namib-naukluft>

8. ALTERNATIVES


Due to the fact that the proposed new sand mining site has been identified and considering that the sand mining activities at, this proposed new sand mining site had already commenced, as far back as early 2015, prior to the commissioning of the EIA process, it is not feasible to assess alternatives at this point in time. Despite, the assessment of alternatives, not being feasible, some alternatives, have however, been considered and investigated by the **Sand Miners Association**, prior to the commencement of the sand mining operations at the proposed new site.

8.1 Location Alternatives

The following different and alternative locations were considered for the conduction of the sand mining operations:

- Further downstream from the current sand mining area, near the Railway Bridge, which is located approximately, 2.8 km east of the Swakopmund residential area. Swakopmund might extend eastwards in the future, thus, encroaching on this alternative site, and a lodge was found at the edge of the river bed.
- The Khan River.
- Further upstream from the current sand mining area, close to the Rössing Uranium Mine.
- The Omaruru River in the Henties Bay Municipal District, which is currently being mined for sand as well.

The last three of the proposed sand mining sites, listed above, being the Khan River, upstream in the Swakop River close to Rössing Uranium Mine and the Omaruru River, are much further

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from Swakopmund. Thus, the sand mining operations, will become much more expensive in terms of transport costs, for the **Sand Miners Association**. But, considering that these proposed sites are located further from the residential areas, the potential impact on third parties would be significantly reduced. Some of these sites, might also be situated inside the Namib-Naukluft National Park, instead of on the boundaries of the Dorob National Park and the Namib-Naukluft National Park, such as the current sand mining site, and this could potentially have much more significant impacts on biodiversity and the tourism industry.

8.2 Access Route Alternatives

There is already an established gravel access route, which leads to the current sand mining site. This route, was the old power line servitude, which was specifically developed and upgraded by the **Sand Miners Association**, to improve the ease of access to the sand mining site. The access road turns southwards off the B2 highway and is located roughly 22km east of Swakopmund. The plot road, which is an alternative route to follow, is no longer being utilized by the **Sand Miners Association**, as the continued use thereof would cause further disturbances to the surrounding plot owners and may pose a safety risk to third parties, making use of the plot road.

The proposed area for the sand mining activities is situated roughly 50km outside of Swakopmund in an east-north-easterly direction. The area where the sand mining activities are to be conducted, is located on the boundaries of the Dorob National Park and the Namib-Naukluft National Park, and is located within these National Parks.

A new area with a total of roughly 57ha were identified for the **Sand Miners Association** to continual conduction of the sand mining operations and the lifespan of the project is estimated at 15 (fifteen) years.

8.3 Socio-Economic

Many of the direct, indirect and accumulative impacts, which have already been discussed in this report, will have a positive impact of significance on the local community.

8.4 NO-GO Option

The potential negative impacts associated with the sand mining activities, would be avoided if these activities do not proceed. This in turn affect the economy of the country.


However, by disallowing and halting the sand mining operations, will undoubtedly result in the Operational industry along the coast, not having a sufficient and continuous supply of sand, to be used in Operational projects. The sand which is being mined by the **Sand Miners Association** is the current sand mining area, is a critical component for the Operational industry. This will severely impede the physical development of the region.

Therefore, in order for the sand mining operations to continue, with its current sand mining activities, the management and mitigation measures presented herein, has to be implemented to ensure that the potential negative impacts on the environment can be minimized or avoided.

9. DESCRIPTION OF THE CURRENT ENVIRONMENT

The information presented in the section below was derived from the following sources:

- Visual observations during site visits by NEHC CC (has site inspections been conducted);
- Discussions with local residents and authorities;
- Atlas of Namibia 3rd edition (Mendelsohn *et al*, 2009);
- Google Earth and spatial data from Environmental Information Services (EIS) Namibia;
- Other EIA's and specialist studies in the area:

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- Husab Linear EIA (Metago, 2011); and
- Biodiversity Impact Assessment of the Linear Infrastructure at Swakop Uranium’s Husab Project (AWR, 2010).
- No Environmental Noise monitoring has been conducted;

9.1 Landscape and Elevations

The sand mining operations is located in the Swakop River approximately 50 km up from the Swakopmund. Figure 9.1-1 shows the site layout, from which it can be seen that the whole width of the main riverbed is planned for mining, up to 322m wide at the downstream (western) side, but that approximately 1582m upstream of the western boundary the channel splits into two to pass around a large rock island. The elevation at the site is approximately 100m amsl at the most westerly point of the sand mine.

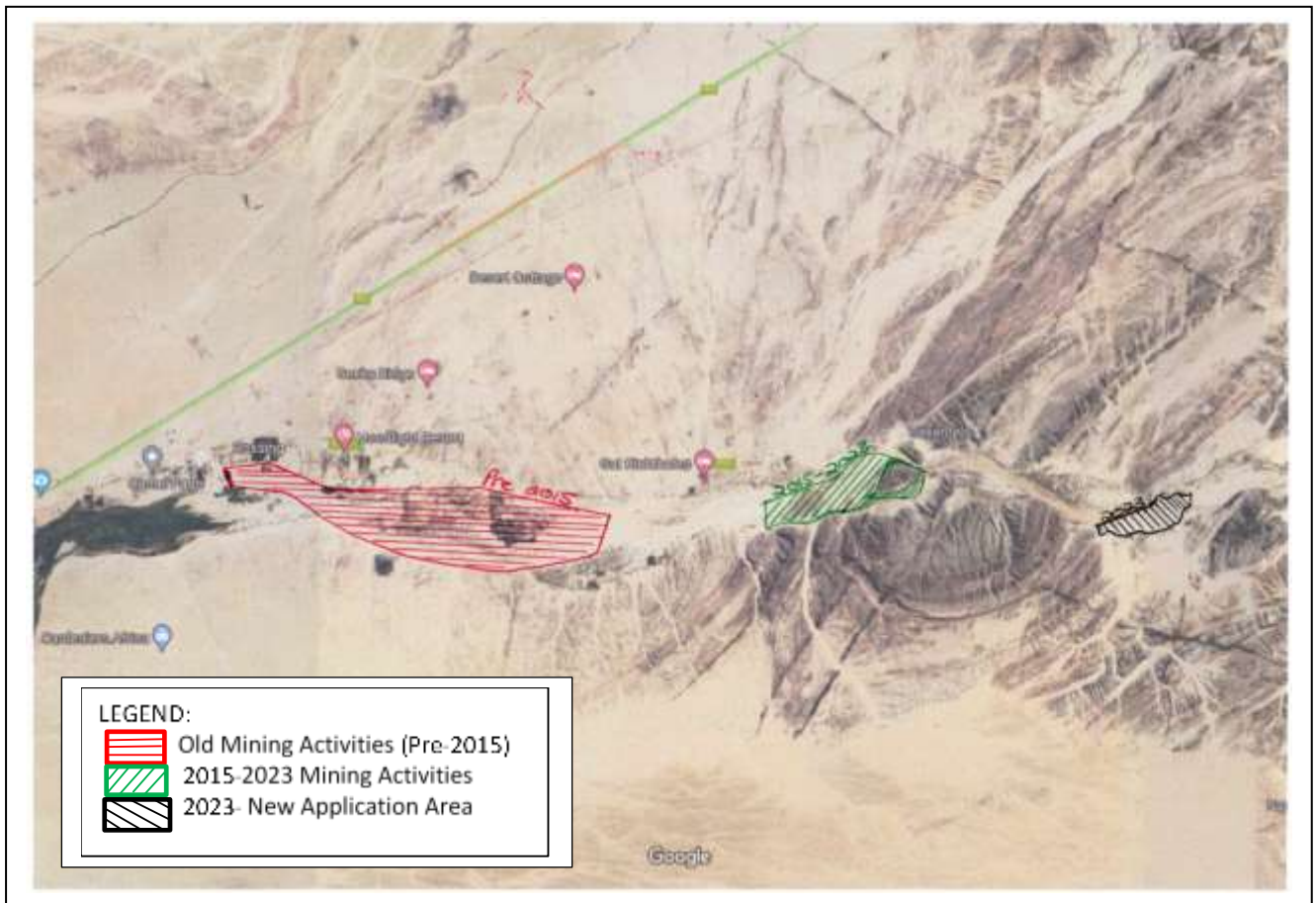


FIGURE 9.1-1: LOCAL SETTING OF THE SAND MINING ACTIVITIES

9.2 Land Use

The proposed sand mining area is located on the fringe of the Namib-Naukluft National Park and the Dorob National Park, and its borders the municipal area. Hence, the current land use to the east of the sand mine differs, from the land use, to the west.

The National Park areas, falls within a dry and hot desert climate and is home to various desert adapted animals and plants. The landscape has high aesthetic and recreational value, due to its pristine state and, as thus, the declaration of both as Nature Reserves. Tour-operators, self-drive tourists and members of the public frequently visit these National Parks for site seeing, wildlife viewing, and camping. The sand mine area is directly located where tourists and some of the plot owners, enter the National Parks and Swakop River, if they are approaching from Swakopmund. It is an important and highly used entry point, into the park, by tourists and locals alike, and consequently it is important for the local tourism operators in the area.

On the western side of the current sand mining area, plots border the sand mining activities. The plots are under private ownership, and most of the residents there, reside at the plots or conduct small-scale farming operations there, which was in all likelihood chosen by the plot owners, due to the quietness and pristine surroundings in the area. The closest plot is situated approximately $\pm 350\text{m}$ from the sand mining activities.

The current sand mining operations at the proposed new sand mining site in the Swakop River, commenced as far back as April 2015. The aerial photograph as seen in Figure 9.2-1, below, shows the size of the sand mining operations in September 2015 and the nearest receptors to the sand mine as well as the access roads.

The nearest receptor is located $\pm 350\text{m}$ from sand mine and $\pm 500\text{m}$ from access road. The access road into the Swakop River is used by plot owners as well as by people visiting the National Parks, such as tourists.

Other mines within the area include the Rössing Uranium Mine located 30km to the north-east and Husab Uranium Mine located approximately 26km east of the sand mining site. The Etango Pilot Project is located about 13km to the southeast of the sand mining operations.

It must be noted that the NamPower power line currently runs approximately, through the center of the current and sand mining site (to the immediate west of the rock island), runs a 220 kV NamPower power line in a south-west to north-east direction. To the east of this power line, another (Erongo Red) 22kV line runs more or less parallel to the bigger one, over the rock island.

The “*Big Tree*”, which is a popular site for locals, and possibly for tourists for picnics, in order to experience the scenic landscape, is located close to one of the 220 kV powerline pylons. The powerline therefore, crosses almost over the entire picnic area.

The new proposed site does not have any power lines crossing the site and by relocating current sand mining activities will address this safety concern.



FIGURE 9.2-1: AERIAL PHOTOGRAPH OF THE SANDMINE, ACCESS TRACKS AND NEAREST RECEPTORS LOOKING EAST (*photo taken September 2015-rowan miles*)

9.3 Visual Baseline

In order to establish the visual baseline, various site visits were conducted by NEHC CC, which coincided with additional discussions with the representatives of the Coastal Tourism Association of Namibia (C-TAN), along with the neighboring plot owners. In establishing the visual baseline, Google Earth as well as the Husab Linear Infrastructure EIA (Metago, 2011), was also utilized.

9.3.1 Landscape Character and 'Sense of Place'

In determining the landscape characteristics of the landscape, the sand mining site and the surrounding area thereof, is readily defined by the Swakop River Valley in the center, which runs in an east-westerly direction, with the Moon landscape area to the south, east and north-east thereof. Upstream, of the eastern boundary, the channel splits into two and passes around a large rock island.

Consequently, it is important to provide the following context to the study area:

- The project site is located on the boundaries of the Dorob National Park and the Namib-Naukluft National Park.
- The sand mining activities have already commenced in early 2015, and the excavation performed on the sand mining site as well as the sand mining vehicles and equipment, are visible from the plot road.
- The proposed new sand mining area, is located in close proximity to the '*built environment*', in this case being houses and businesses. Thus, locals and tourists will only be able to experience '*open nature*' once they have passed the plots, even though there are some houses situated on the edge of the river, a bit further east.
- The eastern section of the sand mining site, is situated within the above-mentioned entrance into the Swakop River.

Given the dominance of the natural landscape, the overall '*sense of place*' for the majority of the area, can be considered tranquil, although the NamPower (220 kV) powerline, has already altered this to a certain extent.

9.3.2 Visual Resource Value / Scenic Quality


With reference to Figure 9.2-1 above, the background visual resource of the study area is considered to be of high value. The highest value resources are the river valley, the hills, the Moon landscape and the natural vegetation. Even though there are houses and roads in the area, these do not detract from the scenic beauty and dominance of the natural features of the total landscape. The significant powerline structure crossing the Swakop River more or less in the center of the sand mining site, reduces the visual resource value to a certain extent. In general, the total visual resource can be considered, sensitive to project related changes.

9.3.3 Visual Receptors

The sensitive viewer locations are the "*the Big Tree*", tourists and locals traveling along the plot road, specifically as they enter the Swakop River, just east of the sand mining area, as well as the neighboring plot owners.

9.4 Climate

The weather at the Namibian coast is influenced by the cold Benguela current and the Namib

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Desert. Swakopmund receives less than 50mm of rain per year, and averages at around 16 degrees annually, has frequent frost events and is subjected to strong winds.

9.4.1 **Surface Wind Field**

The air quality specialist report indicated that during the day-time, prevailing winds rise from the south-west and to a lesser extent, to the north-west. The highest wind speeds were recorded from an east-northeast direction, although less frequently.

