Environmental Scoping Assessment (ESA) for the Municipal Council Sand Mining Borrow Pit Area, Across Nonidas Swakopmund. Reference number CS/RP/SM-012/2023

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Application for an Environmental Clearance Certificate for the Municipal Council Sand Mining Borrow Pit Area, Across Nonidas Swakopmund.

Project details

- The Swakopmund Municipality plans to perform a thorough geotechnical assessment of the current sand mining borrow pits.
- This assessment aims to determine the remaining material reserves, formulate recommendations for effective management, and carry out an environmental impact assessment to address all associated environmental issues.
- Additionally, the municipality seeks to obtain an Environmental Clearance for the entire sand mining borrow pits site measuring 55.97 hectares.

Proponent

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	For review by the Ministry of Environment, Forestry and Tourism: Office of the Environmental Commissioner, interested and affected parties and stakeholders.
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Signed	

Executive Summary

The Swakopmund Municipality plans to perform a thorough geotechnical assessment of the current sand mining borrow pits which saw operations commence in circa 2016.

This assessment aims to determine the remaining material reserves, formulate recommendations for effective management, and carry out an environmental impact assessment to address all associated environmental issues. Additionally, the municipality seeks to obtain an Environmental Clearance for the entire sand mining borrow pits site measuring 55.97 hectares.

Sand mining was an activity carried out long before 2015 in the Swakopmund River area, managed by the Sand Miners Association (SMA). The Council was responsible for issuing permits to all companies under the SMA and ensuring compliance with environmental laws. However, in 2016, the Council observed that sand mining companies were causing damage to the river.

As a result, all mining activities in the Swakopmund River were stopped immediately. Subsequently, a few companies were granted permits to mine sand in the Nonidas area before 2017. The composition of the sand in Nonidas differs from that in the river.

Companies mining in Nonidas received permits only upon submission of an Environmental Management Plan and an Environmental Clearance Certificate. One permit condition mandated companies, to rehabilitate their borrow pit, but many companies vanished without fulfilling this requirement. The lack of proper control measures on-site has also led to issues with illegal mining.

The borrow pits are located 11.2 kilometres from the Swakopmund Central Business District (CBD) on the left side of the B1 national highway opposite Nonidas.

The entire Municipal Council sand mining borrow pits are located at Latitude -22.636083° and Longitude 14.628267° to the Northeastern Point, Latitude -22.638680°and Longitude 14.630734° at the Southeastern Point. The western boundaries are located at Latitude -22.641070° and Longitude 14.617284° to the Northwestern Point and Latitude -22.644956° and Longitude 14.619494° at the Southwestern Point.

The total accessory works area covers 559,723.84 m3 / 55.97 hectares and spans a total distance of 4.6 km and directly fall under the jurisdiction of the Swakopmund Local Authority and zoned mixed-use light industrial.

NCEL Geotechnical Consultants Cc has been the successful tenderer for the Project: CS/RP/SM-012/2023: Geotechnical Assessment of Municipal Council Sand Mining Borrow Pit Area, Across Nonidas, Swakopmund under Contract No: E/03/2024.

NCEL Geotechnical Consultants Cc was appointed to undertake all the statutory procedures to deliver on this exercise by commissioning an Environmental Impact

Assessment Process. The official contract and appointment letter was signed and issued on 26 January 2024.

We commenced with the process of registering the project on the Environmental Clearance Certificate (ECC) System of the Ministry of Environment, Forestry and Tourism (MEFT) on the 18 February 2024. It was confirmed from the MET response correspondence that only a Scoping Report and Environmental Management Plan (EMP) was required for the process of application for an ECC.

To commence with the Public Participation of the Stakeholder Engagement Process, four (4) adverts were placed in two (2) prominent daily newspapers for two (2) consecutive weeks on the following dates.

- The Namibian – Thursday, 22, February 2024, Page 9
- Namib Times – Friday, 23, February 2024, Page 11
- The Namibian – Thursday, 29, February 2024, Page 16
- Namib Times – Friday, 01, March 2024, Page 7

A comprehensive BID document was prepared for Interested and Affected Parties (I&AP's) and we, asked I&APs to register as such and request BID documents from 18 February 2024.

We also communicated that we needed inputs and concerns communicated to us before the 22 February 2024 on the BID Document.

Two members of the public namely Mr. Hafeni Hiveluah and Mr. Michael Louw requested a copy of the BID document and to be registered as IAP's and we emailled them the BID documents on 29 February 2024 and on 6 March 2024 respectively. A Stakeholders Meeting was held on 15 March 2024 at the Tamariskia Community Hall as advertsied and not a single person pitched up.

The notice of the availability and review of the scoping report was extended to end April 2024. There were no comments received from the public during this period.

The following were regarded as main impacts related to the ongoing and proposed development:

The sand mining activities in this instance for brick and concrete making, construction and infrastructure development are usually associated with some impacts, both positive and negative. The proposed activity have some potential impacts on the surrounding environment, and these are listed below.

Positive:

- *Resource Availability*: Sand is a crucial raw material for construction, brick, and concrete production. Sand mining ensures a steady and sufficient supply of this essential material, supporting the construction industry's needs in the Swakopmund, Langstrand and Walvisbay area.

- *Infrastructure Development*: Sand mining facilitates the construction of buildings, roads, bridges, and other infrastructure projects vital for economic growth and societal development. Adequate sand supply helps meet the demand for these projects, promoting urbanization and improving living standards in the in the Swakopmund, Langstrand and Walvisbay area.
- *Job Creation*: Sand mining operations require a workforce, providing employment opportunities for local communities. This contributes to economic development by generating income and reducing unemployment rates in Swakopmund and the region.
- *Economic Growth*: The construction and concrete industries play a significant role in driving economic growth. Sand mining supports these industries by ensuring the availability of key raw materials, which, in turn, stimulates economic activity and generates revenue through taxes and exports.
- *Housing and Shelter*: Sand is a primary component of bricks and concrete, which is used extensively in building construction. By enabling the production of bricks and concrete, sand mining helps address housing shortages and provides shelter for growing populations, improving living conditions.
- *Infrastructure Maintenance*: Sand is also used in infrastructure maintenance and repair activities, such as road resurfacing and concrete structure renovations. Sand mining ensures a continuous supply of material for these purposes, prolonging the lifespan of existing infrastructure.
- *Innovation and Technology*: Sand mining operations often drive innovation and technological advancements in mining techniques, extraction processes, and environmental management practices. These improvements can lead to more efficient and sustainable sand mining operations, reducing environmental impacts while maximizing resource utilization.
- Local empowerment through skills development during operations.
- Associated spinoff industries during these activities leading to economic empowerment and growth.

Negative:

The following potential negative impacts may be anticipated:

- *Noise (nuisance):* noise generated by machinery and vehicles may lead to nuisance to employees and immediate community living across the B1 Highway at Nonidas.
- Air pollution from fugitive dust emissions from loading and hauling activities and heavy mobile equipment traffic and during offloading.
- *Vehicular traffic*: potential increase in local traffic due to loading and hauling activities on site and travel on the B2 road to Swakopmund and Langstrand and, on the MR44/ Hifikepunye Pohamba Freeway to Walvisbay and subsequent operational activities.
- *Health and safety*: improper handling of Personal Protective Equipment (*PPE*) and equipment may cause health and safety risks.
- *Habitat Destruction*: Sand mining in this area often involves the extraction of sand from the top layers of the coastal gravel plains, leading to the destruction of natural habitats for various plant and animal species. This habitat loss can disrupt ecosystems, reduce biodiversity, and threaten the survival of sensitive species.

- *Erosion and Sedimentation*: Removing sand from coastal gravel plains can accelerate erosion and sedimentation processes. This can lead to increased sedimentation in waterways, and erosion of coastal gravel plains, posing risks to infrastructure and habitats.
- *Water Quality Degradation*: Sand mining operations can impact water quality through sedimentation, turbidity, and pollution from mining activities and equipment.
- *Social Impacts:* Sand mining can have adverse social impacts on communities, including displacement of residents, and conflicts over land and resource rights. Mining operations may also disrupt traditional practices and cultural heritage sites, leading to social tensions and community disintegration.
- Illegal and Unsustainable Practices: In many cases, sand mining is conducted illegally or using unsustainable practices that exacerbate environmental and social impacts. Illegal sand mining can occur in protected areas, without proper permits or environmental assessments, leading to widespread ecological damage and regulatory challenges.

We are confident that the above-mentioned impacts can adequately be addressed by implementing the mitigation measures provided in the Environmental Management Plan (EMP) **in Chapter 12.**

Therefore we recommend that the currently active development, as described in **Chapter 7** and the following associated activities receive an Environmental Clearance Certificate (ECC), provided that the EMP is implemented and conditions set by the Municipality of Swakopmund are complied with.

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Abbreviations

°C	Degrees Celsius
AOI	Area of Influence
BID	Background Information Document
CBD	Central Business District
DEA	Department of Environmental Affairs
DRC	Democratic Resettlement Community
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
ESA	Environmental Scoping Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gas Emissions
FEL	Front End Loader
GN	Government Notice
HME	Heavy Mobile Equipment
HPP	Harambee Prosperity Plan
HSE	Health Safety and Environmental
HSEO	Health Safety and Environmental Officer
ISO	International Standards Organisation
I&AP's	Interested and Affected Parties
MAMSL	Mean Sea Level
MEFT	Ministry of Environment, Forestry and Tourism
MSDS	Material Safety Data Sheets
MURD	Ministry of Urban and Rural Development
NAMBAP	Namibia Planning Advisory Board
NDP5	Namibia's 5th National development plan (NDP5)
NIDS	Namibia Intercensal Demographic Survey (NIDS)
NSA	Namibia Statistics Agency
SANS	South African National Standard
SM	Municipality of Swakopmund
SQM	Square metres

Definitions of Terms

Term	Definition
Corrective Action	Action to eliminate cause of a detected nonconformity
Duration	Refers to the length of time over which an environmental impact may occur;
Environment	Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, and their interrelation

Environmental Audit	An assessment of the extent to which an organization is observing practices which minimize harm to the environment
Aspect	Element of an organization activities or products or services that can interact with the environment.
Environmental impact	Any change to the environment, weather adverse or beneficial, wholly, or partially resulting from an organization. aspects
Frequency	the number of times during the project or specific project phase or activity that an environmental effect might occur (e.g., one time or multiple times) in a specified time period.
Hazard	Source, situation, or act with a potential for harm in terms of human injury or ill health, or combination of these
Hazard identification	The process of recognizing a hazard in existence and defining its characteristics
Incident	Work-related events in which an injury or ill health or fatality occurred. Or could have occurred
Interested Parties	Person or group, inside or outside the workplace, concerned with or affected by the Integrated management system of an organization
Impact	Any consequence caused by a proposed activity on the environment, including effects on human health and safety, fauna, flora, soil, air, water, climate, landscape, and historical monuments, or other physical structures, or the interaction among those factors. It also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors.
Non conformance	Non-fulfilment of a requirement as per IMS standards, Applicable Rules & Regulations & Client requirements
Ill health	Identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work-related situation
Risk	Combination of the likelihood of an occurrence of a hazardous event or exposures and the severity of injury or ill health that can be caused by the event or exposures
Risk Assessment	The process of evaluating the risks arising from a hazard, considering the adequacy of any existing controls, and deciding whether the risks are acceptable
Occupational Health and Safety	The condition and factors that affect or could affect the health and safety of employees or other workers (including temporary workers and contractor personnel), visitors or any person in the workplace
Preventative Action	The action to eliminate the cause of a potential nonconformity or other undesirable potential situation
Project	The features and activities that are a necessary part of the Project Proponent's development, including all associated facilities without which the Project cannot proceed. The Project is also the collection of features and activities for which authorization is being sought.
Project Site	The (future) primary operational area for Project activities.

Project Footprint	The area that may reasonably be expected to be physically touched by Project activities, across all phases. The Project Footprint includes land used on a temporary basis such as construction laydown areas or construction haul roads, as well as disturbed areas in transport corridors, both public and private.

1. Introduction

To usher in a new era of continuing works at the current Swakopmund municipal sand mining borrow pits the Municipality needs to obtain a blanket Environmental Clearance Certificate (ECC) and put in place corrective measures from the current status quo.

The Proponent the Municipality of Swakopmund needs to undertake all the statutory procedures to apply for an Environmental Clearance Certificate (ECC) for the sand mining operations across the total accessory works area which covers 559,723.84 m3 / 55.97 hectares and spans a total distance of 4.6 km and directly fall under the jurisdiction of the Swakopmund Local Authority and zoned mixed-use light industrial.

As per requirements of the Environmental Management Act (EMA) No. 7 of 2007, and its 2012 Environmental Impact Assessment (EIA) Regulations, an Environmental Scoping Assessment (ESA) application needs to be undertaken and submitted to the Department of Environmental Affairs of the Ministry of Environment, Forestry and Tourism (MEFT), respectively for approval and issuing of an environmental clearance certificate (ECC).

The intent is to conduct an ESA is ultimately to aid in;

- Notify the public of the ESA process.
- Assess the environmental baseline of the site, suitability for the current and intended use and identify sensitive areas (*if any*).
- Identify and assess potential negative impacts associated with the current and proposed activity.
- determining the remaining material reserves,
- formulate recommendations for effective management, and
- carry out an environmental impact assessment to address all associated environmental issues.
- Provide recommendations to avoid or minimize the potential negative impacts.
- Compile an ESA Report and draft Environmental Management Plan (*EMP*) and submit to the competent authorities and DEA for the consideration of an ECC; and
- Recommend future assessments and studies required (*if deemed necessary*).
- Seek to obtain an Environmental Clearance for the entire sand mining borrow pits site measuring 55.97 hectares.

2. Terms of Reference

The Municipality of Swakopmund appointed NCEL Geotechnical Consultants Cc as the successful tenderer for the Project: CS/RP/SM-012/2023: Geotechnical Assessment of

Municipal Council Sand Mining Borrow Pit Area, Across Nonidas, Swakopmund under Contract No: E/03/2024 to, to undertake all the statutory procedures to apply for an Environmental Clearance Certificate (ECC).

3. Study Approach and Methodology

This Environmental Scoping Assessment (ESA) process was carried out in accordance with provisions for EA, as prescribed by the Environmental Impact Assessment Regulations (GN. No. 30 of 2012), provided for by Section 56 of the Environmental Management Act (No. 7 of 2007).

The Terms of Reference and the relevant and applicable legislation guided the study's approach and methods.

A summary of the approach, key steps and corresponding activities in each phase of the EIA process are outlined in the following Sections.

3.1. Registration of Application for Environmental Clearance Certificate

The first step followed as part of this EA process was to identify the listed activities, which the proposed project entails, as stipulated in the 'List of Activities that may not be undertaken without an Environmental Clearance Certificate' (GN. No. 29 of 2012) and register the mentioned with the Office of the Environmental Commissioner.

The current and proposed activity involves sand mining operations and quarry for gravel. Only one listed activity has been identified for which an ECC is required and is listed below.

MINING AND QUARRYING ACTIVITIES

3.1 The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation,
in terms of the Minerals (Prospecting and Mining Act), 1992.

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

3.3 Resource extraction, manipulation, conservation, and related activities.

Annex 5: List of Category A Project Activities that cannot be undertaken without Environmental Clearance Certificate

Activity Mining, Test Mining, Quarrying and Crushers Activities - All commercial activities.

(6). Other forms of test mining and mining or extraction of any natural resources whether regulated by law or not including road stones, gravel, sand, and clay mining.

Annex 6: List of Category B Project Activities that cannot be undertaken without Environmental Clearance Certificate

Brick making and related industry / activities.

1. Sand mining operations

2. Quarry for gravel

In accordance with Section 32 of the EMA No 7 of 2007, applications for an ECC should be submitted with the relevant Competent Authority, which for this proposed activity is identified as the Department of Environmental Affairs (DEA): Office of the Environmental Commissioner-Ministry of Environment, Forestry and Tourism (MEFT), The Ministry of Mines and Energy (MME) and the Municipality of Swakopmund.

The mentioned authorities will now be informed of the proponent's intention to apply for an ECC with the Environmental Commissioner. We commenced with the process of registering the project on the Environmental Clearance Certificate (ECC) System of the Ministry of Environment, Forestry and Tourism (MEFT) on the 18 February 2024. It was confirmed that only a Scoping Report was required for the process of application for an ECC.

4. Scoping Stage Aims

The next step followed as part of this EA process was the scoping stage. The identification of impacts and their significance as well as public consultation (as prescribed by Regulation 21 to 24 of the EIA Regulations (GN. No. 30 of 2012) are important elements of the scoping stage and they are to.

- Register the project and EIA process with the relevant authorities, i.e. MEFT through the submission of the Application for an Environmental Clearance Certificate and the online registration on the MEFT's website.
- Provide a reasonable opportunity for I&APs to be involved in the process.
- Identify the relevant policies and legislation relevant to the proposed project and determine key gaps in relevant environmental and social legalisation.
- Provide baseline environmental and social information.
- Identify all key environmental and social issues to be addressed in the Impact Assessment phase; and
- Agree on the level of assessment to be undertaken (i.e. terms of reference for specialist studies), including the methodology to be applied, the expertise required, as well as the extent of further consultation during the impact assessment phase.

Hence, during the scoping stage, issues/impacts that are likely to be significant are identified and those that are less significant are evaluated and if warranted, eliminated.

4.1. Scoping Stage Method

The method followed during the scoping stage was as per requirements set by the Environmental Impact Assessment Regulations (GN. No. 30 of 2012), which included –

- Giving notice to all potential interested and affected parties (I&APs) of the application (ECC application) in newspaper adverts.
- Preparing a scoping report by subjecting the proposed application to scoping by -
    - Assessing the potential effects of the proposed listed activity on the environment.
    - Assessing whether and to what extent the potential effects identified can be mitigated and whether there are any significant issues and effects that require further investigation.
    - Identifying feasible alternatives related to the development.
    - Setting the Terms of Reference for further investigations (if required).
    - Informing I&APs of the way forward in the EA process.
    - Ensuring informed, transparent, and accountable decision-making by the relevant authorities; and
- Informing all registered I&APs of the decision of the office of the Environmental Commissioner.

4.2. Study Assumptions and Limitations

In undertaking the EA and compiling of the scoping report, the following assumptions and limitations apply:

- It is assumed that all the information provided by the proponent and authorities consulted is accurate and that those have disclosed all necessary information available.
- No alternative site for assessment is available.
- It is assumed that all permit or licence requirements, other than the ECC, associated with the development will be addressed as separate investigations and are not included in this EA process.
- It is assumed that there will be no significant changes to the development or the affected environment between the compilation of this report and implementation of the development that could substantially influence findings and recommendations with respect to mitigation and management, etc.
- The EA process involved the assessment of impacts on the current conservation value of affected land and not on either the historic or potential future conservation value.
- The assessment is based on the prevailing environmental (social and biophysical) and legislative context at the time of writing.

5. Legislation relevant to the proposed development

The table below provides a summary of the National legislative framework considered to be relevant to this development and the environmental assessment process.

Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
Atmospheric Pollution Prevention Ordinance 11 of 1976	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs	• Air quality and GHG • Emissions • Health and safety • Biodiversity • Communities and • Socio-economic	Section 5 provides that no person may carry on a scheduled process on any premises in a controlled area without a current registration certificate. In addition, no person may erect or cause to be erected any building or plant, which is intended to be used for the purpose of carrying on any scheduled process, unless he is the holder of a provisional registration certificate authorising such building or plant.	Fugitive emissions in the form of dust liberation from civil works will require comprehensive management and monitoring programmes to be in place.
Constitution of the Republic of Namibia 1 of 1990	Government of the Republic of Namibia	• Air quality and GHG emissions • Non-mineral waste • Water use and quality control • Hazardous materials and contamination • Noise and vibration • Visual amenities • Land use stewardship • Biodiversity • Heritage and archaeology • Disaster management and risk	In Namibia, environmental protection is enshrined in the Constitution and Sustainable development is a cornerstone of Vision 2030. Since 1990, the Government of Namibia has adopted several policies that promote sustainable development. Most of these have their roots in the following two articles of the Namibian Constitution: Article 91(c), which defines the functions of the Ombudsman to include:… the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation	The works needs to fully adhere to the requirements of environmental and ecosystem protection to ensure that the area of influence is maintained for the benefit of current and future generations.

		• Communities and socio-economic • Occupational Health and safety	of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia … and Article 95(l), which commits the state to actively promote and maintain the welfare of the people by adopting policies aimed at the: … maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future … The State is thus committed to actively promoting and maintaining the Environmental welfare of Namibians by formulating and institutionalising policies that can realise the above-mentioned sustainable development objectives. The integration of the principles of sustainable development into national policies in Namibia is supported by various key international, regional and national legal instruments and policy documents.	
Environmental Management Act 7 of 2007 (and accompanying	Ministry of Environment, Forestry and Tourism:	• Air quality and GHG emissions • Non-mineral waste	Adequate public participation is required as a first step of the environmental assessment process in order for interested and affected	The EIA process described in the act must be followed such

regulations Government Notice (GN) 29 and 30, Government Gazette (GG) 4878, 6/2/2012;	Department of Environmental Affairs	• Water use and quality control • Hazardous materials and contamination • Noise and vibration • Visual amenities • Land use stewardship • Biodiversity • Heritage and archaeology • Disaster management and risk • Communities and socio-economic • Occupational Health and safety	parties to give their input and grievances (Section 2(b-c). Protection of Namibia's cultural and natural heritage, including its biological diversity for the benefit of present and future generations (Section 2(d). This section requires that projects with significant environmental impacts are subjected to a thorough environmental assessment process (Section 27).	as conducting public participation. An Environmental Clearance certificate is required for the continuation of the sand mining activities.

Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
Regional Councils Act No 22 of 1992	Ministry of Urban and Rural Development	• Land use stewardship • Communities and socio-economic	Regional Councils are responsible for the planning and coordination of regional policies and development	They are tasked with the planning, implementation and evaluation of development in their regions and thus the Erongo Regional Council and elected Councillors are Interested and Affected Parties (I&AP's) to these developments

Labour Act 11 of 2007 No. 156 Labour Act, 1992: Regulations relating to the health and safety Of Employees at work	Ministry of Labour, Industrial Relation and Employment Creation: Office of the Labour Commissioner	• Health and safety • Hazardous materials and contamination • Noise and vibration • Communities and socio-economic	The regulations relating to the Health and Safety of Employees at Work contain extremely comprehensive provisions on a wide range of health and safety issues in the workplace of which the following are of relevance to construction activities. CHAPTER 1 governs the RIGHTS AND DUTIES OF EMPLOYERS • CHAPTER 3 provides for WELFARE AND FACILITIES AT WORK-PLACES. Regulation 30 • CHAPTER 4 contains Comprehensive provisions on the SAFETY OF MACHINERY. • CHAPTER 6 PHYSICAL HAZARDS AND GENERAL PROVISIONS • CHAPTER 7 MEDICAL EXAMINATIONS AND EMERGENCY ARRANGEMENTS • CHAPTER 8 CONSTRUCTION SAFETY	The Municipality of Swakopmund is obliged to enforce compliance on companies undertaking sandmining activities at is sand mining borrow pits to implement stringent health and safety and PPE policies.
South African National Standard (SANS) –Code of Practice, SANS 10103:2008, The measurement and rating of environmental noise with respect to annoyance and to speech communication, and as	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs	• Health and safety • Noise and vibration • Communities and socio-economic	Noise nuisance means any sound which disturbs or impairs, or is likely to disturb or impair the convenience, peace, safety or health of any person residing within municipal areas	Sand miners and harvesters should ensure that noise emissions from their operations comply with the requirements of these Regulations and Code of Practice

required by the regulations of the South African Department of Environmental Affairs and Tourism (DEAT), No 154 Noise Control Regulations in Terms of Section 25 of the Environmental Conservation Act, 1989 (Act No 73 of 1989), Govt Gaz. No.	The Municipality of Swakopmund: Environmental Health Department			

Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
National Heritage Act 27 of 2004	National Heritage Council	• Heritage and archaeology • Communities and socio-economic	In terms of Section 57 (7) no person may without a permit: (a) use an archaeological or palaeontological object or meteorite for the purpose of study, conservation or presentation. (b) uncover or expose, or move from its original position, any archaeological or palaeontological object or meteorite. (c) carry out an investigation or survey of any land for the purpose of finding any archaeological or palaeontological object or meteorite. (d) alter or develop any land on or in which an archaeological or	Sand miners and harvesters should ensure that if any archaeological or palaeontological objects as described in this Act are found in the course of its mining operations or closure that such find be reported to the relevant Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any object of heritage significance as envisaged by this Act.

			palaeontological site or a meteorite is believed to be located. (e) carry out an act likely to endanger an archaeological or palaeontological object or meteorite;	
Road Traffic and Transport Act 22 of 1999; (as amended by the Road Traffic and Transport Amendment Act 6 of 2008)	Municipality of Swakopmund	• Air quality and GHG emissions • Hazardous materials and contamination • Disaster management and risk • Communities and socio-economic • Health and safety	In terms of Section 64 the operator of a motor vehicle shall, inter alia ensure that the conveyance of dangerous goods is undertaken in accordance with such requirements as are prescribed by or under this Act or any other law pertaining to such goods.	Sand mining activities must comply with these regulations for safe transportation methods of plant and equipment to work sites to minimize impacts on communities and next-door neighbours as well as traffic impacts.
Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
The Pollution Control and Waste Management Bill, 1999	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs	• Water use and quality control • Hazardous materials and contamination • Noise and vibration • Visual amenities • Land use stewardship	The Bill aims to promote sustainable development; to prevent and regulate the discharge of pollutants to the air, water, and land, to regulate noise, dust and odour pollution, to make provision for the establishment of an appropriate framework for integrated pollution prevention and control, to establish a system of waste planning and management and to	There will be discharge of pollutants to the air, water and land, generation of noise, dust and odour pollution during the sand mining and transportation phases and this must be reduced to as low as reasonably possible it if cannot be mitigated

		• Biodiversity • Heritage and archaeology • Disaster management and risk • Communities and socio-economic • Occupational Health and safety	enable Namibia to comply with its obligations under international law in this regard	

Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
Public Health Act 36 of 1919	Ministry of Health and Social Services Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs	• Air quality and GHG emissions • Hazardous materials and contamination • Noise and vibration • Disaster management and risk • Communities and socio-economic • Health and Safety	Section 132: empowers the Minister to make regulations regarding, inter alia, the drainage of land or premises, the disposal of liquids and the removal and disposal of rubbish, refuse, manure and waste matters as well as regarding the establishment and carrying on of factories or trade premises which are liable to cause offensive smells or effluvia or to discharge liquid or other material liable to cause such smells or effluvia or to pollute streams and prohibiting the establishment or carrying on of such factories in unsuitable localities. Section 119: no person shall cause a nuisance on any premises owned or	Relevant for the purposes loading and hauling activities of sand and the provisions of the Act that regulate trades which are liable to cause offensive smells and nuisances and, in this case, will be dust and noise.

			occupied by him. Offensive smells or effluvia and excessive smoke are deemed to be nuisances.	
Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
Soil Conservation Act 76 of 1969 (as amended in South Africa to March 1978)	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs	• Water use and quality control • Land use stewardship • Biodiversity	In terms of section 3 of the Act, the Minister of Agriculture, Water and Forestry ("the Minister") may either by written notice in the Gazette or by written notice to the owner or occupier of land issue directions in respect of, inter alia: (a) the drainage of vleis, marshes, natural water sponges and water courses. (b) the protection and stabilising of barrier dunes on the coast, of other dunes where drift sand occurs or may occur and of the vegetation occurring thereon. (c) the prevention of erosion, the denudation, disturbance or drainage of land; and (d) any other disturbance of the soil which creates or may create conditions which cause or may cause any form of erosion or pollution of water by silt or drift sand.	Sand mining, loading, and hauling activities may impact on conditions which cause or may cause erosion and will be obliged to comply with any such directions as may be issued by the Minister in terms of this Act. Storm water draining infrastructure such as berms needs to be installed and managed accordingly.
Tobacco Products Control Act No 1 of 2010	Ministry of Health and Social Services (MHSS)	• Community health • Fire safety	Prohibited distance of smoking tobacco products from public places and workplaces	By law you may not smoke next to others or shared public spaces and workplaces.

				For fire safety management smoking is banned from some work areas.
Urban and Regional Planning Act No 5 of 2018	Ministry of Urban and Rural Development	• Urban planning and consents	Consolidate the laws relating to urban and regional planning; to provide for a legal framework for spatial planning in Namibia; to provide for principles and standards of spatial planning; to establish the urban and regional planning board; to decentralise certain matters relating to spatial planning. to provide for the preparation, approval and review of the national spatial development framework, regional structure plans and urban structure plans; to provide for the preparation, approval, review and amendment of zoning schemes; to provide for the establishment of townships; to provide for the alteration of boundaries of approved townships, to provide for the disestablishment of approved townships; to provide for the change of name of approved townships; to provide for the subdivision and consolidation of land; to provide for the alteration, suspension and deletion of conditions relating to land	The Municipal Sand mining borrow pits falls under the jurisdiction of the Swakopmund Local Authority and zoned mixed-use light industrial. They are zoned as per the Swakopmund Town Planning scheme.

Relevant Legislation, Regulations and Guidelines	Regulatory authority	Aspects	Summary of legislative provisions	Relevance to the works
Social Security Act 34 of 1994	Social Security Commission Ministry of Labour	• Disaster management and risk • Communities and socio-economic • Health and safety	This Act provides for the payment of maternity leave benefits, sick leave benefits and death benefits to employees and pension benefit to retired employees. The act applies in relation to every employer, and employee. The Act requires that, every employer, in the prescribed manner and period, registers himself or herself with the Commission as an employer and every employee employed by him or her.	Companies involved in sand mining activities are required to register and pay contributions to the Social Security Commission for all their current and future employees.
Water Act 54 of 1956		• Mineral waste • Non-mineral waste • Water use and quality control • Hazardous materials and contamination • Land use stewardship • Biodiversity • Disaster management and risk • Communities and socio-economic	This Act provides for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes and for the control of certain activities on or in water in certain areas. The user of water for industrial purposes must furnish the Department of Water Affairs in writing with those particulars regarding the use and disposal of purified or treated water as may be prescribed by regulation (section 21(1)(c)).	Municipal water supplies and discharge will be to the Municipal sewer. Any effluent produced will have to be treated in accordance with requirements set out in section 21(1) and (2) of the Act. The applicable standards for Namibia are those which were promulgated by the Minister by Notice in the Gazette in 1962 (R553 Regional Standards for Industrial Effluent, in

				Government Gazette No 217 dated 5 April 1962). Should waste water be discharged, a permit is required. Sand miners and contractors are obliged to have a comprehensive plan in place to avoid the pollution of ground water where applicable.
Water Resources Management Act 24 of 2004		• Mineral waste • Non-mineral waste • Water use and quality control • Hazardous materials and contamination • Land use stewardship • Biodiversity • Disaster management and risk • Communities and socio-economic	This was enacted to replace the Water Act 54 of 1956, which is generally outdated, with a view to reforming the use and management of Namibia's water resources. However, this Act has not yet been put into force. Like the 1956 Act, even though the main thrust is geared at freshwater. 56 to 71) which deals with Water Pollution Control stipulates that a person may not discharge effluent directly or indirectly to any 'water resource' unless such person is following a permit issued in terms of section 60. The term 'Effluent' is defined to mean "… any liquid discharged as a result of domestic, commercial, industrial or agricultural activities".	This Act has yet to enter into force. As such, the provisions of the Water Act 54 of 1956 regarding pollution of water still apply. See comments above for the Water Act 54 of 1956.

6. The need for the project and its benefits are explained using the three pillars of sustainable development.

The proposed development directly falls under and within the Swakopmund Municipal area of jurisdiction.

1. **Environmental benefits** –The proposed project site is already in a transformed state due to years of sand mining activities.

The project area is a desert environment, there are no trees or any other vegetation, and no animals or birds were observed during site visits. Water courses are only evident during the rainy season caused by water runoff when it eventually rains.

2. **Economic benefits** – Mining sand from these borrow pits have immensely contributed and will continue to the urbanisation of Swakopmund, Langstrand and Walvisbay translating to economic activities, employment and delivering much needed housing in all segments of the market. Direct and indirect job opportunities have been and will be created for semi-skilled & skilled workers, technicians, labourers, and transporters.

An indirect positive impact will also be felt through increased spending on services of local business such as banking, general retail, transport companies, property etc, payment of rates and taxes to the Municipality of Swakopmund.

3. **Social benefits** – In alignment with the national development priorities this project bring forth some positive impacts. The activities will continue to contribute towards social equity, dignified living and poverty alleviation through job creation and development of local infrastructure and skills.

The benefits and acceptability of these activities are high and reasonable to stakeholders. The scheme will bring about economic, social, and environmental benefits that are in line with Namibia's development goals, programmes, and vision.

The ongoing and proposed sandmining from these borrow pits is regarded as pertinent for urbanisation and infrastructure development of Swakopmund, Langstrand and Walvisbay and would not have a negative impact on the urban and environmental structure of this area.

The socio-economic impacts associated with sand mining from these borrow pits does, not affect Swakopmund and its surrounds negatively and, the activities continuously contribute positively towards the ongoing development of Swakopmund.

The proposed activity is in line with the objectives of the Swakopmund Stucture Plan 2020 – 2040, the Swakopmund Town Planning Zoning and Planning Scheme, Namibia's 5th National development plan (NDP5) as well as The Harambee Prosperity Plan II (covering the period 2021-2025). There is no suitable alternative to the proposed development.

The benefits and acceptability of this project is and will be high and reasonable to stakeholders. The scheme brings about economic, social and environmental benefits that are in line with Namibia's development goals, programmes and vision.

7. Development Proposal

7.1. Locality, Size and Existing Land Use

The entire Municipal Council sand mining borrow pits are located at Latitude -22.636083° and Longitude 14.628267° to the Northeastern Point, Latitude -22.638680°and Longitude 14.630734° at the Southeastern Point. The western boundaries are located at Latitude -22.641070° and Longitude 14.617284° to the Northwestern Point and Latitude -22.644956° and Longitude 14.619494° at the Southwestern Point.

Topographically, the site is relatively flat, as per Google Earth Topographical Image below, slightly sloping toward the sea (east direction) with surface elevations of roughly 74.0 m above mean sea level (mamsl).

The total accessory works area covers 559,723.84 m3 / 55.97 hectares and spans a total distance of 4.6 km and directly fall under the jurisdiction of the Swakopmund Local Authority and zoned mixed-use light industrial.