Although there are no distinct wind seasons within the Erongo Region, seasonal wind rises, provide an indication in the shift of the wind regime throughout the year. During the summer months of December to February, the prevailing winds are from the northwest and to a lesser extent from the west-southwest, with almost no flow from the easterly and southerly sectors. During autumn, being March to May, the wind field changes completely with a distinct shift in airflow from the southwest and noticeable winds from the east-northeast. Similar wind patterns are noted for the winter months of June to August, but with a very prominent east north-easterly flow. These winds, the so-called “*East Winds*”, are also characterized by very high speeds. The prevailing wind field returns to the dominant north-westerly flow during the spring months, with frequent northerly winds.

9.4.2 **Rainfall**

The majority of the rainfall (about 60%) in Swakopmund falls between January and March. Rainfall is generally from storms producing short cloud-bursts of low to high intensity. Thus, a high proportion of the rainfall of most storms in rocky areas does not infiltrate, but forms surface runoff. Infiltration will however, in the sandy areas around the sand mining site, be proportionately higher, thus, reducing surface runoff volumes. However, as the Swakop River has a very large catchment area, of approximately 29 000 km², all significant flood events are caused by inland storms, where the annual rainfall is much higher.

9.4.3 **Evaporation**

The monthly evaporation for all months, is significantly higher than the rainfall, indicating that the area is a water negative area, meaning that there is a large deficit in the available water.


9.5 **Geology**

The Swakopmund region is located within the south-central zone of the Damara Supergroup. Generally, the rocks of the Swakop Group can be classified as metamorphosed continental shelf deposits. Metamorphism occurred during the Pan-African collision of the Congo and Kalahari cratons roughly 750 to 550 Ma. The rock types include moderate to high temperature, low pressure metamorphic rocks such as schist, marble and gneiss together with glaciogenic tillite and diamictite.

The metasedimentary rocks are characterized by dome structures and a general NE-SW elongation, together with numerous syn- to post tectonic granitic plutons. The Welwitschia lineament is host to numerous uraniferous granites, some of which, are being mined economically.

9.6 **Regional Hydrology**

The study area is located in the lower part of the Swakop River catchment. As can be seen from Figure 9.6-1 below, the Swakop River has a large westward flowing catchment which rises in the Khomas Hochland in the central part of Namibia, to the east of Okahandja. The total catchment area down to the sand mining area, is in excess of 29 000 km², although the lower third of the catchment has low rainfall and does not contribute much in the way of significant runoff, with the majority of the flow generated in the upper parts of the catchment.

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Significant rainfall events cause flooding which reaches the coast at Swakopmund on a fairly regular basis. The most significant flow will be in the form of large floods generated higher up in the catchment, and the floods will generally be of a fairly large volume and of long duration, unlike the small flash floods found in the smaller catchments. Therefore, there is no point in investigating the local hydrology around the sand mining area.

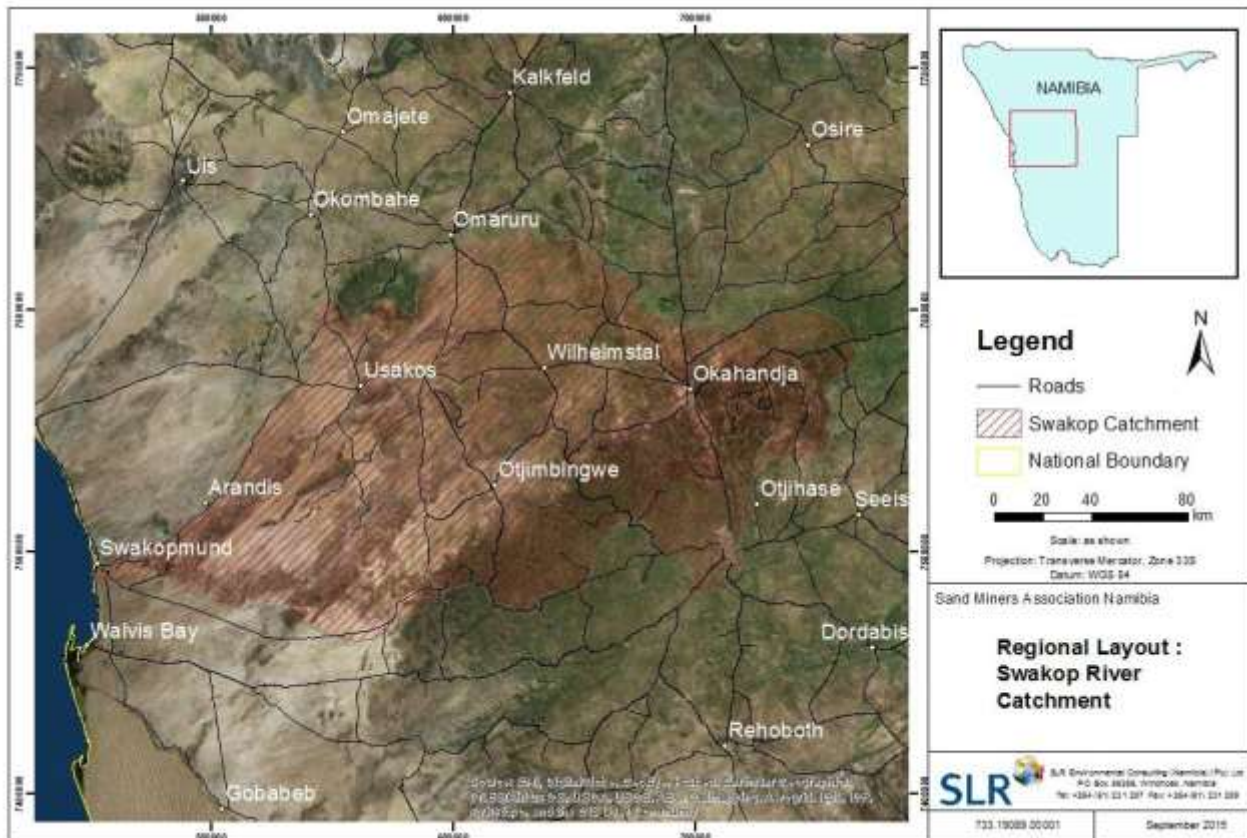


FIGURE 9.6-1: SWAKOP RIVER CATCHMENT - SLR dated 2015

9.7 Groundwater Level and Flow

From a regional perspective, two types of aquifers can be distinguished within the sand mining area, namely:

- A fractured aquifer, occurring in the bedrock of the Swakop Group rocks; and
- A shallow alluvial aquifer in the river bed of the Swakop River.

The groundwater in the bedrock is hosted in fractures and fissures in the rock matrix. As a result of rocks such as schist and gneiss, permeability and transmissivity, of the groundwater, is generally low. Marble tends to have higher values, due to the tendency to form karstic formations, which in turn increase permeability. In an arid area, such as Swakopmund, the groundwater is not often recharged and the water table can be up to 70m to 80m deep. The combination of deep groundwater, slow recharge and low permeability values does not make the fractured bedrock aquifer, a good target for boreholes for human needs.

Conversely, the Swakop River is also host to an alluvial aquifer with a water level, less than 10m deep, which gets recharged with every flood event. For the purposes of this study only, the shallow alluvial aquifer of the Swakop River is of importance as the bedrock fractured aquifer, is not used by consumers in the downstream Swakop River area. The flow of groundwater in the alluvial aquifer mimics that of surface water flow, i.e. water flows from east to west towards the coast along the Swakop River. The alluvial aquifer of the Swakop River can be divided into compartments characterized by a sequence of “pools” and basement highs (“Grundschwelle”) (BIWAC, 2010). These compartments represent defined sections of the alluvial aquifer which

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are separated by geological features with higher resistance to weathering such as dykes and pegmatites

The compartments can be considered as homogenous sections, in terms of water balances of inflow, outflow, flood recharge and evaporation. The sand mining site lies within the farming compartment, as illustrated in Figure 9.7-1 below, and therefore, could potentially impact on domestic and agricultural users of the alluvial aquifer, as a number of farmers are relying on groundwater abstraction to irrigate their crops.

There are multiple natural factors that can influence the groundwater level and quality thereof. For example, the area between Nonidas and Rossmund is an area of naturally high evaporation levels due to the bedrock high ('wetland') that occurs there. The high level of evaporation from open water contributes to an increase in salinity of the downstream groundwater. The local bedrock high causes the groundwater to surface and to evaporate. Thick and dense vegetation, like the Tamarisk plant in various sections along the Swakop River account for the loss of on average 11 Mm³ of water per annum, from the aquifer due to direct evaporation and evapotranspiration, almost three times the annual recharge thereof.

It has been determined that the sand mining activities have already intersected with the alluvial aquifer.



FIGURE 9.7-1: LOWER SWAKOP RIVER SHOWING THE TWO AQUIFER COMPARTMENTS AND LOCATION OF SAND MINE ON THE COMPARTMENT BOUNDARY

9.8 Biodiversity

The sand mining location is situated on the boundaries of the Dorob National Park and the Namib-Naukluft National Park, where a high diversity of desert adapted plants and animals can be found.

The biodiversity baseline description in this section of the report relates to the general biodiversity found in the Swakop River and was derived from the specialist biodiversity assessment conducted for the Swakop Uranium Linear Infrastructure EIA (AWR, 2010). In addition, the site-specific biodiversity description is based on findings by NEHC CC during their site visits as well as in consultation with neighboring plot owners and the Coastal Tourism Association of Namibia (C-TAN).

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The Swakop River is important as it allows water and nutrients to reach into the desert from the wetter hinterland and fog to reach further into the desert from the coast. As the water and nutrients are key ecological drivers in the desert, it is important that they be maintained. The Swakop River is ecologically important for many species, as it supplies grazing and browsing for large mammals, a movement corridor, shelter from wind-blown sand and sun and an aquifer recharge. The Swakop River valley has discrete vegetation assemblages, including thickets of large trees that depend on the regular replenishment of the aquifer and in turn provides a habitat to a suite of invertebrate trophic guilds, dependent on large woody vegetation. The Swakop River is ecologically characterized by a high disturbance rate. This is due to flooding, the recharge of the superficial aquifer, animal movement and seasonal standing of water.

The most common plant found in the Swakop River, is the Tamarisk (*Tamarix usneoides*) and the Mesquite (*Prosopis spp*). The mesquite is an invasive species that is competing with Camelthorn Trees (*Acacia erioloba*). Furthermore, *Acacia reficiens* (rooihaak), *Arthroa leubnitziae* (pencil bush) and *Zygophyllum stapfii* (doller bush) can be found in and around the river. The *Acacia erioloba-Faidherbia albida* community is a plant community found in the sandy riverbed habitat. *Acacia erioloba* and *Faidherbia albida* (Ana tree) are a protected species and the *Acacia erioloba* is increasingly threatened countrywide. Within the new sand mining area, the Tamarisk can mostly be found with one or two Camelthorn trees (including the “Big Tree”), located in close proximity to the planned sand mining activities.

In the Swakop River a number of endemic invertebrates were found, none of which are threatened. Mammal species of conservation concern, which were previously recorded in the Swakop River, include the spotted hyena, aardwolf, rock hyrax and Hartmann’s mountain zebra. The River supports significant kudu and ostrich populations. Bird species recorded in the Swakop River with a high probability, include the Verreaux’s Eagle and the Great White Pelican. Overall the Swakop River valley holds a high diversity of bird species. Reptile species of conservation concern, which were recorded in the Swakop River, are the leopard tortoise, Bibron’s burrowing asp, Namaqua sand lizard and the rock monitor. In close proximity to Rossmund, the local bedrock is high in the river and causes the groundwater to surface. This surface water attracts quite a number of bird species, such as flamingoes etc.

However, as the sand mining area is situated on the boundaries of the Dorob National Park and the Namib-Naukluft National Park, adjacent to the residential plots, only a few of the above-mentioned animals will occasionally be observed. The EIA team in consultation with the local residents have observed the occurrence of springbuck and ostriches within close proximity to the current sand mining activities. A lot of springbuck can be found on the Rossmund Golf Estate, which is located approximately 13km west-south-west of the sand mining site. The springbuck uses the Swakop River, as a corridor to move between the Namib-Naukluft National Park and the Rossmund golf course.


9.9 Air Quality

Information regarding the air quality was sourced from the “Air quality Specialist Opinion on the Potential for Air Quality Impacts from the Sand Mining Operations in the Swakop River” report (Airshed, 2015).

9.9.1 AMBIENT PM₁₀ CONCENTRATIONS

Ambient sampled PM₁₀ concentrations reported on for the period of 17 March 2009 to 25 July 2011 are reposted in this study to provide an indication of the existing ambient air quality. The PM₁₀ samples were taken for 24-hours every three days. The daily average concentrations were assessed against the WHO IT3 and SA Standard of 75 µg/m³.

The average over the five months in 2011 is 49 µg/m³ with the highest daily concentration of 248 µg/m³ sampled on 18 April 2011. It should be noted that the period

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over which the average was calculated is for a complete year, with data available for a total of 76 days due to the measurements conducted every 3-days. *SLR dated 2015.*

9.10 Noise

The area is used for small-scale farming, tourism accommodation and businesses, but mainly for private residences, which produces relatively low noise levels.

However, tourists and other motorists, such as locals and residents utilizing the “plot road”, which is a gravel road running parallel with the Swakop River, for access and the sand mining activities which have been conducted in the area for a number of years. A number of small airplanes were also noted during the various site visits by NEHC CC, flying over the general area. These activities all contribute to the ambient noise levels in the area surrounding the project site.

10. IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

The activities described hereinabove, has the potential to have an impact on the biophysical and socio-economic environment. Some environmental aspects and potential impacts were identified during the screening and scoping phases of the Environmental Impact Assessment, which was held in consultation with the relevant authorities, the Interested and Affected Parties (I and AP) and the environmental team.