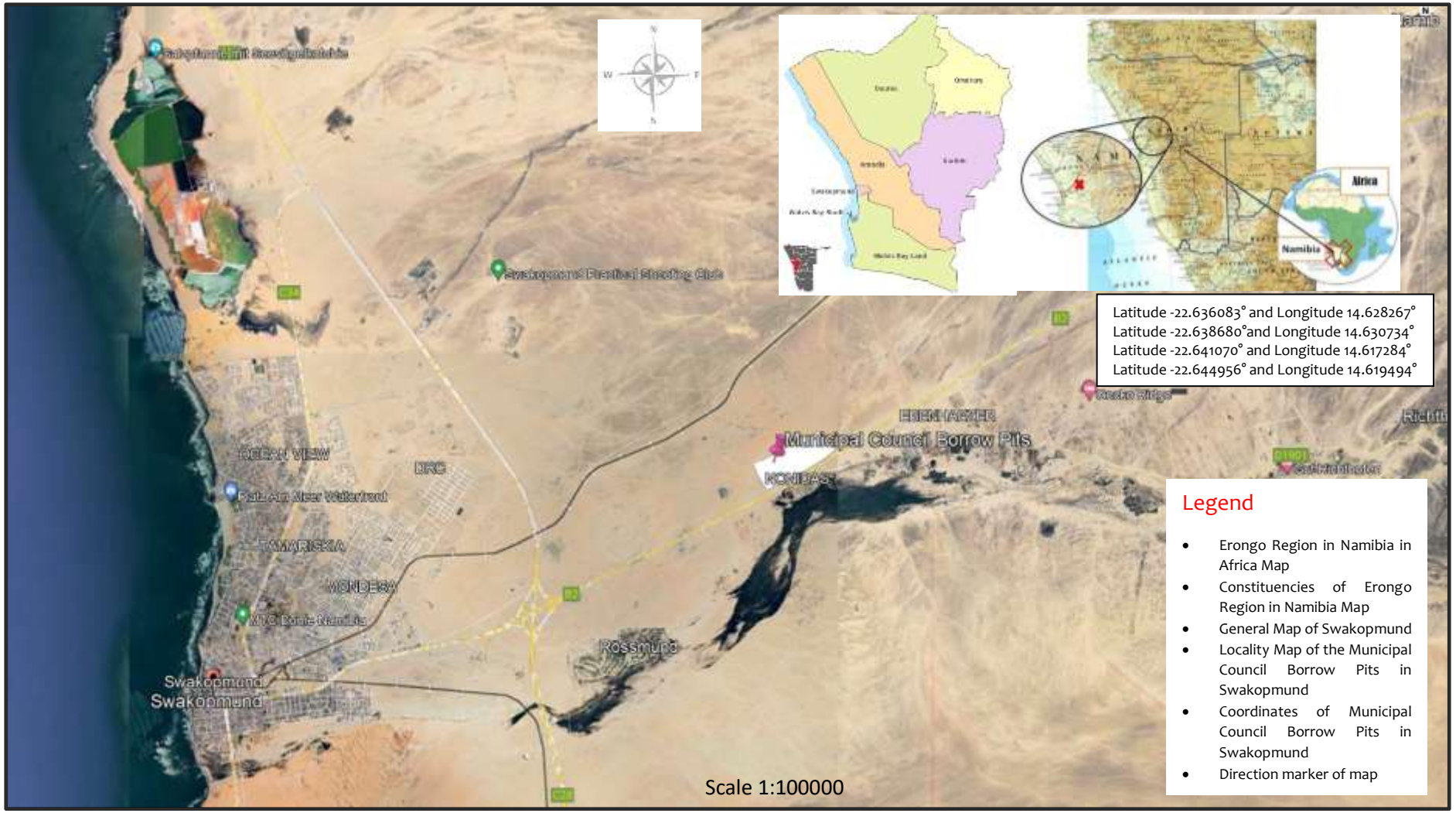
Picture 1 Site picture of borrow pits.

Picture 2 Site picture of borrow pits from a Northern direction.

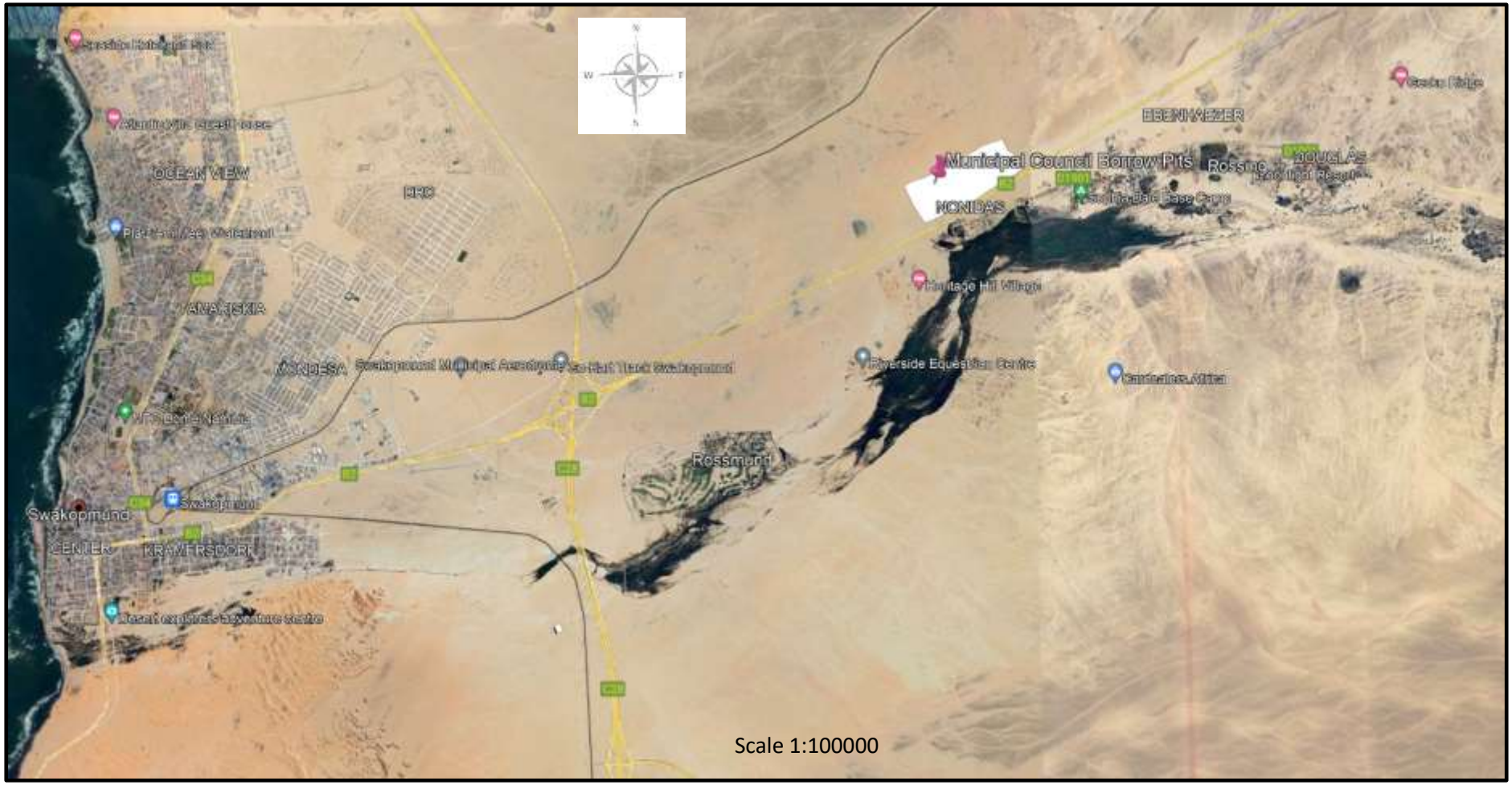
Picture 3 Borrow pits showing clear and abundant G5 material.

Picture 4 Active borrow pit excavated to G5 material.

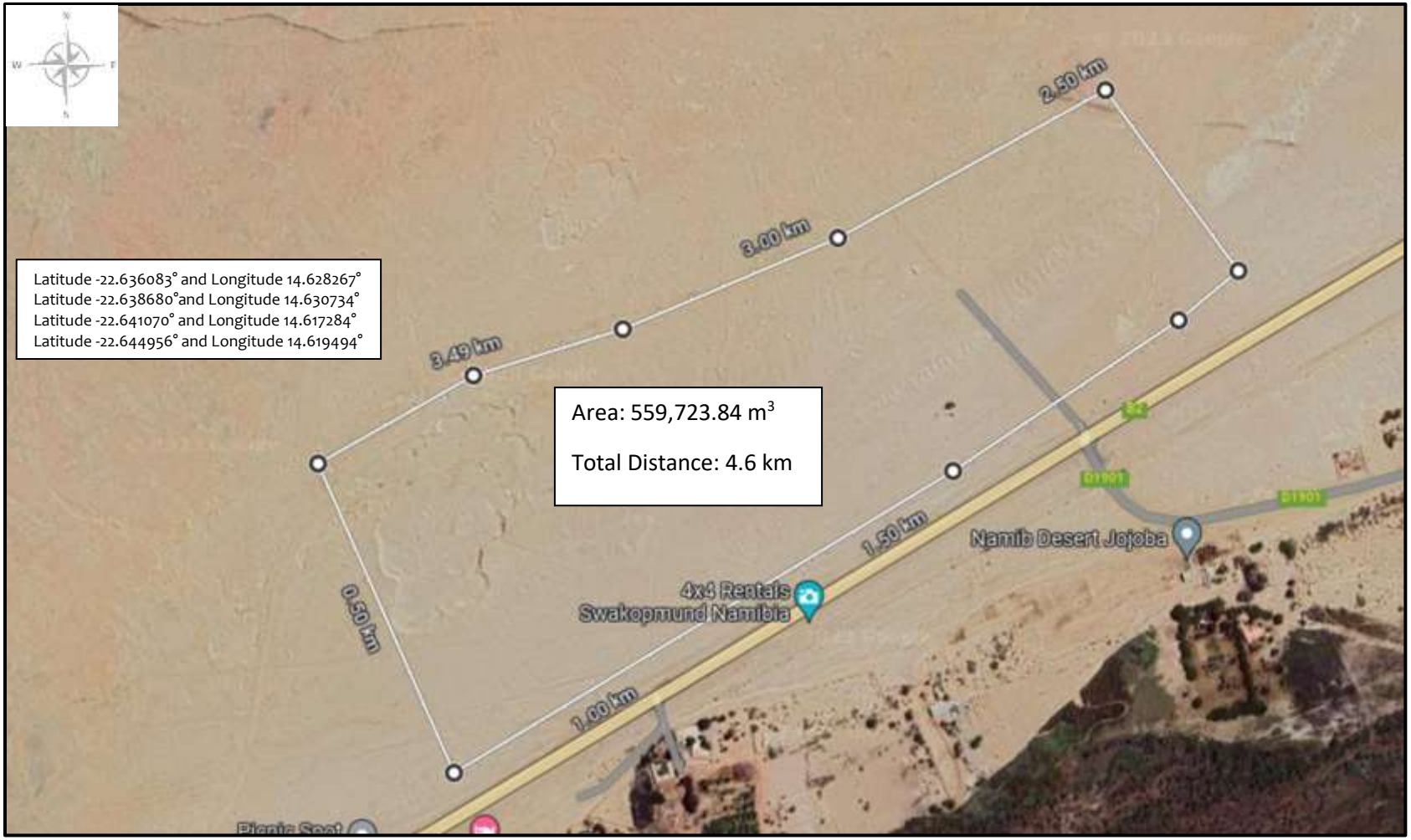
Picture 5 Picture of natural ground level with finer top material



Picture 6 Locality Map of the Municipal Borrow Pits in Africa, Namibia, Erongo Region, East of Swakopmund



Picture 7 Locality Map of the Municipal Borrow Pits East of Swakopmund across the Nonidas River Plots



Picture 8 Size and extent of the Municipal Council borrow pits across Nonidas in white lines.

7.2. Intent and Overview

The intent to conduct an ESA is ultimately to aid in obtaining permissions and authorisations which is the Environmental Clearance Certificate (ECC) for the.

- Swakopmund Municipal Council Sand Mining Borrow Pits located across Nonidas outside Swakopmund.

The area of operation and referred to as the Swakopmund Municipal Council Sand Mining Borrow Pits are the only legal sources of sand mining within the judicial boundaries of the town of Swakopmund.

8. Description of the Proposed Project

The Municipality of Swakopmund, hereafter referred to as the 'Proponent', has commissioned a geotechnical assessment determine the remaining material reserves and an Environmental Impact Assessment (EIA) at its current and active sand mining borrow pits which, supplies the town of Swakopmund, Walvisbay and Langstrand with sand material for the manufacturing of concrete, bricks and market sand.

The borrow pits are located 11.2 kilometres from the Swakopmund Town Centre on the left side of the B1 national highway opposite Nonidas.
The entire Municipal Council sand mining borrow pits are located at Latitude -22.636083° and Longitude 14.628267° to the Northeastern Point, Latitude -22.638680°and Longitude 14.630734° at the Southeastern Point. The western boundaries are located at Latitude -22.641070° and Longitude 14.617284° to the Northwestern Point and Latitude -22.644956° and Longitude 14.619494° at the Southwestern Point.

The project entails the mining of sand material on a yearly basis dependent on compliance with granted Environmental Authorisation) and involves the following:

- The excavation of sand material (once to twice a week).
- No generation of residue waste - all excavated material will be utilized.
- Stockpiling of materials until enough quantity is collected for offsite transportation.
- The site will be accessed via an existing gravel access road; thus, the project entails no construction of new infrastructure.
- Loading of material with front end loaders onto tipper trucks.
- The transportation of material via tipper trucks to operator's/sand harvester's laydown areas at their material warehouses
- The rehabilitation of the site once mining has ceased, to restore it to its near natural land state; and
- No campsite or site office is required.
- The sand material is and will be excavated using opencast mining. The plant machinery used for excavation includes front end loaders and tipper trucks for the transportation of the excavated material.

This method of mining is proven to be the most environmentally sound for the scale of mining and the type of material excavated, if managed correctly. The mining (excavation) and transport of the sand material will take place once to twice a week (maximum). The sand material will be transported from the project site to *the current permitted operators namely Refuse Solutions and Quality Bricks yards in Swakopmund*, by *six* to *ten tipper* trucks limited to a speed restriction of 60 km/h.

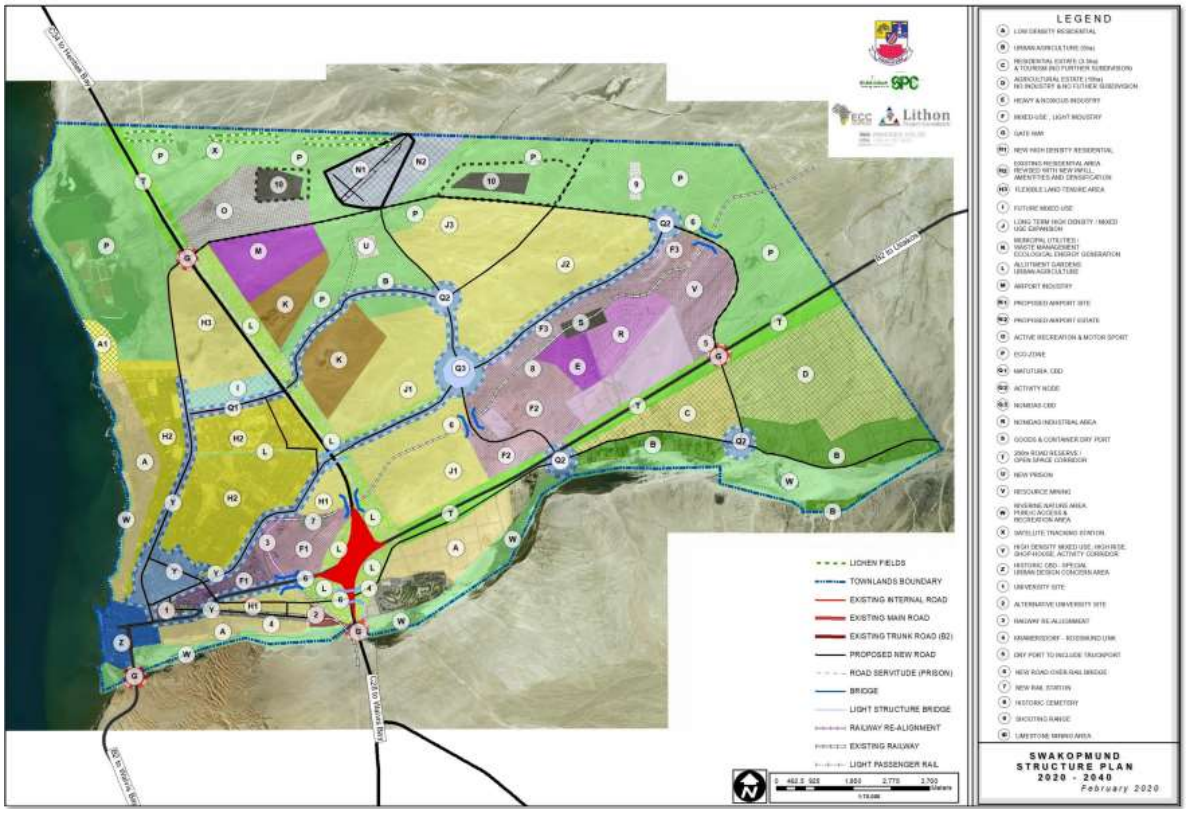
It is the responsibility of the permitted operators/harvesters to minimize dust generation during these times using the appropriate dust suppression measures. All tipper trucks leaving the operational area must be covered with tarp covers to prevent dust liberation and stones being windblown and damaging vehicular traffic.

No sand harvesting will be permitted to take place during the seasonal East Wind conditions and mining, loading, and hauling activities must be scheduled and limited during periods of low wind conditions.

9. Surrounding land use and character

9.1. Land Use and Ownership

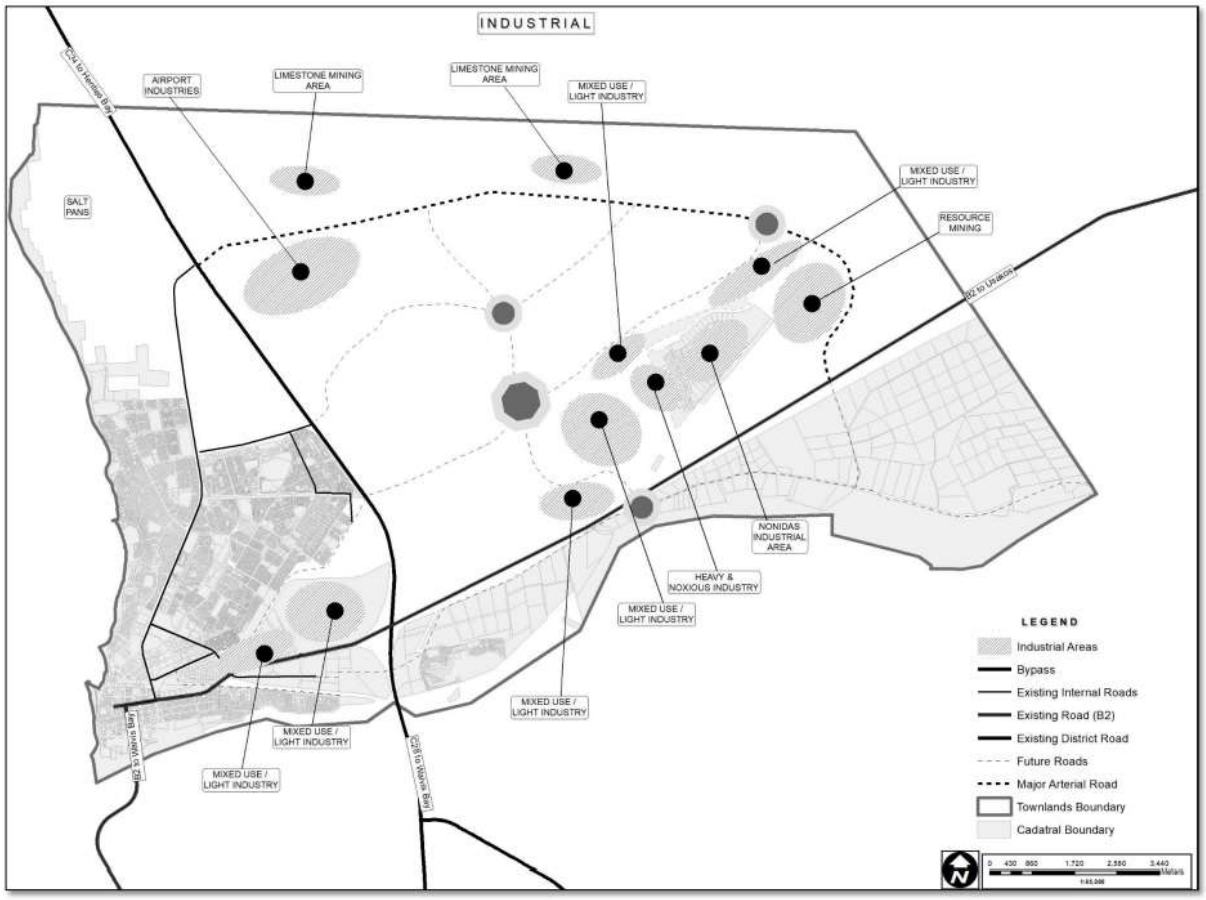
The subject area falls under and belongs to the Swakopmund Municipal Council and zoned for mixed use and light industrial use. It is currently leased out to Refuse Solutions and Digits Investment trading as Quality Bricks for sand mining activities.



Picture 9 Municipal Sand Mining borrow pits zoned as V for resource mining in the Swakopmund Structure Plan 2020-2024 within the Municipal Townlands

9.2. Neighbouring land use and character

The Municipal Council sand mining borrow pit area is in the municipal area zoned for mixed use light industrial and borders the Dorob National Park and activities commended in 2016. On the Southern side of the borrow pits across the B1 national road, are the Nonidas Industrial agricultural plots zoned urban agriculture and agriculture estate which, also falls under the jurisdiction of the Municipality of Swakopmund.



Picture 10 Industrial zones in Swakopmund and focus area earmarked for Resource mining as per Swakopmund Structure Plan 2020-2040

9.3. Climate

The assessment considered the local climate conditions, including temperature, precipitation, wind patterns, and seasonal variations.