The historic sand mining activities, coupled with the current sand mining activities at the proposed new sand mining site within the Swakop River, provided the environmental team as well as all the stakeholders involved, to observe the related environmental and social issues and impacts. The relevant management and mitigation measures, to be implemented to minimize or prevent the occurrence of the potential impacts, will be provided and discussed in the Environmental Management Plan (EMP).

The following issues were assessed in this process and the findings are presented in this Scoping Report:

10.1 Groundwater and surface water

The sand mining operations has the potential to reduce and disturb the groundwater resources in the area where the operations are being conducted. The thickness of the aquifer is reduced, by the stripping away of the topmost layer of the sand, thus, effectively reducing the potential storage capacity thereof, in the long term. Furthermore, if the sand mining activities, reaches down to the water table, it would result in the direct evaporation from the sand body.

The machinery and vehicles being used in the sand mining activities, furthermore, has the inherent potential to spill hydrocarbons, the spill risk, which is significantly higher when the machinery and the vehicles are being refueled. These oil and diesel spillages can pollute the surface water. Considering that all these activities, occur within the Swakop River, it may impact the surface water as well as the groundwater, specifically for the water users, downstream.

The excavated pits, could possibly intercept small floods, which would be held inside the excavated pit. In the event where that occurs, no water flow will reach the lower parts of the Swakop River, down by the farming area, which in turn would negatively impact the recharging of the aquifer in that area. Lastly, the impacts on sediment load as a result of the volume of sand lost from the river, has to be investigated.

10.2 Biodiversity

The area wherein the current sand mining activities are being conducted, has already been cleared of vegetation and thus, has been disturbed. However, in the event that new areas, will have to be used for the conduction of the sand mining activities, those new areas will have to be cleared of vegetation, which will cause an impact of the natural vegetation and will result in an associated loss of habitat for fauna. Furthermore, machinery and vehicles as well as the excavated pits, may potentially cause a disturbance to the animals in the area, as some of the animals may no longer move freely throughout the Swakop River corridor. Consequently, the impacts of the sand mining activities on the biodiversity, were therefore, assessed further in this report. If the employees, working at the sand mining site, are not well-managed, they can possibly negatively impact the environment, by, *inter alia*, poaching and the illegal collection of plant species.

10.3 Air Quality

The sand mining operations will give rise to particulate emissions, such as dust. It should also be borne in mind, that the transportation of the sand from the site, may potentially cause dust to be released into the air, thus, effecting air quality. Taking into consideration, that the sand mining operations are being conducted in relatively close proximity to the homes of some third parties, the impacts on the air quality, as a result of the sand mining operations, warranted further assessment in this report.

10.4 Visual

From a visual standpoint, the cleared sites and the sand mining activities being performed in the Swakop River, can create a visual impact and in general, result in a loss of '*sense of place*'. Transporting the sand from the sand mining site, will generate dust, in light thereof, that the access routes used for such transportation, are gravel roads, which will release dust into the air, thus, having a visual impact. Hence, the further assessment of visual impacts was performed in more detail, herein.

10.5 Safety

The sand mining activities as well as the excavated pits, poses a potential risk of injury to third parties, visiting the area or driving along the Swakop River, in the area where the sand mining activities are being performed. Additionally, third parties utilizing the plot road, which intersects with the sand mining area's access road, may also encounter additional safety risks. The dust and other air emissions may also pose health risks to third parties visiting the sand mining site and to those whom reside in relatively close proximity to the sand mining site.

10.6 Noise

The noise from the sand mining activities can cause noise pollution and result in a nuisance or noise disturbance to third parties. It had been recorded by some of the Interested and Affected Parties that the noise generated from specifically the reverse hooters, from the relevant machinery used in the sand mining operations, as well as the vehicles used during the sand mining operations, resulted in noise disturbances.

10.7 Socio-Economic Impacts

The employees present at the sand mining site, may, by not adhering and implementing proper waste management, pollute the environment, and consequently creating health and safety hazards as well as nuisance issues for third parties and which may adversely impact the tourism industry in the area.

11. ASSESSMENT OF IMPACTS

11.1 Groundwater

11.1.1 *Impact on groundwater resources*

The proposed new sand mining area's excavated pit, is located at the upper boundary, of the farming compartment of the Swakop River's alluvial aquifer. This location is more favorable than other downstream areas, which are further, considering that the water level in the upstream compartment is usually deeper, and therefore, less vulnerable to evaporation.

In the unmitigated case, the overall significance is rated as high, but is rated as low in the mitigated scenario.

11.1.2 *Reduction of aquifer thickness*

At present, the water level is estimated to be, between 5 to 6 meters below the surface, being the natural ground level, in the area, where the sand mining activities are taking place. When the river floods, the groundwater will be recharged, but, the removal of the top meters of sand, reduces, not only the volume of the aquifer, but the thickness thereof, as well, which can potentially be recharged during such flood events. Consequently, the aquifer's storage and holding capacity, may be decreased, as a result thereof. It has already been established that the sand mining activities, have already intersected the aquifer, in certain sections.

The overall significance is rated as medium in the unmitigated case, and remains medium in the mitigated scenario.

11.1.3 *Groundwater quality*

Pollutants such as hydrocarbons, oil and fuel spillages and bacteria, generated by or as a result of the sand mining operations, may conceivably seep into the groundwater, thus, contaminating the groundwater and affecting the quality of said groundwater.

In the unmitigated case, the overall significance is rated as high, but is rated as low, in the mitigated scenario.

11.2 Surface Water

11.2.1 *Downstream decrease in Surface Water runoff*

The excavated pits have the potential to capture and retain flood water. But, the capture, storage and retention of flood water by these excavated pits, shall in no way whatsoever, have any impact on the downstream surface water runoff, in light thereof, that there are no consequential users of the downstream surface water runoff, produced by flood events.

It should however, be noted that the reduction in downstream surface water runoff, does however, impact the groundwater compartment, seeing that the surface water, which passes the sand mining area, recharges the downstream groundwater compartment, thus, negatively impacting the groundwater.

The overall significance is rated as medium in the unmitigated case, whilst the overall significance is rated as low, in the mitigated scenario.

11.2.2 **Pollution of Surface Water runoff**

When one investigates and assesses the potential pollution of the surface water runoff, regard has to be had, to the main factors, which may affect the quality of the surface water runoff. Hence, the assessment and investigation of the potential pollution of the surface water runoff, has to be carried out, against the backdrop of the sand mining activities.

It can thus, be reasonably inferred, that the spillages and leakages of fuels, oils and grease, used in the vehicles and machinery, at the sand mining site, coupled with the pollution which coincides with the various other activities, being carried out by the employees of the sand mining operations, such as the disposal of waste, etc., may result in the pollution of the surface water runoff. However, considering that the staff complement of the **Sand Miners Association**, is fairly small, logic would follow, that the amount of corresponding pollution caused by the employees of the sand mining operation, would also be small.

Furthermore, if large volumes of flood water, are taken into consideration, these copious amounts of flood water, will significantly reduce and dilute any source of amount of pollution. Thus, the overall significance thereof, is rated as medium in the unmitigated case, and rated as low in the mitigated scenario.

11.3 Biodiversity

11.3.1 **Physical destruction and general disturbance to biodiversity**

As illustrated hereinabove, the Swakop River is considered, from a biodiversity perspective, to be ecologically of value to many species. Accordingly, if the sand mining operations, are not properly and adequately managed and mitigated, the biodiversity of the proposed new sand mining area, may be exposed to or suffer additional impacts, as a result of the additional clearing of areas and the total width of the river being blocked in certain areas, especially around the '*rock island*', just east of the area where the sand mining activities are currently being conducted.

The additional impacts on the biodiversity, can inter alia be summarized as follows:


- There are animals that make use of the river, as a corridor for movement, which will be at larger risk to sustain injuries, due to the sand mining activities;
- Protected vegetation species might be cleared, to make space for the performance of the sand mining activities; and
- The littering and disposal of waste, by the employees of the sand mining operation, as well as the discharged emissions, from the sand mining vehicles and equipment, can possibly have an adverse effect on the biodiversity of the area, as well as the surrounding habitats.

Considering all of the above, the overall severity, in the unmitigated case is rated as high, but, on the other hand, is rated as medium in the mitigated scenario, as a majority of the aspects and impacts identified and discussed hereinabove, can be sufficiently and adequately mitigated to acceptable levels.

11.4 Visual

11.4.1 **Visual impact and impact on "Sense of Place"**

In order to establish the severity and significance of the visual impacts, the change to the visual landscape, as a result, of the sand mining operations, has to be determined and assessed.

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In order to determine the visual landscape, the following has to be considered:

- The character of the landscape;
- The 'sense of place';
- The aesthetic value thereof;
- The sensitivity of the visual resource; and
- Sensitive views.

In this regard, the general area, as well as the area, where the proposed new sand mining operations, are being conducted, are considered to have a relatively significant visual landscape. During the operations phase of the sand mining operations, it is widely accepted that there will be a significant visual impact on the surrounding environment.

The sensitive receptor viewpoints, being the 'Big Tree', the plot road where it enters into the Swakop River, just east of the sand mining site, as well as the neighboring plot owners, will experience significant visual impacts, due to the sand mining operations, during the operating thereof. It must however, be taken into consideration, that the 220kV power line crosses over the Swakop River, in a very close proximity to the 'Big Tree'.

Therefore, the overall severity is rated as high in the unmitigated case. However, in the mitigated scenario, the overall severity is rated as medium.

11.5 Third Party Safety

11.5.1 Safety impacts on third parties

Third party safety entails the consideration and evaluation of the possible safety impacts, the proposed sand mining activities, may have on third parties. As a result of the sand mining activities, third parties visiting the area, or utilizing the plot road, which intersects with the access road used by the sand mine, might encounter sand mining vehicles, which in turn poses road safety risks, in the form of motor vehicle collisions. Furthermore, the existent excavated outs, also presents risks to third parties, driving in the Swakop River, wherein the sand mining activities, are being conducted.

Accordingly, the overall significance in the unmitigated case is high, whilst in the mitigated scenario, it is rated as low, in light thereof, that the potential impacts identified and discussed above, can be prevented, and the associated risks therewith, can be reduced, avoided, managed and mitigated.


11.6 Air quality

11.6.1 Air quality impacts on surrounding receptors

The maximum impact from the sand mining operations is at a distance of between 50m and 100m from the source activity with a 24-hour PM₁₀ ground level concentrations of 26.3µg/m³ and 25.7µg/m³, respectively. These concentrations are well below the selected ambient air quality (AQ) PM₁₀ limit of 75µg/m³. The predicted PM₁₀ ground level concentration at 350m from the sand mining operations is 4.1µg/m³, which is well below the AQ limit.

The assessment, however, could not account for dust impacts under high wind conditions, which is likely, to result in windblown dust from the sand mining operations.

The maximum impact distance from the access road was modelled to be 50m with a 24-hour PM₁₀ ground level concentration of about 29µg/m³, depleting rapidly within 200m down to a concentration of 6.5µg/m³. These measurements, are well below the

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selected ambient AQ PM₁₀ limit of 75µg/m³. The ambient air quality measured at the nearest home from the access road, at a distance of 500m, measured the PM₁₀ concentration as 1.5µg/m³, which is insignificantly low. *SLR dated 2015.*

However, driving along the access road, behind a tipper truck, the dust being generated, was visually relatively excessive, and could lead to some level of nuisance to the nearby residents, depending on the wind direction.

The overall severity is low in both the unmitigated case as well as in the mitigated scenario.

11.7 Environmental Noise

11.7.1 Environmental Noise impacts on surrounding receptors

From the sensitive receptor viewpoint of the neighboring plot owners, some noise disturbances have been noted.

The overall significance is rated as medium in the unmitigated case, and remains rated as medium in the mitigated scenario.

12. IDENTIFICATION AND DESCRIPTION OF POTENTIAL ENVIRONMENTAL IMPACTS

Potential impacts that were identified during the scoping process, in consultation with specialists, are discussed under the environmental component headings in this section. These discussions should be read with the corresponding descriptions of the current environment discussed in **sections 8 to 10** of the scoping report. This section was also updated after consultation with the I and AP's.

Due to the fact that sufficient information was obtained during the scoping stage, preliminary impact assessments are provided and are available in accordance with the methodology described in **Table 12-1**.

Impacts associated with this project are therefore, cumulatively assessed in this Scoping Report. Based on all the available information at this stage, it was possible to compile an EMP at this stage of the process. All management and mitigation measures are therefore, contained in the EMP.

Management and mitigation objectives to address the identified impacts are discussed in this section and the detailed actions are included in the EMP.

TABLE 12-1: CRITERIA FOR ASSESSING IMPACTS

Note: Both the criteria used to assess the impacts and the method of determining the significance of the impacts is outlined in the following table. Part A provides the definition for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D.

The methodology utilized in the rating of significance of impacts.

MAGNITUDE	DURATION
10 - Very high/don't know	5 - Permanent (longer than 10 years)
8 - High	4 - Long-term (7 to 10 years; impact ceases after site closure have been obtained)
6 - Moderate	3 - Medium-term (3 months to 7 years; impact ceases after the operational life of the activity)
4 - Low	2 - Short-term (0 to 3 months; impact ceases after the Operational phase)

MAGNITUDE	DURATION
2 - Minor	1 - Immediate
SCALE	PROBABILITY
5 - International	5 - Definite/don't know
4 - National	4 - Highly probable
3 - Regional	3 - Medium probability
2 - Local	2 - Low probability
1 - Site only	1 - Improbable
0 - None	0 - None

Significance Points= (Magnitude + Duration + Scale) x Probability Thus:

SP >60	Indicates High environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30-60	Indicates moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates low environmental significance	Impacts with little real effect and which will not have an influence on or require modification of the project design.
+	Positive impact	An impact that is likely to result in positive consequences/effects.

Comparing the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the Operational phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

12.1 Potential impacts Table:			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Direct impacts:			
<p>Soil and Ground Water Pollution – 12.1 – Ground water</p> <ul style="list-style-type: none"> The Operational phase will result in increased infiltration of contaminants into the ground water and soil. The clearing of the site will result in exposed soil surfaces which may be prone to erosion, creation of dust and sedimentation of streams. Spillages of oil, lubricants and fuel from Operational vehicles, plant and machinery has the potential to contaminate the soil and groundwater. Flora in these areas where contamination occurs will die. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Maintenance plan on all earth moving equipment. Daily inspections on all equipment use on site. No servicing of any equipment on site, Refuelling of equipment in demarcated area. Detailed planning and design of storm water runoff. Appropriate erosion and stormwater management structures must be installed around the Operational site. All Operational vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. Plant and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. Drip trays are to be utilized during daily greasing and re-fueling of machinery and to catch incidental spills and pollutants. Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
		<ul style="list-style-type: none"> Vehicles to be used during the Operational phase are to be kept in good working condition and should not be the source of excessive fumes. If fuels and chemicals are kept and stored on site, it must be kept in adequate storage facilities that are secure, enclosed and banded. Strict procedures for the management of the site must be developed and adhered to. Staff must be trained to prevent spillages during fuel dispensing. 	
<p>Visual Intrusion & Pollution</p> <ul style="list-style-type: none"> Littering and illegal dumping on the site may result in an alteration of the visual character of the site. The development will result in the removal of vegetation which will be visually intrusive. The Operational site will be visually intrusive: <ul style="list-style-type: none"> Alteration of the site will alter the visual characteristics of the site and the surroundings. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Demarcated storage area for any possible refuse on site. Removal of vegetation strictly in accordance to the layout plan. The site must be managed appropriately and all rubbish and rubble removed to a recognized waste facility. A certificate of disposal must be obtained for any waste that is disposed of. Waste must not remain on site for more than 2 weeks. Littering, rubbish and illegal dumping on the site is NOT allowed. Refuse must be contained and disposed of at the Municipal land fill site. 	
<p>Destruction of Flora & Fauna</p> <ul style="list-style-type: none"> Operational activities will disturb the fauna in the area. The clearing of vegetation will result in the loss of habitat, habitat fragmentation and possibly a loss of species on the site. The noises and vibrations resulting from machinery and blasting could impact on faunal species outside the site. Pollution resulting from the Operational Phase such as litter, solid waste, and spills of oil, lubricants and fuel could reduce the quality of the habitats in the surrounding area and directly impact on the health and welfare of the fauna and flora surrounding the site. Due to the disturbance of the site alien plants will be able to establish and could become a problem by infesting neighbouring land. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Removal of vegetation strictly in accordance to the architect layout plan. Noise and vibration be mitigated by day time work and equipment operating with adequate exhaust system. Site clearing is to be limited to only the area necessary for carrying out the specified works and the destruction of vegetation should be minimized. No littering by Operational workers is permitted. Any litter will be collected and removed off-site to a registered waste site. No burning of stockpiled vegetation is permitted. Disturbance to birds, animals and reptiles and their habitats should be prevented at all times. <p>The illegal hunting or capture of wildlife will not be tolerated. Such matters will be handed over to the relevant authorities for prosecution.</p>	
<p>Traffic & Access</p> <ul style="list-style-type: none"> Increased traffic congestion could possibly occur as a result of Operational vehicles moving onto and off the site during Operational. Movement of vehicles to and from the filling station may increase traffic congestion. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Surrounding farm owners to be informed of the timeframe of day to day Operational time. Minimize unnecessary movement of vehicles to and from the site. The access, being on an important B2 route will need to meet certain criteria: 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>
<p>Noise Pollution</p> <ul style="list-style-type: none"> There will be an increase in noise during the Operational Phase - machinery, equipment hauling tracks and vehicles, will be used. The noise emanating from the B2 is not expected to increase significantly in terms of the current noise levels. <p>Noise from the Sand Mining Operations will include:</p> <ul style="list-style-type: none"> The noise generated by the diesel trucks idling and revving, and other vehicles braking and accelerating may increase within the new Proposed area 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Surrounding farm owners to be informed of the timeframe of day to day Operational time. Operational activities to occur during day time hours only i.e. 07:00 - 17:30; Sand Miners to be conscious of the noise generated during their specific activities, and to limit excessive noise generation where possible. Noise levels shall be kept within acceptable limits, and Operational crew must abide by National Noise Laws and local by-laws regarding noise. 	

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
		<ul style="list-style-type: none"> • If work is to be undertaken outside of normal work hours permission, must be obtained. Prior to commencing any such activity, the Sand Miners must advise the potentially affected neighbouring residents. Notification could include letter-drops. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Operational / management activities involving use of the earth moving equipment and vehicle, machinery, etc., must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays. • Equipment that is fitted with noise reduction facilities (e.g., side flaps, silencers etc.) must be used as per <u>operating instructions and maintained properly during day-to-day operations.</u> • Noise levels shall be kept within acceptable limits, and forecourt staff must abide by National Noise Laws and local by-laws regarding noise. • Noise levels should comply with the SANS Code of Practice 100103 - 0994 (recommended noise levels). 	
<p>Atmosphere Pollution and Odours</p> <ul style="list-style-type: none"> • The increased dust and emissions resulting from Operational activities (vegetation clearing, site preparation, earthworks, uncovered topsoil stockpiles and sand piles, loads on vehicles, plant and machinery poses a health hazard to Operational staff and people living and working in the vicinity of the site. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> • Maintenance plan on all earth moving equipment. • Daily inspections on all equipment use on site. • Dust suppression actions including wetting of soil prior earth moving actions. • Consideration of wind direction and wind speed during earth moving actions. • Dust generation should be kept to a minimum. • Dust must be suppressed on access roads and Operational areas during dry periods by the regular application of water or a biodegradable soil stabilisation agent. • Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution. • It is recommended that the clearing of vegetation from the site should be selective and done just before Operational so as to minimize erosion and dust. • Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible shall be avoided. • All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
<p><u>Safety & Security</u></p> <ul style="list-style-type: none"> The Sand Miners operational site can be a dangerous place and thus could result in harm to people and property. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Access control implemented. No unauthorized personnel on site. Signs should be erected on all entrance, indicating that no temporary jobs are available, thereby limiting opportunistic laborers and crime. The site and crew are to be managed in strict accordance with the Namibian Labour Act (Act 11 of 2007) and the applicable Regulations. Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. The Sand Miners is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g., hard hats, safety boots, masks etc.). All vehicles and equipment used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the Namibian Labour Act (Act 11 of 2007) and the applicable Regulations. An environmental awareness training programme for all staff members shall be put in place by the Sand Miners. Before commencing with any work, all staff members shall be appropriately briefed about the EMPr and relevant occupational health and safety issues. All Operational workers shall be issued with ID badges and clearly identifiable uniforms. Access to fuel and other equipment stores is to be strictly controlled. Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimized. This will also ensure that potential liabilities and damage to life and the environment are avoided. Adequate emergency facilities must be provided for the treatment of any emergency on the site. The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed conspicuously at prominent locations around the Operational site at all times. The Sand Miners must have a basic spill control kit available at each Operational crew at the Operational site. Appropriate measures should be in place for the correct storage and handling of fuel as well as the procedures for dealing with dangerous situations. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
		<ul style="list-style-type: none"> Equipment and materials must be handled by staff that have been supervised and adequately trained. Staff must be regularly updated about the safety procedures. Emergency contact details for the police, Security Company and fire department must be readily available.	
<p>Hygiene</p> <ul style="list-style-type: none"> The health of workers may be adversely affected by unhygienic working conditions on the Sand Mining site. Workers may be exposed to diseases such as tick bite fever, malaria, HIV-AIDS. Unhygienic conditions result in the transmission of diseases. Areas of potential concern include the ablutions, cooking areas, selling of food and standing water on the site. 	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate	<ul style="list-style-type: none"> Supply of adequate ablution facility on site. Adequate resting area for Operational workers. Induction training to all Operational workers. Medical fitness certificates for all Operational workers. The Sand Miners shall make available safe drinking water fit for human consumption at all other working areas. Toilet facilities shall be provided on site. Adequate numbers of chemical toilets must be maintained to service the staff using this area. At least 1 toilet must be available per 20 workers. Toilet paper must be provided. The chemical toilets servicing the site must be maintained in a good state, and any spills or overflows must be attended to immediately. The chemical toilets must be emptied on a regular basis. The chemical toilets must be sited taking into account the possibility of the prevailing wind unfavorably dispersing unpleasant odours. Tick repellent must also be provided (Bayticol is available from certain pharmacies and should be sprayed on the clothing in contact with grass, etc.). HIV AIDS awareness and education should be undertaken by all Sand Miners staff. Management policies and strategies must be in place to prevent unhygienic conditions developing. 	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate
<p>Operational Traffic</p> Operational traffic will not result in increased traffic congestion on the B2 due to Sand Miners already utilizing this road.	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate	<ul style="list-style-type: none"> Minimize unnecessary movement of vehicles to and from Operational site. Surrounding business and residential areas to be informed of the timeframe of Operational phase. 	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate
<p>Security</p> Operational sites by their nature act as a magnet to the unemployed, so large numbers of people may gather on or around the site. These people must be kept of the site for safety reasons. Furthermore, criminals may also utilise the opportunity to steal items from the site.	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate	<ul style="list-style-type: none"> Access control implemented. No unauthorized personnel on site. 	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate
<p>Spread of Alien Vegetation</p> Due to the disturbance of the site alien plants will be able to establish and could become a problem by infesting neighbouring land.	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate	<ul style="list-style-type: none"> Removal of vegetation strictly in accordance to the layout plan. 	Magnitude: 6 Duration: 2 Scale: 2 Probability 4 SP= 40 Moderate

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
<p><u>Operational Traffic</u> Operational traffic will not result in increased traffic congestion on the B2 due to Sand Miners already utilizing this road.</p>	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Minimize unnecessary movement of vehicles to and from Operational site. Surrounding business and residential areas to be informed of the timeframe of Operational phase. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
<p><u>Socio Economic</u></p> <ul style="list-style-type: none"> The proposed new Sand Miners site will maintain current levels of local. Both short-term and long-term employment will be maintained in this case. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Utilize as far as possible local community in Operational phase. Utilize as far as possible the local community in regard to services, support and obtaining goods and materials. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
Cumulative impacts:			
<p><u>Surface Water Pollution</u></p> <ul style="list-style-type: none"> Spillages of oil, lubricants and fuel from Operational vehicles, plant and machinery has the potential to contaminate surface water. The wetland located along this river would become polluted. Flora and fauna in these areas where contamination occurs will die. Spillages of oil, lubricants and fuel from vehicles as well as spillages has the potential to contaminate surface water. This surface water will flow into the drainage the river. The wetland located along this river would become polluted. Flora and fauna in these areas where contamination occurs will die. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Maintenance plan on all earth moving equipment. Daily inspections on all equipment use on site No servicing of any equipment on site, Oil trays for all equipment while not in use. Refuelling of equipment in demarcated area 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
<p><u>Increased run off Water</u></p> <ul style="list-style-type: none"> The increase, such as the Operational Phase, roads and driveways will increase the amount of storm water runoff and thus reduce the infiltration of water into the groundwater. This may result in erosion of areas around the site. Storm water runoff has the potential to erode the topsoil and result in sedimentation of streams if not controlled. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Detailed planning and design of possible storm water runoff. Removal of vegetation strictly in accordance to the architect layout plan. Formal building activity must commence as soon as possible after earth moving activities. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
<p><u>Ground Water Pollution</u></p> <ul style="list-style-type: none"> The Operational phase will result in increased infiltration of contaminants into the ground water and soil. The clearing of the site will result in exposed soil surfaces which may be prone to erosion, creation of dust and sedimentation of streams. Spillages of oil, lubricants and fuel from Operational vehicles, plant and machinery has the potential to contaminate the soil and groundwater. Flora in these areas where contamination occurs will die. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Maintenance plan on all earth moving equipment. Daily inspections on all equipment use on site. No servicing of any equipment on site, Oil trays for all equipment while not in use. Refuelling of equipment in demarcated area. Detailed planning and design of storm water runoff. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
<p><u>Socio Economic</u></p> <ul style="list-style-type: none"> The proposed new Sand Miners site will maintain current levels of local employment. Both short and long-term employment will be maintained in this case. 	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Utilize as far as possible local community in Operational phase. Utilize as far as possible the local community in regard to services, support and obtaining goods and materials. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>
<p><u>Faunal Displacement</u> The displacement of fauna as a result of an increase in ambient noises, vibrations is likely to remain even with mitigation.</p>	<p>Magnitude: 6 Duration: 2 Scale: 2 Probability 4</p> <p>SP= 40 Moderate</p>	<ul style="list-style-type: none"> Removal of vegetation strictly in accordance to the mining layout plan. 	<p>Magnitude: 6 Duration: 2 Scale: 4 2 Probability</p> <p>SP= 40 Moderate</p>

12.2 MORE DETAILED IMPACT ASSESSMENT:

12.2.1 Groundwater Impact Assessment

12.2.1.1 Impact on Groundwater Resources

Introduction

In the event that the sand mining operations, were to go to deep into the ground, the effect thereof, would be that the alluvial aquifer of the Swakop River, would experience increased evaporation.

The increased evaporation, can have two effects, namely:

- That the water level downstream of the sand mining area, would drop; and
- The increased salinity of the groundwater, which will only occur, in the instance where the groundwater is ponding in the excavated pits.

This would result in the effects thereof, being transferred downstream, beyond the spatial extent of the sand mining operations and consequently, affect the downstream aquifer water users.