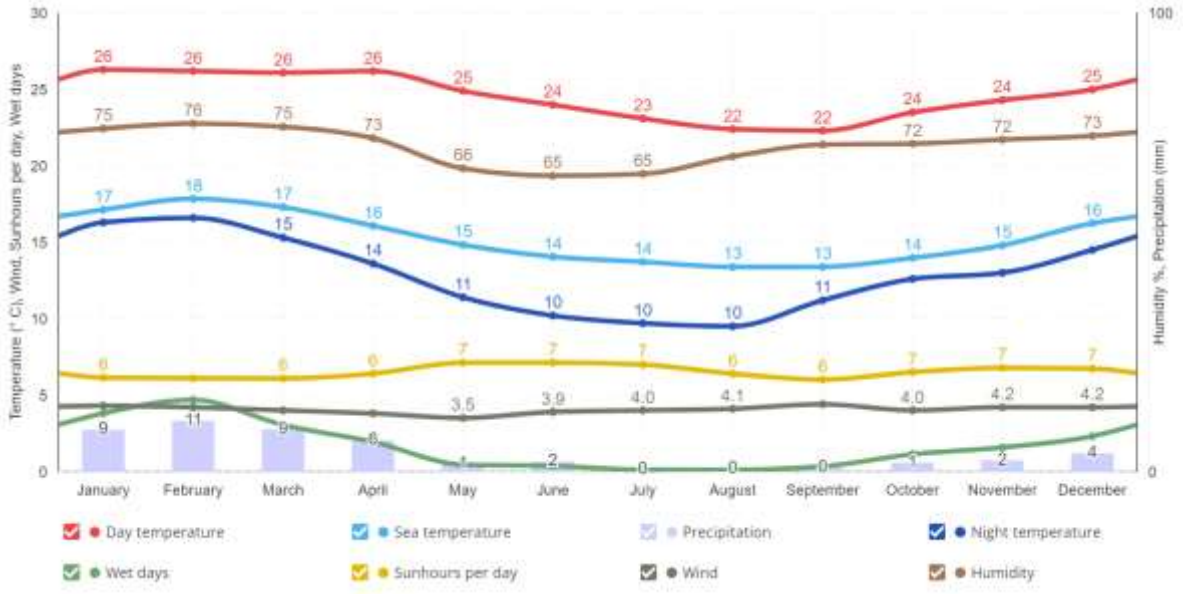
Surrounded by the Namib Desert on three sides and the cold Atlantic waters to the west, Swakopmund enjoys a mild desert climate (BWn, according to the Köppen climate classification).

Swakopmund's climate is characterized by mild temperatures, very low rainfall, frequent fog, and a high degree of sunshine.

The average temperature ranges between 15 °C to 25 °C. Rainfall is less than 20 mm per year. The cold Benguela current supplies moisture for the area in the form of fog that can reach as deep as 140 km inland.

Fogs that originate offshore from the collision of the cold Benguela Current and warm air from the Hadley Cell create a fog belt that frequently envelops parts of the Namib Desert.

Coastal regions can experience more than 180 days of thick fog a year and, it is a vital source of moisture for desert life. The fauna and flora of the greater, undeveloped, and undisturbed surrounding areas of Swakopmund have adapted to this phenomenon and now rely upon the fog as a source of moisture.



Picture 11 Combined climate indicators for Swakopmund for a typical year

9.4. Biophysical environment

The assessment examines the existing vegetation types, plant communities, and biodiversity in the project area. It evaluates the potential impacts on flora and fauna, including the loss of habitats, disruption of ecological corridors, and effects on rare or endangered species.

The Central Namib gravel plains habitat is known to have high levels of range-restricted endemism. Invertebrates, burrowing reptiles, and small mammals are the animal taxa most likely to be supported by the coastal gravel plain.

Several drainage lines are embedded in the gravel plains habitat and drain from the low hills to the North to the South around the borrow pits. Vegetation is mainly confined to these drainages.

Plains adapted fauna use the vegetation for food and shelter. Soil and organic material get trapped against the plants, sustaining beetles and invertebrates. The substrate of the

drainages is sandier than the surrounding plains and offer shelter to burrowing invertebrates, reptiles, and small mammals.

Drainages present a high ecological value for most taxa in arid zones. They play a large role in supporting diversity by providing resources and movement corridors to organisms and serving as important pockets of high diversity in a surrounding landscape that contains relatively fewer resources.

A few geckos, desert lizards and beetles were observed around the focus area and hilly outcrops during the baseline assessment.

Vegetation in the focus area is scant, consisting of small shrubs that are adapted to the harsh environment, poor soils and hyper-aridity.

Two kinds of drought resistant woody shrubs are predominant in the undisturbed areas in the hilly outcrops to the North of the borrow pits. These are the Dollar bush (Tetraena stapffii), so-called because of its coin-like round leaves, and the Ink/Pencil Bush (Arthraerua leubnitziae), with its fine leaves and spindly appearance.

The Pencil bush is a hardy scrub seen along the Namibian Atlantic coast and Namib Desert, with small white flowers and small succulent oblong leaves.

Both these kinds of plants are indigenous to this habitat and classed as Namibian Endemics. They are well adapted to an area, which receives an average of less than 20 mm of rain a year, and then mostly in single downpours.

Picture 12 The dollar bush (zygophyllum stapfii)

Picture 13 The Ink/Pencil Bush (Arthraerua leubnitziae),

9.5. Geology and Soils

The assessment examined the geological formations and soil properties of the project area, including soil types, stability, permeability, and erosion potential. It evaluated the potential impacts on geological features and soil quality due to excavation, or other activities.

The Swakopmund area is underlain by rocks of the Damara Sequence, intruded by dolerite dykes of Karoo age. Bedrock occurs on or near-surface in much of Swakopmund's eastern and central suburbs.

A greater part of Swakopmund is located on deep luvio-marine deposits. These deposits consist largely of non-cohesive, granular, gravelly, medium-grained sands. The upper surface layer is generally loose, but the medium dense to dense sands are at depths of about 0,5 m.

Examination of soil profiles indicates that the sands generally have a low collapse potential, but the upper loose surface layers are compressible and subject to substantial settlement under load.

The municipal borrow pits site lies in a flat area, which consists of unconsolidated sediments of undetermined depth. All the test pits exhibited coastal sands originating from littoral processes to a typical depth of 3.0m+ below ground level.

These coarse sands are generally dry to slightly moist but become very moist with depth. The consistency is very loose on the surface becoming loose to medium dense with depth.

Picture 14 Test pits dug up to examine the soil profiles during geotechnical assessment in the focus area.

Picture 15 Alluvial coarse sand has been shown to be the dominant soil types across the site encountered in test pits at borrow pits.

9.6. Topography and Landforms

The assessment considered the physical features of the land, such as slopes, hills, valleys, and landforms. It evaluated the potential impacts on topography, including the alteration of natural landforms or the disturbance of slopes and drainage patterns.

The topography of the area around the municipal borrow pits is characterised by flat to gently rolling gravel plains interspersed with rocky outcrops and devoid of structural features.

Topographically, the site is relatively flat, as per Google Earth Topographical Image Picture 8 on Page 32, slightly sloping toward the sea (east direction) with surface elevations of roughly 74.0 m above mean sea level (mamsl).

The substrate is gravel and deep, sandy soils, with mixed sand and fine rock.

Picture 16 Alluvial coarse sand straddles the area where the borrow pits are located.

9.7. Water Resources

This aspect assesses the impact of the project on surface water and groundwater resources. The assessment considers potential impacts on water quality, water availability, hydrological patterns, and aquatic habitats.

The Swakopmund area is underlain by rocks of the Damara Sequence, intruded by dolerite dykes of Karoo age. The complex stratigraphic relationships within the Damara Sequence have not yet been clearly defined.

Cenozoic superficial deposits, comprising thin colluvial soils, alluvium and luvio-marine deposits overlie the bedrock to varying depths.

The groundwater potential of fractured aquifers in the Swakop Group of the Damara Sequence is generally low (Smith, 1965). However, the carbonates (marbles and limestones) are of moderate potential and at properly selected targets like fracture zones and karstified contact zones, higher yields can be found (Smith, 1965).

The proposed project site is considered to have a low vulnerability, little to very low groundwater potential and extremely low recharge. The subsurface conditions were assessed in eleven (11) shallow trial pits excavated across the study area by means of a hired Caterpillar Machinery to depths of 3.0m from natural ground level (deepest test pit).

There is no surface water and no groundwater seepage encountered in any of the test pits excavated on this site.

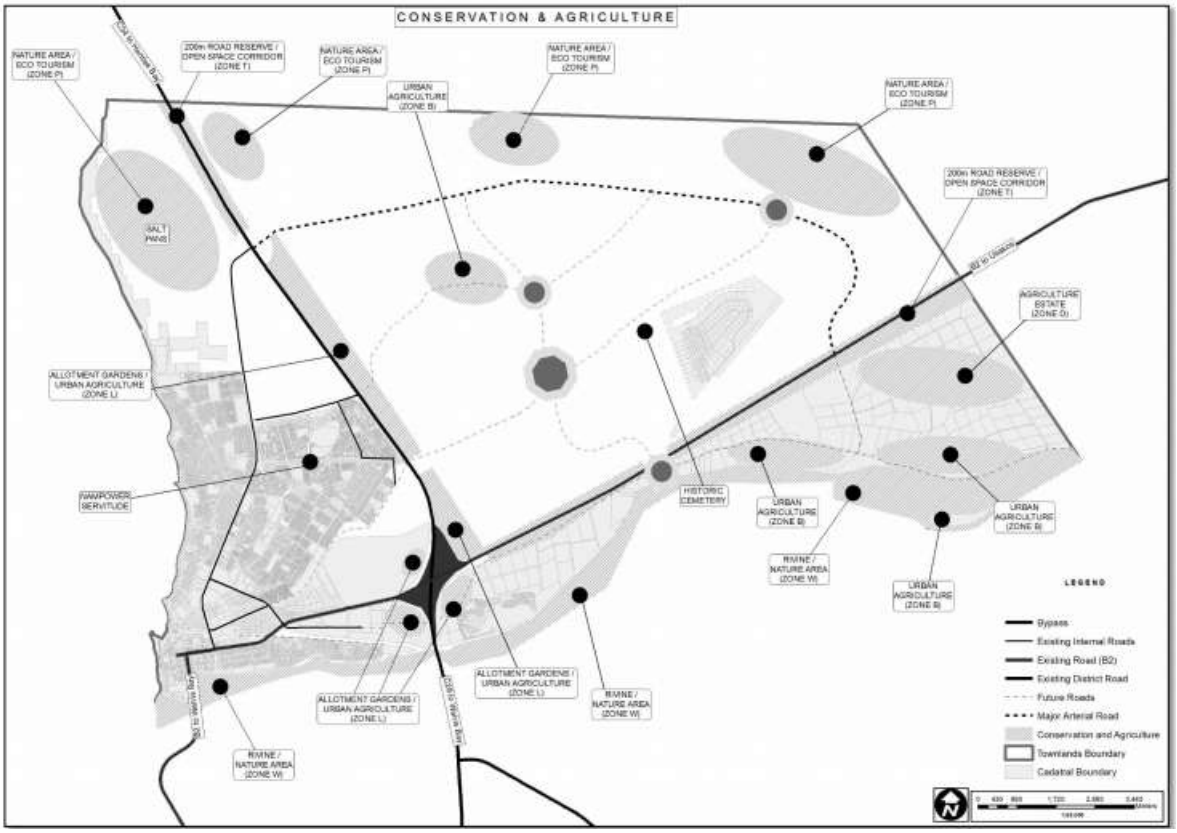
9.8. Cultural and Heritage Resources

The assessment may include the identification and evaluation of cultural or historical resources, archaeological sites, or areas of cultural significance that could be affected by the project.

Excavations for sand mining has been undertaken since 2016 and no heritage finds have been discovered in the focus area. There are however six (6) unmarked graves about a kilometre to the North of the municipal borrow pits next to the railway at coordinates. Lat -22.616482 and Long 14.631283 at the historic cemetery. This is the only heritage site and finds in the vicinity of the municipal borrow pits.

Picture 17 Unmarked graves at the historic cemetery.

Picture 18 Unmarked graves at the historic cemetery



Picture 19 The historic cemetery depicted in the Swakopmund Structure Plan 2020-2040.

9.9. Infrastructure and Built Environment

This aspect evaluates the potential impacts on existing infrastructure, such as roads, buildings, utilities, and services, that may be affected by the project or require modifications to accommodate it.