Assessment of the Impact

Severity:

Although the proposed new sand mining site, is located at the upper boundary of the farming compartment of the Swakop River's alluvial aquifer, this location is preferable and more favorable, than sites located further downstream. The water levels in the upstream compartment of the Swakop River, is usually deeper, and therefore, less vulnerable to evaporation.

The severity therefore, is consequently rated as medium in the unmitigated case, while it is rated as low in the mitigated scenario.

Duration:

The duration for the continued decrease in the groundwater levels is rated as high in the unmitigated case and as medium in the mitigated scenario.

Spatial Scale:

The effect and influence of the impact on the groundwater resources is beyond the boundary of the sand mining site, the influence is thus, rated as both medium in the unmitigated case and in the mitigated scenario.

Consequence:

In light of the aforementioned, the consequence of the impact on the groundwater resources, was determined to be high in the unmitigated case and low in the mitigated scenario.

Probability:

The probability of this impact occurring, is rated as medium in the unmitigated case and is rated as low in the mitigated scenario.

Significance:

In summarizing the above assessment, the overall significance is rated as high in the unmitigated case and was rated as low in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – groundwater resources

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	H	M	H	M	H
Mitigated	L	M	M	L	L	L

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12.2.1.2 Reduction of Aquifer Thickness

Introduction

With reference to previous studies on the evaporation from saturated alluvial aquifers in Southern Africa, which have shown that no direct evaporation can occur, from an existing water level depth of about 0.6m, below the surface. This figure is, however, only valid for a certain grain size distribution. To be on the safe side, it is recommended that sand should not be mined deeper than 1m above the current water level.

During the next flood event, the aquifer will get some recharge and the water levels will rise, as a result thereof. This will, consequently, change the depth at which the sand mining operation can be conducted. This however, needs to be re-assessed, once new RWL measurements have been obtained after the flood event.

Assessment of the Impact

Severity:

The water level is presently between 5 to 6 meters below the surface, being the natural ground level in the area where the sand mining activities are being performed. The removal of the top couple of meters of sand, results in the reduction of the volume and storage capacity of the aquifer. This means that the volumes to and by which the aquifer can be recharged, due to flood events, is effectively being reduced. It should, however, be borne in mind, that the sand mining activities have already intersected with the aquifer in certain sections.

The severity in the unmitigated case is rated as medium, whilst it is rated as low in the mitigated scenario.

Duration:

The duration of the reduction of the aquifer thickness, is rated as high in the unmitigated case, but is rated as low in the mitigated scenario.

Spatial Scale:

Considering that the impact of the aquifer thickness reduction, is mainly within the boundaries of the sand mining site, the influence thereof is low in both the unmitigated case and in the mitigated scenario.

Consequence:

The assessment in the determination of the consequence hereof, based on the factors mentioned above, the consequence was found to be medium in the unmitigated case as well as in the mitigated scenario.

Probability:

In the unmitigated case the probability of occurrence is rated as high, while the probability of occurrence is rated as medium in the mitigated scenario.

Significance:

In summarization of the assessment above, the overall significance is rated as medium in the unmitigated case and remains medium in the mitigated scenario, as not much can be done to replace the volume of the sand mined.

Tabulated summary of the assessed cumulative impact – aquifer thickness

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	H	L	M	H	M
Mitigated	L	H	L	M	M	M

12.2.2 Groundwater Quality

Introduction

The potential spillage and leakage of hydrocarbons can possibly pollute the aquifer and the groundwater resources, which is a serious consequence. These spillages and leakages can occur as a result of the negligent refueling and faulty equipment during the overnight storage thereof. There is also a probability of the occurrence of bacterial pollution from the employees of the sand mining operations, using the surrounding area and environment as toilet and ablutions facilities.

Assessment of the Impact

Severity:

As a result of the potential seepage of the pollutants generated by the sand mining activities, into the groundwater, the severity hereof, is considered to be medium in the unmitigated case, whilst the severity thereof, in the mitigated scenario, is considered as low.

Duration:

The duration of the potential for the pollution of the groundwater resources, is estimated to be beyond the closure of the sand mining site, consequently, it is regarded as a high impact in the unmitigated case, and is regarded as a medium impact, in the mitigated scenario.

Spatial Scale:

The impacts of the potential pollution of the groundwater resources, is beyond the boundary of the sand mining site, hence the influence is rated as medium in both the unmitigated case and in the mitigated scenario.

Consequence:

Based on the assessment and determination above, the consequence of this impact, was determined to be high in the unmitigated case and as medium in the mitigated scenario.

Probability:

It was found that the probability of this impact occurring was rated as medium in the unmitigated case, whilst the probability of the impact occurring was rated as low in the mitigated scenario.

Significance:

The overall significance of the potential pollution of the groundwater resources, is rated in the unmitigated case, as high, and is rated in the mitigated scenario, as low.

Tabulated summary of the assessed cumulative impact – groundwater quality

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	H	M	H	M	H
Mitigated	L	M	M	M	L	L

12.2.3 Surface Water Impact Assessment

12.2.3.1 Downstream Decrease in Surface Water Runoff

Introduction

The excavated pits can possibly have an impact on the surface water flow, which in turn, might also result in sediment load being transferred from the Swakop River to the sea.

Assessment of the Impact

Severity:

It should be borne in mind, that there are no significant downstream users of the surface water runoff, produced by flood events. As such, the capture, storage and retention of the flood water by the excavated pits, would consequently, not have any impact on the downstream users of the surface water. However, the surface water, which passes by the sand mining area, is used to recharge the groundwater compartment, situated downstream from the sand mining area. The reduction of the surface water runoff, will thus, lead to the reduction of the recharge of the downstream groundwater compartment, which would be a negative effect on the groundwater.

Any water from smaller floods, which enter the excavated pits, would form a pond and the water contained therein, will predominantly be lost to evaporation, which again reduces the available volumes of flood water for the recharge of the downstream groundwater compartment. The extremely large catchment area, can generate floods with large peak flow, volume and duration. It is likely that any significant flood event, will fill the excavated area with water first, and then as the flood continues, the excavated pits, will then be filled with sand carried down in the flood, which will partially or completely refill the excavated pits. There will thus, not be significant volumes of water remaining in the excavated pits.

The Swakop River derives the sediments that get transported downstream from a large catchment area in the interior of Namibia. Clay, silt and sand comprises the majority of the sediments, which are being transported during a flood event in the lower reaches of the Swakop River. Relatively large floods ($>30\text{Mm}^3$) deposits sediments uniformly along the river bed, where the river gradients are low.

Very large floods ($>100\text{Mm}^3$) are able to discharge significant quantities of sediment into the ocean at the river mouth (CSIR, 1997). A flood event during 1934, deposited a calculated amount of 40Mm^3 of sand into the ocean, together with a uniform 2.5m thick blanket of sediment in the river bed (CSIR, 1997). The total estimated surface of the sand mining area, is roughly 0.3km^2 , which comprises approximately 2% of the total surface area of the farming compartment of the lower parts of the Swakop River. If the sand mining activities, were to go down to 3m below the present surface, the sand mine, will account for roughly $300\,000\text{ m}^3$. Some of the sediments carried by the Swakop River, could get trapped in the pool formed by the sand mining operations. However, considering that the sand mine takes up very little in terms of the surface area of the Swakop River, most of the sediment, should still reach the ocean, if the flood event is large enough to reach the ocean.

In view of all of the above, the severity thereof, is deemed to be medium in the unmitigated case, and is deemed as low in the mitigated scenario.

Duration:

The duration of the reduction in the potential surface water runoff, is directly linked with the life of the sand mining operations. Thus, as long as the sand mining operations, are being performed, there will be a reduction in the potential surface water runoff. The result hereof, is that the impact is regarded as medium in the unmitigated case, and as low in the mitigated scenario.

Spatial Scale:

Considering that the impact of the reduction in the potential surface water runoff, reaches beyond the boundaries of the sand mining site, down to Swakopmund, the influence is rated as medium in the unmitigated case, but is rated as low in the mitigated scenario.

Consequence:

Against the backdrop of the assessment hereinabove, the consequence in the unmitigated case, was determined to be medium, while the consequence in the mitigated scenario, was determined to be low.

Probability:

In the unmitigated case, the probability that the surface water runoff will be reduced, is rated as medium. In the mitigated scenario, the probability of the occurrence of the reduction in the surface water runoff, is rated as low.

Significance:

The overall significance is rated as medium in the unmitigated case, but is rated as low in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – surface water runoff

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	M	M	M	M	M
Mitigated	L	L	L	L	L	L

12.2.3.2 Pollution of the Surface Water Runoff**Introduction**

The spillages and leakages of fuels, oils and grease from the sand mining equipment and vehicles, can possibly affect the water quality. The pollution from the various activities carried out by the employees, such as ablution facilities, washing, cooking, the disposal of rubbish and waste, can also impact the quality of the water.

Seeing that the **Sand Miners Association's** staff complement on site, is fairly small, the logical inference would be, that the associated pollution of the staff, will be small as well. However, large volumes of flood water, will significantly dilute any pollution source.

Assessment of the Impact**Severity:**

A possibility exists that pollution can be transported downstream from the sand mining area, which can potentially cause deterioration close to the sand mining site. Therefore, the severity is rated as medium in the unmitigated case, but is reduced to low in the mitigated scenario.

Duration:

The duration term for the probable pollution is medium, in both the unmitigated case as well as in the mitigated scenario.

Spatial Scale:

The impact and influence of the possible pollution of the surface water runoff, extends beyond the boundaries of the sand mining site, hence, the influence thereof, is rated as medium in the unmitigated case and in the mitigated scenario.

Consequence:

In light of the aforementioned assessment, the consequence of the potential pollution of the surface water runoff, is medium in the unmitigated case, but the consequence was determined to be low in the mitigated scenario.

Probability:

The probability of the occurrence of the pollution of the surface water runoff, was found to be medium in the unmitigated case, but as low in the mitigated scenario.

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Significance:

The overall significance of the possible pollution of the surface water runoff, was determined as medium in the unmitigated case, but in the mitigated scenario, the overall significance was determined to be low.

Tabulated summary of the assessed cumulative impact – surface water runoff

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	M	M	M	M	M
Mitigated	L	M	M	L	L	L

12.2.4 Biodiversity**12.2.4.1 The Physical Destruction and General Disturbance of Biodiversity****Introduction**

A number of the activities relating to the sand mining operations in the Swakop River, have the potential to destroy biodiversity in the broadest sense or to cause a general disturbance of and to the biodiversity in the sand mining area.

Assessment of the Impact**Severity:**

The area within which the sand mining activities are currently being conducted, had already been cleared of vegetation. Very little vegetation was found in the newly proposed future sand mining area, with the exception of some *Tamarix usneoides* (Wild Tamarisks) and Mesquite (*Prosopis spp*) as well as one or two *Vachellia eriolobas* (Camel Thorn Trees) (including the "Big Tree"), which are in relatively close proximity to the planned sand mining activities.

However, as mentioned above, the Swakop River, is in general a sensitive area from a biodiversity standpoint, as is ecologically important for many species. The river bed is amongst other things, an important corridor for the movement of animals. The sand mining vehicles and equipment along with the excavation of sand mining pits, may cause a disturbance to animals, as the animals in the area, may not be able to move freely in the Swakop River corridor, as a result of the sand mining operations.

Tourists and locals alike, very often drive within the Swakop River, in close proximity to the sand mining site. Considering that the sand mining activities within the Swakop River, had been conducted for quite a number of years, the impact on the movements of animals, should largely remain unchanged.

Against the backdrop of the discussions above, the unmitigated severity is regarded as high. But, considering that many of the issues can be prevented or mitigated to acceptable levels, the severity in the mitigated scenario, is regarded as medium.

Duration:

In both the unmitigated case as well as in the mitigated scenario, the impacts identified above, are of a long-term duration, because where the biodiversity of the area is compromised, killed or removed, the impact is likely to be of a lasting long-term nature. The duration is thus, rated as high in both the unmitigated case as well as in the mitigated scenario.

Spatial Scale:

Given that the biodiversity processes are not confined to the sand mining site, the spatial scale of the impacts will extend beyond the boundaries of the sand mining site in both the unmitigated case and in the mitigated scenario. The key related issues are the migration of species and the linkages between biodiversity areas. Hence, why the

impacts are deemed to be of a medium nature in the unmitigated case and in the mitigated scenario.

Consequence:

In the unmitigated case, this potential impact's consequence, is rated as high. Although, the severity of these impacts may be reduced with adequate and proper mitigation, the duration and spatial scale, remains high. Accordingly, the consequence in the mitigated scenario, would still be rated as high.

Probability:

Without proper and adequate mitigation, the probability of the occurrence of these impacts, will be deemed to be high in the unmitigated case. However, with mitigation, the probability may be reduced, because emphasis will be placed on allowing an open corridor for animals to move, and all the sand mining activities, be conducted according to the rules of the National Parks within which the sand mining site is located. With the adequate and proper mitigation and measurement, the probability of the occurrence of these impacts, can be deemed as low.

Significance:

In the unmitigated case, the overall significance of this potential impact is rated as high. In the mitigated scenario, however, the overall significance is rated as medium.

Tabulated summary of the assessed cumulative impact – physical destruction and general disturbance of biodiversity

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	H	H	M	H	H	H
Mitigated	M	H	M	H	L	M

12.2.5 Visual

12.2.5.1 Visual Impacts and Impacts on "Sense of Place"

Introduction

The visual impacts, primarily consist of the excavated pits, as well as the machinery and vehicles used during the sand mining operations, coupled with the dust being generated thereby.