Swakopmund is well-connected by road and serves as a major transportation hub in the region. The town is situated along the B1 highway, which is a major route connecting Western Namibia's coast to the rest of the country.

No additional road infrastructure is required as there is a gravel access road into and out of the site that join the B1 highway for transportation of building sand to Swakopmund on the B1 highway.

For hauling sand to Walvisbay trucks are rerouted via the B1 Highway onto the MR44 dual-lane road renamed to Hifikepunye Pohamba freeway that runs between the dune belt from Swakopmund to Walvisbay.

9.10. Socio-Economic Environment of the Erongo Region

As if intended by nature, the Central-western Plains of Namibia have been carved out over millennia, now to serve as the perfect gateway for socio-economic development in the Erongo Region and beyond.

Covering most of this vast and naturally endowed area, the Erongo Region is taking rapid and giant strides towards establishing itself as Namibia's new hub for economic growth. This is being emphasised by the region accommodating all the country's uranium mines as well as mines producing commodities such as gold, marble, granite, sea salt and gemstones.

The rich Benguela Current in the Atlantic Ocean provides for a thriving fishing and processing industry while the continental shelf off its coast keeps the promise of large reserves of natural oil and gas to be explored. At its port city of Walvis Bay, the most important sea, air and road routes converge, facilitating national, regional and international trade.

With its tourism industry growing at a fast rate and agriculture at its hinterland serving as the main livelihood there, the Erongo Region offers a diverse portfolio of economic activities and resources.

The most important centres are well connected by excellent roads with its communication, water and electricity infrastructure being of world standard. Strong safeguards ensure the conservation of the region's biodiversity and sustainable development in harmony with nature.

About 51.04% of Namibia's population lives in cities and urban areas, and about 48.96% lives in rural areas. This is a significant increase in the urban population since 2009 when 40.6% of the population was urban. The country's urbanization rate is around 1.94%.

In the Namibia Statistics Agency's (NSA) recently released 2016 Namibia Intercensal Demographic Survey (NIDS) Report, it says that urban regions, and especially towns in the Erongo region, are growing at a much faster rate than rural areas.

The movement of people from rural to urban areas has increased at an exponential rate with a total increase of 31 593 in the population of the Erongo region between 2011 and 2016.

The Namibian population is estimated to have grown by 1,9% annually between 2011 and 2016, compared to 1,4% that was recorded in 2011.

With such a huge amount of people moving to the Erongo region, the provision of sufficient housing has been difficult. In its report, the NSA states that shacks made up approximately 40% of all households in the most urbanised regions such as Omaheke, Otjozondjupa, //Kharas, Hardap, Erongo and Khomas.

Improvised housing units or shacks account for 26,6% of all households nationally. These structures were mostly common in urban areas, accounting for 39,7% of the households as opposed to 10,6% of households in rural areas. Of the 58 486 households recorded in the Erongo region, 42,2% were detached/semi-detached houses and 43,6% were shacks.

A total of 73,2% of households in the Erongo region use electricity from the main grid or generators, compared to 50% of households nationally that rely mainly on wood as the main source of energy.

Swakopmund is the third-most populous city in Namibia and the capital of the Erongo administrative district, home to about 60,000 people. It experiences one of the highest rural-urban influx in the Erongo Region. This is mainly because it is seen as a place of opportunity to generate income and reduce poverty.

Due to the high uranium spot price new uranium mines are opening and the active ones have ramped up production. In addition, the new Green Hydrogen industry and Oil and Gas Industry that is coming online in Swakopmund and Walvisbay is contributing to urbanisation and fuelling the construction industry at the coast, and this is creating additional demand for building sand.

10.Public Participation

The following procedures has been adhered to inform the public of the intended EIA process for the Municipal Council borrow pits and to give them the opportunity to comment.

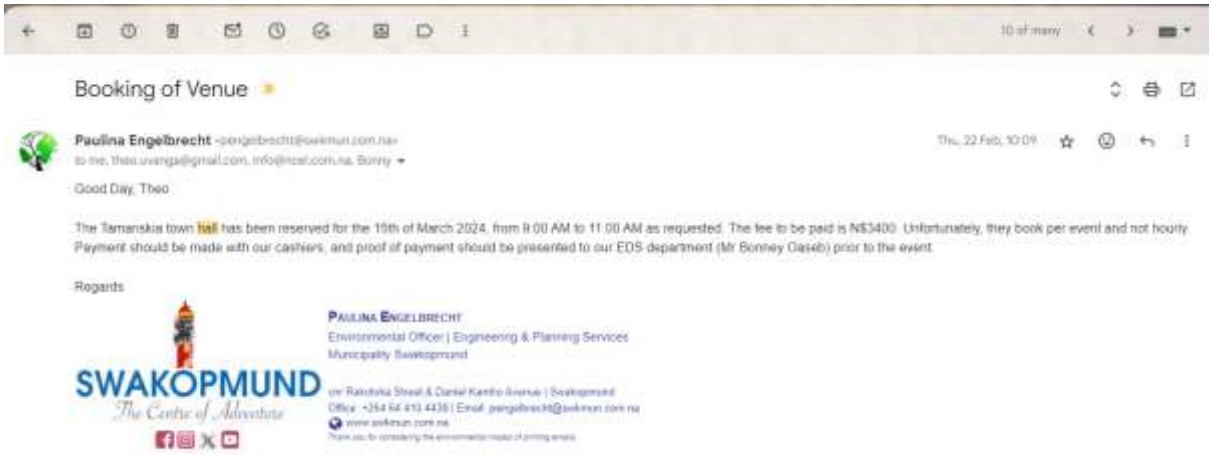
To commence with the Public Participation of the Stakeholder Engagement Process, four (4) adverts were placed in two (2) prominent daily newspapers for two (2) consecutive weeks on the following dates.

- The Namibian – Thursday, 22, February 2024, Page 9
- Namib Times – Friday, 23, February 2024, Page 11
- The Namibian – Thursday, 29, February 2024, Page 16
- Namib Times – Friday, 01, March 2024, Page 7

A comprehensive BID document was prepared for Interested and Affected Parties (I&AP's) and we, asked I&APs to register as such and request BID documents from 18 February 2024.

We also communicated that we needed inputs and concerns communicated to us before the 22 February 2024 on the BID Document. Two members of the public namely Mr. Hafeni Hiveluah and Mr. Michael Louw requested a copy of the BID document and to be registered as IAP's and we emailled them the BID documents on 29 February 2024 and on 6 March 2024 respectively. A Stakeholders Meeting was held on 15 March 2024 at the Tamariskia Community Hall as advertsied and not a single person pitched up.

The notice of the availability and review of the scoping report was extended to end April 2024. There were no comments received from the public during this period.



Picture 20 Confirmation of Venue booking for Stakeholders engagement meeting venue.

Bank Windhoek

Transaction Information

Reference Number	20240222-56312118
Recipient Name	MUNICIPALITY OF SWAKOPMUND
Bank Name	First National Namibia
Branch Name	H/Office Windhoek Namibia 556
Branch Code	282672
From	Namibia Civil Engineering Laboratory CC
Recipient Account	62249603300
Amount	N$ 3,400.00
Action Date	22/02/2024
Transaction Description	NCEL Geotechnical Consultants
Transaction Status	ENCR Processed
Transaction Type	QuickPayment

Picture 21 Proof of Payment for Stakeholders Meeting Venue

11. Concluding Remarks

In compliance to the Environmental Management Act (No. 7 of 2007), it was necessary to apply to the Environmental Commissioner for the issuance of an Environmental Clearance Certificate (ECC) for the Swakopmund Municipal borrow pits.

It is our expert opinion that the proposed activity will not have a significant negative impact on the immediate and surrounding environment, or next-door neighbours and it is an active activity where various operators have in the past obtained ECC's to mine and load and haul sand for their operations. Additionally, no objections were received during the public participation process.

Thus, without hesitation, we recommend that an Environmental Clearance Certificate (ECC) should be issued for.

- **Swakopmund Municipal Council Sand Mining Borrow Pit Area, Across Nonidas**

We hope and trust this submission meets your approval and should there be any queries please to hesitate to contact us for clarifications.

……
Mr. Theo Uvanga
Quintessential Trading and Consultancy
Environmental Assessment Practitioner (EAP)
PO Box 2112, Swakopmund, Postcode 13001
Email: quintessentialtrading@gmail.com Tel: +264814815077

12. Environmental Management Plan (EMP)

12.1. Purpose of the EMP

The EMP contains the pre-requisite and necessary mitigation measures (and recommended actions), as well as the relevant timeframes, including the responsible persons, in respect of the sand mining operations.
The ultimate responsibility for the implementation of the EMP vests with the Municipality od Swakopmund who is the owner. The EMP is a legally binding document that forms an important part of the Environmental Assessment process and needs to be strictly adhered to.

Tenants/operators workers working in the mining, loading and hauling operation must be made aware of the EMP, including their responsibilities and all identified sensitive / 'no go' areas. Any transgressions must be treated as serious, with remedial action taken.

The EMP is divided into two parts, the operational and rehabilitation phase, with each containing its own set of mitigation measures. Water is not required for this specific mining operation.

12.2. Objectives of the EMP

This EMP has the following objectives:

- To outline functions and responsibilities of the responsible persons involved in the sand mining operations.
- To state standards and guidelines which are required to be achieved in terms of environmental legislation.
- To outline mitigation measures and environmental specifications which must be implemented to ensure environmental and social protection of the surrounding environment; and
- To prevent long-term or permanent environmental degradation.

12.3. Structure of the EMP

The EMP provides mitigation and management measures for the following phases of the project:

- Operational Phase

This section of the EMP provides management principles and environmental actions, procedures and responsibilities as required for this phase of the sand mining operation are specified.

- Rehabilitation Phase

This section of the EMP provides management principles for the decommissioning and rehabilitation phase of the project.

12.3.1. Key role players

- Borrow Pit Owner/Operator

The mining permit applicant (as owner and manager) is ultimately accountable for ensuring compliance with the EMP and conditions specified in the Environmental Authorisation Clearance Certificate (EIA).

A Health, Safety & Environmental Officer (HSEO) must be appointed by the applicant as an independent appointment, to objectively manage and monitor the implementation of all applicable environmental legislation, the conditions of the ECC, and the EMP for the project.

The applicant is further responsible for providing a mandate to enable the HSEO to perform his/her responsibilities.

- Borrow Pit Manager

The Manager has overall responsibility for managing the borrow pits, contractors, and consultants, and for ensuring that all environmental management requirements are met. All decisions regarding environmental procedures must be approved by the Manager. The Manager has the authority to stop any operational activity in contravention of the EMP.

- HSEO

The HSEO role is an independent appointment. His/her duty it is to objectively manage and monitor the implementation of applicable environmental legislation, the conditions of the ECC, and the EMP for the borrow pits. The HSEO must be on site prior to any site establishment/operations and must endeavour to form an integral part of the site's project team.

12.3.2. Environmental Awareness

Environmental awareness training should take place monthly, coordinated and monitored by the HSEO. Issues that pose a risk will be discussed and an understanding of the issues generated.

Any emergency situations will require immediate action by the Manager. Therefore the discussions must focus on situations which may arise to which the manager must be alerted.

It is of importance that workers are informed of 'no-go' areas and strictly abide by the EMP, Health and Safety Regulations, as well as conditions of the ECC, if granted by the Competent Authority. The HSEO shall conduct initial induction training with the Applicant and workers prior to mining commencement.

Thereafter, the Manger is required to conduct monthly environmental awareness briefings, in consultation with the HSEO. Some issues that should form part of the training include:

- Demarcation of the accessory works area and access road footprint.
- Sensitive no go areas, such as fauna habitats.
- Interpretation of Signage on site.
- Vegetation that must be avoided.
- Fauna species that may not be harmed.
- Identification of alien species.
- Erosion control measures.
- Storage of fuels and chemicals on site and refuelling areas.
- The repairing of equipment and machinery on site.
- The use of toilets.
- Proper waste disposal.
- Spill and emergency plans.
- Health and Safety onsite.