Assessment of the Impact

Severity:

As already indicated herein, as a result of the sand mining activities, will cause significant visual impacts, thus, the severity thereof, is rated as high in the unmitigated case. However, with mitigation the severity thereof, could be reduced. Therefore, the severity is rated as medium in the mitigated scenario.

Duration:

Considering that the visual impacts run in conjunction with the life of the project, the duration of the visual impacts, are thus, expected to be of a medium term. Consequently, the duration in both the unmitigated case as well as in the mitigated scenario, is deemed to be medium.

Spatial Scale:

As the spatial scale of the visual impacts, will extend beyond the boundaries of the sand mining site, the effect hereof is regarded as medium in both the unmitigated case and in the mitigated scenario.

Consequence:

The consequences of the visual impacts were determined to be medium in both the unmitigated case as well as in the mitigated scenario.

Probability:

In the unmitigated case the probability of occurrence is rated as high, but with mitigation, the probability of occurrence would be reduced to medium in the mitigated scenario.

Significance:

The overall significance of this potential impact is regarded as medium in the unmitigated case, and remains as medium in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – visual impacts

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	H	M	M	M	H	M
Mitigated	M	M	M	M	M	M

12.2.6 Safety of Third Parties**12.2.6.1 Safety Impacts on Third Parties****Introduction**

A few aspects were identified, which relates to the sand mining operations, which could possibly cause harm to third parties, such as the excavated pits and the sand mining machinery, equipment and vehicles. The tipper trucks going to and from the sand mining site, might also increase the risk of motor vehicle collisions.

Assessment of the impact**Severity:**

The aspects and impacts which may have an effect on third parties or their safety, have been illustrated and discussed hereinabove.

Although the severity in the unmitigated case, is high, these issues and impacts can be prevented with adequate and proper mitigation measures, resulting in the severity being reduced to low, in the mitigated scenario.

Duration:

In the context of this assessment, death or permanent injury, is considered to be a long-term, permanent impact. Consequently, the duration of these impacts, are deemed to be high in both the unmitigated case and in the mitigated scenario.

Spatial Scale:

All of the impacts, which have been identified and discussed, pertaining to the safety of third parties, are located either within the sand mining site or in the immediate vicinity thereof. Thus, the rating of these impacts is low for the unmitigated case as well as the mitigated scenario.

Consequence:

In the unmitigated case, the consequences of this potential impact, was determined to be high. However, the consequences were determined to be medium, as the consequences of the potential impacts, can with adequate and proper mitigation, be reduced.

Probability:

In the unmitigated case, the probability of the occurrence of this potential impact, is rated as medium. In the mitigated scenario, the probability of occurrence, is reduced to low.

Significance:

The overall significance of this potential impact is considered to be high in the unmitigated case, whilst, the overall significance is considered as low, in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – safety impacts on third parties

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	H	H	L	H	M	H
Mitigated	L	H	L	M	L	L

12.2.7 Air Quality Impact Assessment**12.2.7.1 Air Quality Impact on the Surrounding Receptors****Introduction**

No new Air Quality study was done due to sufficient data available from previous study done by SLR dated 2015.

The main area of concern during the sand mining operations, is the surface activities, such as the sand excavation and scraping, the transferring of the sand at the transfer points, the screening of the sand and the transportation of the sand on the unpaved access road. The main pollutant of concern is the particulates.

The airborne particulate matter can be divided into Total Suspended Particulates (TSP), Thoracic Particles (PM₁₀) and Respirable Particles (PM_{2.5}). PM₁₀ and PM_{2.5} are associated with health impacts, whilst TSP is associated with nuisance.

Only the potential impacts from PM₁₀ emissions on the surrounding environment and on human health, were assessed. Modelling was done using SCREEN31 to obtain an indication of the potential health impact, the distance and the significance. The emission rates were combined for the scraping, tipping, screening and wind erosion, and modelled as an area source. The PM₁₀ impacts, from the gravel access road, was however, assessed separately. *SLR dated 2015.*

Expected Ambient Air Quality Impacts**Severity:**

The ambient air quality was adequately and sufficiently assessed and discussed herein, and the results of the assessment, indicated that the ground level concentrations PM₁₀ for both the sand mining site as well as the access road, measured well below the ambient air quality PM₁₀ limits. It should however, be noted that whilst driving along the access road, behind a tipper truck, the dust being generated by the tipper truck, was visually relatively excessive and could lead to some levels of nuisance to the nearby residents, depending on the wind direction at the prevailing time.

Considering the discussion above and the outcome of the results, the unmitigated severity is regarded as medium to low. But in the mitigated scenario, the severity is regarded as low.

Duration:

The impacts on the ambient air quality, pertaining to nuisance dust, will remain present during the life of the project. Once the sand mining activities cease, the airborne dust

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levels, will return to its natural levels. In light of the aforesaid, the duration of these impacts, are considered to be of a medium term for both the unmitigated case, as well as the mitigated scenario.

Spatial Scale:

With regards to the spatial scale of this impact, the screening assessment indicated that this impact will likely extend, between 50m to 100m from the sand mining operations. However, from the access road, the impact reaches up to 50m from the access road. The nuisance related factors from the dust, could potentially extend beyond the boundaries of the sand mining site, if no mitigation measures are implemented.

Consequently, the impact in the unmitigated case is rated as medium, but as low in the mitigated scenario.

Consequence:

Considering the assessment hereinabove, the consequence was determined to be high in the unmitigated case, whilst, it was determined to be low, in the mitigated scenario.

Probability:

The probability that these impacts will result in long-term health and safety impacts, as a result of PM₁₀ dust particles, is low, but, the nuisance related impacts from the dust are possible. Therefore, the probability of occurrence is regarded as medium in the unmitigated case. The probability of occurrence can however be reduced with adequate and proper mitigation, thus, in the mitigated scenario, the probability of occurrence, is regarded as low.

Significance:

In summarization of the factors in the assessment performed above, the overall significance of this impact is rated as medium in the unmitigated case, but as low in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – air quality

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M-L	M	M	H	M	M
Mitigated	L	M	L	L	L	L

12.2.8 Environmental Noise


12.2.8.1 Noise Impacts on Sensitive Receptors

Introduction

The area in which the sand mining operations are being conducted, is primarily used for private residences, although, some small-scale farming, tourism accommodation and businesses, are being performed in the area as well. It should also be borne in mind, that the area is frequented by locals and tourists alike, whilst, the 'plot road' which runs adjacent to the gravel access road, is utilized by locals and tourists. Considering all of the above, this area produces relatively low noise levels.

Consequently, the noise generated by the sand mining operations, as well as the sand mining vehicles and equipment, results in noise disturbances and noise pollutions for locals and residents alike.

Expected Ambient Noise Level Impacts

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Severity:

Considering that the ambient noise levels in the area are quite low, any noise disturbance and noise pollution will have an impact on the locals and residents. The severity thereof, is rated as medium in the unmitigated case, but in the mitigated scenario however, the severity thereof, is rated as low.

Duration:

The impacts on the ambient noise levels, are directly linked to the sand mining operations, and is projected to last for the lifetime of the project. Therefore, the inverse hereof, is true. Thus, the moment the sand mining operations cease operation, the ambient noise levels are likely to return to their normal levels. Considering all of the above, these impacts are deemed to be medium term for both the unmitigated case, as well as for the mitigated scenario.

Spatial Scale:

Seeing that, some of the plot owners recorded that there has been noise disturbances and noise pollution, it is evident that the impacts on the ambient noise levels, extends beyond the boundaries of the sand mining site. Hence, the impact on the ambient noise levels are regarded as medium in the unmitigated case, but as low in the mitigated scenario.

Consequence:

Considering the assessment hereinabove, the consequence was determined to be medium in the unmitigated case, whilst, it was determined to be low, in the mitigated scenario.

Probability:

In light thereof, that some of the locals and residents have already noted noise pollution and noise disturbances, the probability of occurrence is therefore, assessed to be medium in the unmitigated case. The probability of occurrence can however, be reduced with adequate and proper mitigation and management measures, which in turn will reduce the probability of the occurrence of these impacts, to be assessed as low.

Significance:

In summarization of the factors in the assessment performed above, the overall significance of this impact is rated as medium in the unmitigated case, but as low in the mitigated scenario.

Tabulated summary of the assessed cumulative impact – ambient noise levels


Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	M	M	M	M	M	M
Mitigated	L	M	L	L	L	L

12.3 Environmental Monitoring and Audit Programs

The management of the **Sand Miners Association** will conduct Environmental Monitoring and Audit Programs to assess whether the established environmental, safety and health criteria are being met.

13. WAY FORWARD**13.1 Way Forward for the Scoping Report**

The way forward for the EIA scoping phase is as follows:

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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- MET review the final scoping (including assessment) Report and EMP (this report) and provide an environmental clearance certificate (ECC); and
- Sufficient information is available and no further specialist investigations will be required.

14. CONCLUSIONS

As part of this EIA Scoping Phase, all the environmental aspects associated with the existing and future sand mining operations at the proposed new sand mining area, situated within the boundaries of the Dorob National Park and the Namib-Naukluft National Park, have been successfully identified and assessed. The relevant mitigation and management measures have been provided and included in the EMP, which accompanies this scoping report.

NEHC believes that a thorough assessment of the proposed project has been achieved and that an environmental clearance certificate (ECC) could be issued on condition that the management and mitigation measures in the EMP be adhered to. Considering that the sand mining operations had already commenced, prior to the initiation of the EIA process and the obtainment of the ECC. NEHC CC therefore, recommends that the commitments in the EMP, be implemented with immediate effect and not only after the approval of the MET: DEA, has been obtained.

Furthermore, since the resource at the current location is being depleted at a fast rate, it is advisable for the **Sand Miners Association** to start looking into a new resource area, as soon as possible. There are a number of environmental issues which needs to be considered during the new site selection process.

The project is viable and beneficial to the overall economy of Namibia.

15. REFERENCES

African Wilderness Restoration, 2010. Biodiversity Impact Assessment of the Linear Infrastructure at Swakop Uranium's Husab Project. Project No. AWR TR2009_09.1

Airshed Planning Professionals, 2015. Air quality Specialist Opinion on the Potential for Air Quality Impacts from the Sand Mining Operations in the Swakop River.

BIWAC, 2010. Numerical Groundwater Model and Water Balance of Swakop/Khan River System. Report No. 2010-3-F.V.9

Mendelsohn, J., Jarvis, A., Roberts, C. and Roberts, T., 2002. Atlas of Namibia: A portrait of the land and its people. David Philip Publishers, Cape Town, RSA

Metago, 2011. Environmental Impact Assessment Report for the Husab Mine Linear Infrastructure. Project No. S039-01


SLR, 2015a: Environmental Impact Assessment – Ground and Surface Water Specialist Study. Report No. 2015-WG48

SLR, 2015: Sand Miners Association, Scoping (Including Assessment) Report and EMP for Sand Mining in the Swakop River, Project No.: 734.19089.00001, Report No.: Doc. no. 1, November 2015

APPENDIX A:

**MINISTRY OF ENVIRONMENT, FORESTRY AND
TOURISM**

APPLICATION FOR CLEARANCE

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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23

No. 4878 Government Gazette 6 February 2012

ANNEXURE 1
FORMS

Form 1

REPUBLIC OF NAMIBIA
ENVIRONMENTAL MANAGEMENT ACT, 2007
(Section 32)
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE

NAMIBIA
REVENUE
N\$100

NAMIBIA
REVENUE
N\$100

NAMIBIA
REVENUE
N\$100

PART A: DETAILS OF APPLICANT

1. Name: (person or business) SAND MINERS ASSOCIATION

2. Business Registration / Identity No. 21/2012/0944
(if applicable)

3. Correspondence Address: P.O. Box 8416, SWAKOPMUND

4. Name of Contact Person: JOHAN CORNELISSEN

5. Position of Contact Person: EIA CONSULTANT

6. Telephone No.: 064 - 404 146

7. Fax No.: 064 - 404 179

8. E-mail Address: (if any) info@nehc.co.za

Tick () the appropriate box

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. The environmental clearance certificate is for:

3.1 MINING AND QUARRYING ACTIVITIES
 3.2 OTHER FORMS OF MINING OR EXTRACTION OF ANY NATURAL RESOURCES WHERE REGULATED BY LAW OR
 3.3 RESOURCES EXTRACTION, MANIPULATION, CONSERVATION AND RELATED ACTIVITIES

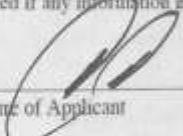
2. Details of the activity(s) covered by the environmental clearance certificate:

[Note: Please attach plans to show the location and scope of the designated activity(s), and use additional sheets if necessary:

Title of Activity: SAND MINERS ASSOCIATION
 Name of Activity: SAND MINING & EXPLORATION
 Location of Activity: SWAKOP RIVER
 Scale and Scope of Activity: ± 10KM² SAND MINING WITH ASSOCIATED ACTIVITIES AND NEW ACCESS ROAD TO SWAKOP RIVER


PART C: DECLARATION BY APPLICANT

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

 JOHAN CORNELISSEN EIA CONSULTANT
 Signature of Applicant Full Name in Block Letters Position

on behalf of SAND MINERS ASSOCIATION Date 03/11/2017

APPENDIX B: NEWSPAPER ADVERTISEMENTS

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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Newspaper Add Template:

**NOTICE FOR ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS (EIA) OF THE PROPOSED SAND AND AGGREGATE MINING
OPERATIONS IN THE SWAKOP RIVER**

CALL FOR PUBLIC PARTICIPATION

The Sand Miners Association (SMA) has appointed National Environmental Health Consultants (NEHC CC) to conduct the Environmental Impact Assessment (EIA) for above mentioned project in order to obtain an Environmental Clearance Certificate as per the requirements of the Environmental Management Act (Act No. 7 of 2007), the Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012) and within the framework of the Terms of Reference of this project all interested and affected parties need to be consulted to ensure that their concerns are taken into account for the following activity:

DESCRIPTION OF PROPOSED ACTIVITY: Sand and Aggregate Mining Operations in the Swakop River, approximately 30km East of Swakopmund

3. MINING AND QUARRYING ACTIVITIES:

- 3.1 Other forms of mining or extraction of any natural resources whether regulated by law or not.
- 3.2 Resource extraction, manipulation, conservation and related activities.

Location: Erongo Region, Swakop River, ≈30km East of Swakopmund.

Name of Proponent: Sand Miners Association

Name of Consultant: NEHC CC
P O Box 8416,
SWAKOPMUND

Contact Person: Johan Cornelissen
Tel: 064 404 146
Fax No.: 064 404 179
E-mail: info@nehc.co.za

Last date for comments and/or registration is 1st December 2017

In order to be identified as an interested and / or affected party, please submit your name, interest in the project and contact information to the consultants above within 14 days of placement of this notice in writing.

Project Reference Number: 2017/090/F

COMMUNITY NEWS

NOTICE FOR ENVIRONMENTAL IMPACT ASSESSMENT PROCESS (EIA) OF THE PROPOSED SAND AND AGGREGATE MINING OPERATIONS IN THE SWAKOP RIVER

CALL FOR PUBLIC PARTICIPATION



The Sand Miners Association (SMA) has appointed National Environmental Health Consultants (NEHC CC) to conduct the Environmental Impact Assessment (EIA) for above mentioned project in order to obtain an Environmental Clearance Certificate as per the requirements of the Environmental Management Act (Act No. 7 of 2007), the Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012) and within the framework of the Terms of Reference of this project all interested and affected parties need to be consulted to ensure that their concerns are taken into account for the following activity:

DESCRIPTION OF PROPOSED ACTIVITY: Sand and Aggregate Mining Operations in the Swakop River, approximately 30km East of Swakopmund

- 3. MINING AND QUARRYING ACTIVITIES:**
- 3.1 Other forms of mining or extraction of any natural resources whether regulated by law or not.
 - 3.2 Resource extraction, manipulation, conservation and related activities.

Location: Erongo Region, Swakop River, ±30km East of Swakopmund.

Name of Proponent: Sand Miners Association

Name of Consultant: NEHC CC
P.O Box 8416,
SWAKOPMUND

Contact Person: Johan Cornelissen
Tel: 064 404 146
Fax No.: 064 404 179
E-mail: info@nehc.co.zo

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In order to be identified as an interested and / or affected party, please submit your name, interest in the project and contact information to the consultants above within 14 days of placement of this notice in writing.

Project Reference Number: 2017/090/F

14 NOVEMBER 2017

MOUNT SIMAZ RECOVERY CENTRE
Drug and Alcohol rehabilitation centre.

Mail: info@mountsimazcentre.net
Website: www.mountsimazcentre.net
Contact Arno @ 081 860 8326
Nick @ 081 870 3337

BIG SALE

@ Crossroads Car Sales
Swakopmund Tel 064-403 666

WAS NOW

2014 Ford Ecopower Ecoboost	218 000	290 000
2016 Ford Ranger 2.2 XLS D/C 4x4	336 000	329 000
2012 Jeep Wrangler Rubicon 3.6 Unlim.	326 000	310 000
2015 Renault Duster 1.5 16cl 4x4	219 000	199 000
2011 Suzuki Jimmy 4x4	158 000	132 000
2015 Toyota Etios 1.5 XG Sedan	138 000	135 000
2016 Toyota Hilux 2.4 GD SRX D/C 4x4	399 900	389 000
2011 Toyota Hilux 3.0 D4D D/C 4x4	299 800	295 000
2015 Hilux Leg 45 3.0 D4D D/C 4x4	419 900	400 000
2016 Volkswagen Polo Vivo HB	155 900	146 000
2016 Volkswagen Polo Vivo Sedan	160 000	150 000

This special offer is for a limited time only.
Terms & conditions apply.

Bring this ad along to qualify for this once in a lifetime price!!!!!!

Crossroads Car Sales Swakopmund
A/H: Antonio @ 081 273 6926
Negumbo @ 081 274 0858

Newspaper Add: Namib Times – 21 November 2017

12 NAMIB TIMES


NOTICES

2017 **Trustee Road Show**

Regions: Northern regions

21 NOVEMBER 2017

Street, Fine collection of the Swakopmund Arts Association's "South West Masters" and contemporary Namibian art works. Open Mondays to Saturdays 10:00 - 12:00 and 15:00 - 17:00.



CALL FOR PUBLIC PARTICIPATION

NOTICE FOR ENVIRONMENTAL IMPACT ASSESSMENT PROCESS (EIA) OF THE PROPOSED SAND AND AGGREGATE MINING OPERATIONS IN THE SWAKOP RIVER

The Sand Miners Association (SMA) has appointed National Environmental Health Consultants (NEHC CC) to conduct the Environmental Impact Assessment (EIA) for above mentioned project in order to obtain Environmental Clearance Certificate as per the requirements of the Environmental Management Act (Act No. 107 of 2007), the Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012) and within the framework of the Terms of Reference of this project all interested and affected parties need to be notified to ensure that their concerns are taken into account for the following activity:

DESCRIPTION OF PROPOSED ACTIVITY: Sand and Aggregate Mining Operations in the Swakop River, approximately 20km East of Swakopmund

3. MINING AND QUARRYING ACTIVITIES:
 3.1 Other forms of mining or extraction of any mineral resources whether regulated by law or not.
 3.2 Resource extraction, manipulation, conservation and related activities.

Location: Erongo Region, Swakop River, 20km East of Swakopmund.

Name of Proponent(s): Sand Miners Association
 Name of Consultant: NEHC CC
 P.O. Box 4214
 SWAKOPMUND

Contact Person: Johan Cornelissen
 Tel: 0811225138
 Fax: 0811224414
 E-mail: johanc@nehc.co.za

Lead date for comments and/or objections is 1st December 2017 (from subject site name, insert in the project and consult information to be completed as an attached and / or additional form where is writing information to the consultant office within the deadline mentioned above is writing)

Project Reference Number: 2017/090/F

Target Date	Day	Targeted Towns to be covered during the Show (including surrounding Towns & Villages)	Venue	Former member registration time slots	Participant presentation time slots
27-Nov	Monday	Fransfontein, Khomasdal, Karraheib, Seifentsh	Council Chamber, Khomasdal Sediment Trap Rest Camp Conference Room	08:30 to 11:00 09:00 to 11:00	11:30 to 13:30 None
28-Nov	Tuesday	Opavon, Ruarason, Karraheib	Opavon Church Church Hall Meeting for confirmation	14:00 to 16:00	None
29-Nov	Wednesday	Opavon, Ruarason, Karraheib	Opavon Community Officers' Board Meeting for confirmation	08:30 to 11:00	14:00 to 16:00
30-Nov	Thursday	Tsumeb, Oshana, Otjomuhs, Opavon	Opavon Community Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
01-Dec	Friday	Gobabis, Oshana, Eim, Oshana, Otjomuhs	Oshana Youth Centre Hall	09:00 to 12:00	13:00 to 15:00
04-Dec	Monday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
05-Dec	Tuesday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
06-Dec	Wednesday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
07-Dec	Thursday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
08-Dec	Friday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
11-Dec	Monday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00
13-Dec	Tuesday	Oshana, Otjomuhs, Otjomuhs, Otjomuhs	Oshana Regional Officers' Board Board Room	09:00 to 12:00	13:00 to 15:00

Presenters
Mr. David Amupolo 0811402315
Mr. Erich Benkes 0811225138
Mr. Julius Haifene 0811224414

Newspaper Add: Republiken – 23 November 2017

Donderdag 23 November 2017

Statistieke Suid-Afrika (SSA) gisteroggend bekend gemaak.

Die oorhoofse inflasiekoers is 4,8%, vergeleke met September se 5,1%. Inflasie was in Julie en Augustus ook laer as 5%. Selfs beter nuus vir verbruikers is dat kos nou net 5,3% duurder is as 'n jaar gelede, die laagste kosprysinflasie nog vanjaar.

Selfs die styging in vleispryse het - einde-lik - begin verlangsam, hoewel vleis steeds gemiddeld 15,5% duurder is as 'n jaar gelede.


Dit was in September 15,6%.

Die verlangsaming van kosprysinflasie is veral goeie nuus vir die armste Suid-Afrikanters, wat nou 'n inflasiekoers van slegs 2% beleef, volgens SSA.

Pensioentrekkers ervaar taans inflasie van net 4%. Ontleders het egter vroeër die week gewaarsku dat die laer inflasiekoers net tydelik is gegewe met hoeveel die petrolprys aan die styg is.

Kerninflasie, 'n belangrike syfer wat die Reserwebank dophou, het eifens gedaal, tot

Notisie vir omgewingsimpaktoetsing (EIA) van die voorgestelde SAND AND AGGREGATE MINING OPERATIONS IN THE SWAKOP RIVER CALL FOR PUBLIC PARTICIPATION



The Sand Miners Association (SMA) has appointed National Environmental Health Consultants (NEHC CC) to conduct the Environmental Impact Assessment (EIA) for above mentioned project in order to obtain an Environmental Clearance Certificate as per the requirements of the Environmental Management Act (Act No. 7 of 2007), the Environmental Impact Assessment Regulations (GN 30 in GG-4878 of 6 February 2012) and within the framework of the Terms of Reference of this project all interested and affected parties need to be consulted to ensure that their concerns are taken into account for the following activity:

DESCRIPTION OF PROPOSED ACTIVITY:
Sand and Aggregate Mining Operations in the Swakop River, approximately 30km East of Swakopmund

3. MINING AND QUARRYING ACTIVITIES:

3.1 Other forms of mining or extraction of any natural resources whether regulated by law or not.

3.2 Resource extraction, manipulation, conservation and related activities.

Location: Erongo Region, Swakop River, 30km East of Swakopmund.

Name of Proponent: Sand Miners Association
Name of Consultant: NEHC CC
PO Box 8416,
SWAKOPMUND

Contact Person: Johan Cornelissen
Yell: 064 404 146
Fax No.: 064 404 179
E-mail: info@nehc.co.za

Last date for comments and/or registration is 1st December 2017
In order to be identified as an interested and / or affected party, please submit your name, interest in the project and contact information to the consultants above within the said date mentioned above in writing.

Project Reference Number: 2017/090/F

Republiken

DIE MARK 17


27-Nov	Monday	Walvisbay	Kuisebmond Community Hill	08:30 to 10:00	10:00 to 12:00
28-Nov	Tuesday	Swakopmund, Herries Bay, Swakopmund, Herries Bay	"Swakopmund Hotel & Entertainment Centre"	14:00 to 16:00	None
29-Nov	Wednesday	Arandis, Karibib, Uvukua, Ojilimbivue	Arandis Primary School, Karibib Town Hall	None	08:30 to 10:30
30-Nov	Thursday	Butte Pos, Gobabis, Witvliet, Omitara, Ojilimbe, Arandis, Epukiro	Omitara Rest Camp, Immigration Offices, "Gobabis Constituency Offices" Board Room"	12:00 to 13:30	15:00 to 17:00
01-Dec	Friday	"Windhoek City, Pioneers Park, Hockland Park, Klein Windhoek, Okahandja, Ouitoto, Khomasdal, Katutura, Soweto, Wanaheda."	The Mineworkers Union of Namibia Conference Room (Windhoek)	08:30 to 17:00	None
04-Dec	Monday	Rehoboth, Kalkrand, Groot Aub, Klein Aub	"Rehoboth Constituency Offices" Board Room"	09:00 to 10:00	10:30 to 12:30
05-Dec	Tuesday	Karasburg, Noordwaer	"Karasburg Constituency Offices" Board Room"	08:30 to 11:30	None
06-Dec	Wednesday	//Nhamus, Aua	"//Nhamus Constituency Offices" Board Room"	08:00 to 10:00	10:30 to 12:30
07-Dec	Thursday	Rosh Pinah	Amica Guesthouse Conference Room	16:00 to 18:00	None
08-Dec	Friday	Kaartmanhoop	"Oranjemund Constituency Offices" Board Room"	10:00 to 13:00	None
		Mariental, Gibson	Kaartmanhoop Constituency Offices' Board Room	08:30 to 10:30	None
			"Mariental Constituency Offices" Board Room"	13:00 to 15:00	None

Presenters
Mr. John Mootseng
Mr. Charles Kauraisa

0811402337
0811251225


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APPENDIX C:
PICTURES OF SITE NOTICE BOARDS

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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


**APPENDIX D:
INTERESTED AND AFFECTED PARTIES
REGISTER**


Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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APPENDIX E:

ISSUES AND RESPONSE REPORT

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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APPENDIX F:
CV
ENVIRONMENTAL PRACTITIONER

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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Johan Cornelissen

DOB: 8 April 1965 | ID: 650408 5019 086

Tel: +264 811 491 032 | Email: joan@nehcafrica.com | P. O. Box 8416, Swakopmund, Namibia

Curriculum Vitae

PROFESSION

Occupational Hygienist – ROH 0159

DATE OF BIRTH

8 April 1965

NATIONALITY

RSA, Permit for Permanent Residence - 21582

MEMBERSHIP IN PROFESSIONAL AND OTHER BODY REGISTRATIONS

- 2015 to date: British Occupational Hygiene Society (BOHS)
- 2014 to date: SANS ISO/IEC 17020 accredited for "Inspection of Occupational Hygiene Workplaces".
- 2012 to date: A member of the International Occupational Hygiene Association (IOHA) which is in its turn recognized by the International Labour and the World Health Organisations.
- 2011 to date: Board of Registration for Occupational Hygiene, Safety and Associated Professionals
- 2008 to date: The South African Society of Occupational Health Nursing Practitioners
- 2007 to date: Environmental Practitioner
- 1986 to date: Occupational Hygienist registered at SAIOH – Registration Nr: 0159
- 1986 to date: Department of Labour, South Africa – Approved Inspection Authority
- 2005 to date: Ministry of Labour, Namibia – Approved Inspection Authority
- 1986 to date: South African Medical and Dental Council

KEY AREAS OF COMPETENCE

Analytical Occupational Hygienist and Environmental practitioner with a comprehensive understanding of the interaction between Health, Safety, Occupational Hygiene, Environmental and Quality within commercial settings, complete with a strong background in science and specific interest in the impact of the environment on health.

- Occupational Hygiene Planning, Implementation and Managing, Surveys and Monitoring of work-related Stress Factors (Noise, Illumination, Dust, Lead, Asbestos, Vibration, VOC, Hazardous Chemicals, Ergonomics, Radiation, ext.).
 - Proficient in sampling techniques
- Environmental Assessment Process (Impact Assessments, Strategic Assessments and Integrated Assessments, Environmental Management Plans)
 - Development of cost-effective strategies to encourage employee health
 - Broad knowledge basis with scientific principles
 - Environmental Health specialising in Food Safety, Processing and Auditing
- Air Quality Management (Isokinetic Stack Sampling, Ventilation and Aspiration Systems)
 - Project Planning, Management and Development
- Management Systems Implementation and training (ISO 9001 / ISO 14001 / OHSAS 18001 / HASSP)
 - Safety and Health Auditing / Risk Assessments and Investigations

Date:
17th of February 2022

Company:
Sand Miners Association – Swakopmund- EIA

Occupational Hygienist
Johan Cornelissen

Project No:
2017 / 090 / F

KEY QUALIFICATIONS, EDUCATION AND TRAINING

2016 to date	Current enrolled in Master of Science Healthcare – MSc Healthcare	ALDERSGATE COLLEGE – Philippines
2013	Asbestos Fibre Counting (PCM)	National Institute for Occupational Health
2013	Key knowledge Certificate - Legislation	North West University of Potchefstroom
2010	Radiation Safety Officer Course (RSO)	The Uranium Institute Namibia
2009 NIOH	Understanding Asbestos	National Institute for Occupational Health
2009 NIOH	Stoffenmanager Exposure Assessment and Control Tool	National Institute for Occupational Health
2007	Lead Auditor Training ISO 9001, 14001 and OSHAS 18001	QMI
2007	Integrated Management Systems	QMI
2004	TWR Certificate in Audiometry 171	WITS University
1999	Occupational Health and Safety Act	UNISA
1996	Certificate in Occupational Hygiene Legislation	Technicon Pretoria
1996	Baccalaureus Technologiae Environmental Health	Technicon Pretoria
1994	National Higher Diploma Public Health	Technicon Pretoria
1986	National Diploma Public Health	Technicon Pretoria
1985	Certificate in Industrial Audiometry and Calibration	Technicon Pretoria

PROFESSIONAL EXPERIENCE

Technical Experience

May 1994 – Current **Business Owner for NEHC South Africa and NEHC Namibia:
National Environmental Health Consultants CC (NEHC CC)
Swakopmund, Namibia | Brits, South Africa**

Current Roles and Responsibilities

Occupational Hygiene Work Related Stress Factor Measurement and Monitoring	Physical measuring of all Occupational Hygiene Stress factors in various industries in Africa, Namibia, Uganda, Malawi, Tanzania, Kenya and South Africa (E.g., asbestos, lead, dust exposure, noise, chemicals, illumination, biological, radiation, ventilation, ergonomics etc.)
Environmental Impact Assessments (EIA)	Completion, Management and auditing of EIAs at various industries in South Africa and Namibia: (e.g., Petrochemical, agriculture, township developments, production, mining, fishing and manufacturing)
Environmental Management Plans (EMP)	Development and Monitoring of EMP's for various sectors
Occupational Safety, Health, Hygiene & Environmental Risk Assessments (SHE)	Comprehensive risk assessments with legal compliant suggestions and implementation of Occupational Safety, Health, Hygiene and Environmental programmes
Health, Safety and Environmental Management Systems	Implementation of management systems using ISO 9001; 14001; OSHAS 18001 Internal Audits of ISO 9001; 14001; OSHAS 18001. 'Lead Auditor' and associated training.
Environmental Health Monitoring	Food Safety, water and food sampling and analyses, disease vectors, solid and liquid waste, personal health, hygiene and legislation training
Air Monitoring	Dust fall-out, PM 10 & PM 2.5 and asbestos air monitoring for various industries. Isokinetic Stack sampling, Ventilation and Aspiration Systems.

Date:
17th of February 2022

Company:
Sand Miners Association – Swakopmund- EIA

Occupational Hygienist
Johan Cornelissen

Project No:
2017 / 090 / F

Auditing	Comprehensive internal and external Safety, Health, Hygiene, Environment and Quality audits. Evaluating and reporting on findings, evaluating and identifying HEGs.
Safety Monitoring	PPE, legal compliance audits, safe work procedures, construction safety, Accident and Incident investigations

Recent Projects

Namibia and South Africa

Air Monitoring – Asbestos Namibia

RÖSSING URANIUM (NAMIBIA).	Inspection and remedial action recommendation of houses in Arandis.
ARANDIS TOWN COUNCIL / RÖSSING URANIUM (NAMIBIA). NAMDEB DIAMOND CORPORATION (PTY) LTD. NAMIBIA TRAINING AUTHORITY (NTA)	Arandis asbestos project. The provision of monitoring of asbestos for demolition at Namdeb's operation. Monitoring the removal of asbestos roofing.
RESOLVE MARINE	Chamarel Project- Demolishing - Asbestos Exposure.
P&I ASSOCIATES (Pty) Ltd:	Chamarel Project – Asbestos Exposure Monitoring & Protecting & Indemnity Club Training and Correspondents.
SMIT SALVAGE:	Chamarel Project – Caretaker Phase, Asbestos Exposure Monitoring.
MINISTRY OF WORKS:	Air monitoring during demolishing of old Oshakati Exposure Monitoring.
TUNACOR:	Building of new cold storage facility.
NAMPOWER:	Demolishing of old facilities Walvis Bay.
ENGEN:	Demolishing of old facilities Walvis Bay.
MINISTRY OF HEALTH:	Asbestos Exposure Monitoring, Windhoek.

Environmental Impact Assessments (EIA) and Environmental Management plans (EMP)

ENAEX	EIA / EMP - Explosives Mixing Plant
SPITZKOPPE REST CAMP	EIA / EMP - Rest Camp
KAAP AGRI	Interested and Affected Party (EIA)
TSUMEB ABATTOIR	EIA / EMP – Filling Station
WESTPORT RESOURCES NAMIBIA - NAMIBPLAAS	EIA / EMP – Uranium Mining
OMATJETE MINING COMPANY	EIA / EMP – Gold Exploration
WESTPORT RESOURCES NAMIBIA - VALENCIA MINE	EIA / EMP -: Residential Village
BME	EIA / EMP - Explosives Plant and Storage Facility Arandis
ERONGO LOGISTICS (PTY) LTD:	EIA / EMP - Storage Facility, Swakopmund
SEAL PRODUCTS (PTY) LTD:	EIA / EMP - Abattoir, Hentiesbay
TOTAL BRITS:	EIA / EMP - Filling Station and Associated Facilities, Pretoria North (SA)
EHLERS FARMING:	EIA / EMP - Broiler, Brits
SEVE SEASONS TRADING:	EIA / EMP - Residential Development, Brits (SA)
EXPACTO CHROME	EIA / EMP - Chrome wash Plant, Rustenburg (SA)
MONSANTO SA (PTY) LTD:	EIA / EMP - Expansion on existing Plant and Dryer facilities, Lichtenburg
CEDDARFALLS:	EIA / EMP - Township Development, Brits (SA)
SAND ROSE INVESTMENTS:	EIA / EMP – Town Development & Planning

Occupational Hygiene Work Related Stress Factor Measurement and Monitoring	Various industries: Ministries: Off-Shore Mining; Mining; Fishing; Construction; Manufacturing; Packaging; Engineering; Chemical
Occupational Health, Hygiene & Environmental Risk Assessments (SHE)	Various industries: Off-Shore Mining; Mining; Fishing; Construction; Manufacturing; Packaging; Engineering; Chemical
Auditing	Various industries: Off-Shore Mining; Mining; Fishing; Construction; Manufacturing; Packaging; Engineering; Chemical

KEY PROJECTS

ARANDIS TOWN COUNCIL / RÖSSING: Arandis asbestos project.

NAMDEB DIAMOND CORPORATION (PTY) LTD: The provision of monitoring of asbestos for demolition at Namdeb's operation.

NAMIBIA TRAINING AUTHORITY (NTA): Monitoring the removal of asbestos roofing.

NAMPORT: Walvis Bay and Lüderitz: Occupational Hygiene Surveys.

Namibia Training Authority (NTA): Technical Working Group – Unit Standard Development - Occupational Health & Safety.

NAMPORT: Walvis Bay: Asbestos Inspection and remedial action recommendations.

Dundee Precious Metals Tsumeb: Occupational Hygiene Surveys.

Cenored: Occupational Hygiene Surveys - Whole Region.

RCL Foods Randfontein: Occupational Hygiene Surveys.

ENAEX: Explosives Mixing Plant.

Puma energy: Occupational Hygiene Surveys.

NAMPORT EMP: Independent Compliance Appointment for the New Container Terminal, Walvis Bay.

WESTPORT RESOURCES NAMIBIA, NAMIBPLAAS: Appointed to complete an EIA.

B2 GOLD MINE: Baseline Occupational Hygiene Surveys.

SWAKOP URANIUM MINE Pty Ltd: Baseline Health and Safety Risk Assessment and baseline Occupational Hygiene Survey (5 year appointment).

LANGER HEINRICH URANIUM MINE (Pty) Ltd: Occupational Hygiene Surveys.

MINISTRY OF ENVIRONMENT AND TOURISM / MINISTRY OF HEALTH AND SOCIAL SERVICES / WORLD HEALTH ORGANISATION: Appointed as Specialist Consultant for above mentioned Ministries to evaluate the impact of Namibia Custom Smelters (Copper) on employees and neighbouring town of Tsumeb.


P&I ASSOCIATES (PTY) LTD: Appointed as Specialist Consultant to evaluate and identify possible Asbestos exposure on the burned Chamarel (Vessel) - classified as an environmental disaster, off shore.

ELGIN BROWN & HAMMER NAMIBIA: Dry Dock: Implementation of OSHAS 18001 System.

PREVIOUS WORK EXPERIENCE

1994 – To date: National Environmental Health Consultants CC – Senior Hygienist and Environmental Practitioner

- Occupational Safety, Health, Hygiene, Environment and Quality consultant for various industries.
- Appointed as preferred SHEQ consultant for Monsanto South Africa (Pty) Ltd, also serving their Africa Plants since 1995

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- Appointed as Kwezi V3 Civil Engineers SHEQ consultants on all their projects in the North West Province (SA) since 2008
- Appointed as De Beers Marine Namibia's preferred SHEQ consultant since 2005
- Compiling of EIAs and EMPs for various clients

1989 – 1994: Brits Town Council, North West Province - Health and Senior Health Inspector for the Council

- Enforcement of applicable legislation within the Brits Town Council jurisdiction.
- Public and Environmental Health
- Food Safety
- Meat Inspections (Abattoir)
- Evaluation of EIA AND EMP's by consultants within the Councils jurisdiction.
- Water Sampling
- Approval of building Plans
- Waste Management

1984 – 1989: Department of Health and Population Development - Health Inspector in Training / Health Inspector

- Enforcement of applicable legislation within the Department of Health and Population Development jurisdiction.
- Public and Environmental Health
- Evaluation of EIA AND EMP's by consultants within the Departments jurisdiction.
- Water Sampling
- Waste Management
- Hazardous Chemicals
- Ministerial Compliance
- Schedule 7 Medicine Control
- Inspections of all Ministerial Premises.
- Communicable and contagious disease control.
- Vector Control

1987 – 1989 SADF Medical Corps – Lt. Health Officer

- Enforcement of applicable legislation within the SADF jurisdiction.
- Public and Environmental Health
- Evaluation of EIA AND EMP's by consultants within the SADF's jurisdiction.
- Water Sampling
- Waste Management
- Inspections of all SADF Premises.
- Communicable and contagious disease control.
- Vector Control


LANGUAGE PROFICIENCY

	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

OTHER REFEREES

Dr. Herma Strauss Principle Medix Namibia Tel: 064 – 221 050 E-mail: herman@medixx.com.na	Dr. Ali El Sherif Chief Medical Officer Ministry of Health and Social Services Namibia Tel: +264 81124480 E-mail: elsherif@mhss.gov.na	Me. Quinta Nendongo SHEQ Aveng Water Treatment (Pty) Ltd Namibia Tel: +264 812227111	Mrs. M van der Merwe Chief Health and Environmental Services of Tshwane Local Municipality Tel: +27 82 498 0685
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APPENDIX G: RECORD OF REPORT DISTRIBUTION

Date: 17 th of February 2022	Company: Sand Miners Association – Swakopmund- EIA	Occupational Hygienist Johan Cornelissen 	Project No: 2017 / 090 / F
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RECORD OF REPORT DISTRIBUTION

NEHC CC's Reference:	2017 090 F
Title:	Scoping (Including Assessment) Report and EMP for Sand Mining in the Swakop River
Report Number:	Report No.: 1
Proponent:	Sand Miners Association

Name	Entity	Format	Date issued	Issuer
Various	IAPs	Hard copies and CDs and Email	May 2022	J. Cornelissen

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