12.4. Description of the environment likely to be affected by the proposed sand mining operation

The study area has been significantly disturbed and degraded as a result of historical and current sand mining activities. This has resulted in the disturbance of soils and in the alteration of the natural vegetation community.

No vegetation is evident throughout the entire borrow pits accessory works area.

12.5. Description of the proposed sand mining activity

Construction Phase: Not Applicable. There will be no construction phase. The site is already active and prepared for sand mining. The proposed activities going forward include:

- Environmental training and awareness for workers.
- The removal and storage of topsoil that will be kept for the rehabilitation and closure phase.
- The demarcation of the sand mining site and ‘no-go’ areas.
- The erecting of signage and site boundaries.
- The placement of portable toilets, bins, spill kits and first aid kits.
- Maintaining the existing access road to the borrow pits.
- Preparing equipment and vehicles for operation.
- Ensuring that there are no protected fauna on site; and
- Implementing erosion control on site.

Operations Phase:

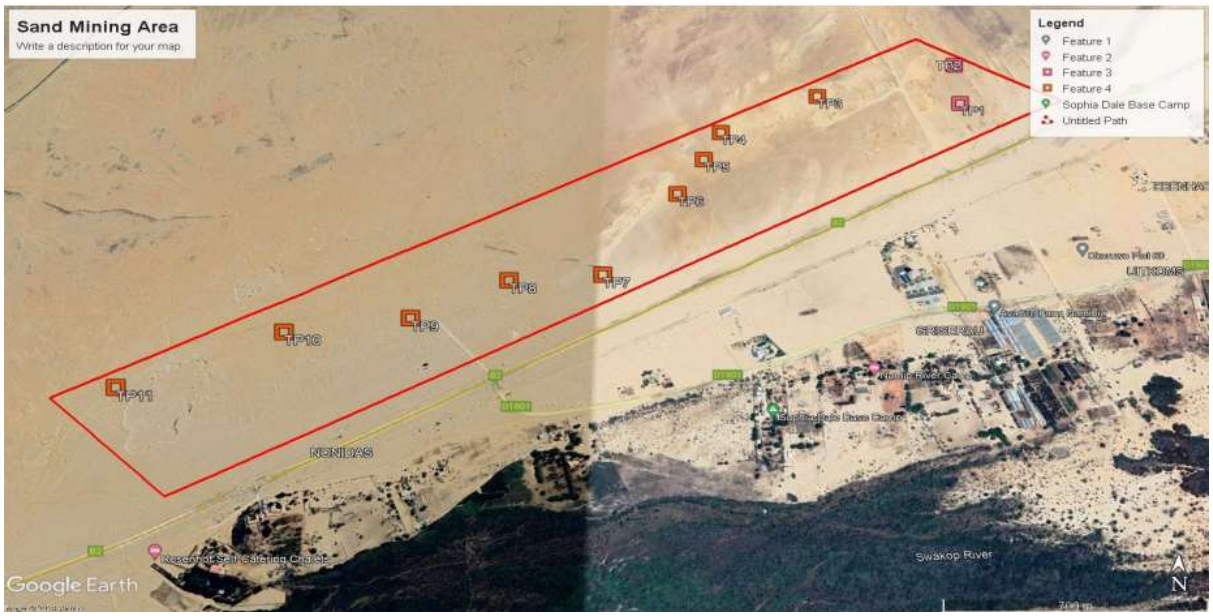
The mineral proposed to be mined is coarse sand with clay content (0.075mm) of not exceeding the limit given in table 1 of SANS 1083, 2002 and based on these properties, this material is fit to be used in concrete, plaster, and mortar after being sieved before use, for the purpose of removing lumps and oversize stones.

The method that is currently employed and continue to be used is, a very basic form of Open Cast Mining. Extraction of sand will be facilitated through the use of an excavator and/or front end loader. The 55.97 hectares accessory works area will be demarcated for sand mining and will not compromise any infrastructure, watercourses or wetlands.

An excavator and/or front end loader must be used to strip the top 30cm of topsoil, which will be stockpiled along the northern and southern flanks of the pits for later rehabilitation use purposes.

The topsoil stockpiles must be positioned to create a wind barrier thus preventing wind erosion across the pits, and shields the working equipment from creating excessive dust.

The excavator and/or front end loader will excavate sand from the pit to a depth of 1m to 3m, and stockpile the alluvial coarse sand on the western side of the pits. The sand will be deposited onto the stockpile area within the permit site and loaded onto tipper trucks by the front end loader for transport off the site, and for sale to the local market. This process does not require the use of any water.



Picture 22 Sand mining borrow pits accessory works area with test pits positions.

Decommissioning Phase:

As part of the basic Assessment process a Closure and Rehabilitation Plan has been formulated to guide the decommissioning of the sand mining borrow pits as contained in the EMP.

12.5.1. Planned life of the borrow pits

A geotechnical study was done concurrently with this EIA and, based on visual assessment and test results, there is enough sand mining reserves of roughly 406,000 m^3. The borrow pits will initially operate for a three-year permit period as per ECC validity and will be renewable further thereafter if in compliance with the conditions of the EMP and ECC conditions.

12.6. Health and Safety

The proponent and its operators onsite must adhere to the Labour Act 11 of 2007 No. 156 Labour Act, 1992: Regulations relating to the health and safety of Employees at work. This includes, but is not limited to the following:

- Workers must be provided with dust masks when working in conditions that require such protective measures.
- All workers on site undergo annual occupational medicals to ensure fitness to work in a sand mining operational environment.
- Operators of equipment and vehicles must be licenced/registered and properly trained.
- Vehicles must be properly maintained. Hooters and lights must be in working order.
- Clean water must be provided to workers in a suitable container.
- There must be a registered first aider and medical equipment, should emergency
- situations arise.
- Sand mining operations should be limited to day light hours between 07h00 to 17h00.
- Sand mining should not occur in adverse weather conditions.
- The sand mining area must be restricted to the public and relevant signs made clearly visible.
- The site must be clearly demarcated, with no-go areas identified and avoided.
- Accidents on site must be immediately reported and suitable action taken.
- Spill kits must be available in case of emergency situations.
- Acceptable, well maintained sanitation must be provided to workers; and
- Rehabilitation must ensure the site is left in safe condition.

13. Potential Impacts of the sand mining operations and risks of the proposed activity

Positive impacts associated with the project include:

- Job opportunities
- The borrow pits has the potential to contribute to the maintenance of and development of new infrastructure in and around the Swakopmund and Walvisbay areas.
- Sand will not be mined from the Swakop riverbed.

Negative Impact associated with the project.

- The sand mining activities will cause noise and dust issues; however, this is easily mitigated.
- Negative impacts with regards to the biophysical environment include potential contamination of the area due to spillage by hydrocarbon products.
- Loss of soil resources
- Change of current land use

13.1. Proposed impact management objectives and the impact management outcomes for inclusion in the EMP.

The EMP addresses the environmental impacts associated with the project during Operation, Decommissioning and Post Closure Phases of the project. The objectives of the EMP will be to provide detailed information that will advise the planning design of sand mining activities to avoid and/or reduce impacts that may be detrimental to the environment.

The following environmental management objectives are recommended for the current sand mining activity.

- Development planning must restrict the area of impact to a minimum and designated area only.
- Closely monitor the sand extraction volumes.
- Prevent illegal sand mining.
- Monitor and prevent contamination and undertake appropriate remedial actions.
- Limit the visual and noise impact on receptors.
- Avoid impact on possible heritage finds.
- Promote health and safety of workers.
- Limit dust and other emissions to within allowable limits.
- Manage soils to prevent erosion.

13.2. Impact Assessment

To ensure uniformity, the impacts are addressed in a standard manner so that their significance can be compared. Each impact is identified in terms of probability (likelihood of occurring), extent (spatial scale), intensity (severity) and duration (temporal scale).

Each rating scale is assigned a numerical value, and the sum of the numerical rating is multiplied by the probability of that impact occurring to give the resulting significance of the impact. The numerical values used for each rating scale are presented below.

Nature of impact: A brief description of the type of impact the mine will have on the affected environment.

Extent/Scale: The physical extent of the impact.

1. Footprint: The impacted area extends only as far as the actual footprint of the activity.
2. Site: The impact will affect the entire or substantial portion of the site/property.
3. Local: The impact could affect the area including neighbouring properties and transport
4. routes.
5. Regional: Impact could be widespread with regional implication.
6. National: Impact could have a widespread national level implication.

Duration: The duration of the impact.

1. Short term: The impact is quickly reversible within a period of one year, or limited to the
2. construction phase, or immediate upon the commencement of floods.
3. Medium term: The impact will have a short-term lifespan (project lifespan 1 – 10 years).
4. Long term: The impact will have a long-term lifespan (project lifespan > 10 years).
5. Permanent: The impact will be permanent beyond the lifespan of the development.

Intensity: This criterion evaluates intensity of the impact and are rated as follows:

1. Minor: The activity will only have a minor impact on the affected environment in such a way that the natural processes or functions are not affected.
2. Low: The activity will have a low impact on the affected environment
3. Medium: The activity will have a medium impact on the affected environment, but function and process continue, albeit in a modified way.
4. High: The activity will have a high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.
5. Very high: The activity will have a very high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.

Determination of significance: Significance is determined through a synthesis of the various impact characteristics and represents the combined effect of the extent, duration, intensity, and probability of the impacts.

1. No significance: The impact is not substantial and does not require any mitigatory action.
2. Low: The impact is of little importance but may require limited mitigation.
3. Medium: The impact is of importance and therefore considered to have a negative impact.
4. Mitigation is required to reduce the negative impacts to acceptable levels.
5. High: The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation and management are essential.

The following assessment scale is used to determine the significance of the identified potential impacts on the environment.
Significance = (probability + duration + scale) x intensity

- Probability: 1 – 5
- Extent: 1 – 5
- Duration: 1 – 4
- Intensity: 1 – 10

Significance rating criteria:

- >75 High environmental significance
- 50 – 75 Medium environmental significance
- <50 Low environmental significance

13.2.1. Impact Assessment

13.2.1.2. Environmental characteristics

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Impact on functional contribution of the larger ecosystem (e.g. terrestrial bird breeding and feeding, insect breeding and habitat for migrating small game)	Operations	-ve	Local	Medium	Medium	Medium	High	1. Before mining operations can commence, the Manager in consultation with the HSEO must clearly demarcate the mining footprint and the access road Footprint. 2. If applicable, No go and sensitive areas (Various wetlands and indigenous vegetation) must be clearly marked and avoided. 3. Disturbance of indigenous fauna and flora, and the natural ecology in the surrounding areas must be avoided. 4. Disturbance of mammals, birds, reptiles, other animals, and their habitats must be prevented. 5. Invasive alien plants must be removed from site. 6. A rehabilitation plan must be implemented once mining. operations cease. 7. Rehabilitation of sand mining should be conducted in accordance with Roads Authority's rehabilitation of borrow pits along the national road network, environmental guidelines, July 2013	Medium

13.2.1.3. Soil characteristics and geology

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Soil stockpiles that are left unattended.	Operations	-ve	Site	Short	Medium	High	High	1. Prior to sand mining, all topsoil must be stockpiled for use during the Rehabilitation Phase. 2. Stockpiled topsoil should be used as the final cover for all disturbed areas where re-vegetation is required. 3. Stockpiled soil should be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet season. 4. Soil stockpiles should be located away from drainage lines and areas of temporary inundation. 5. If possible, seeding of the stockpiles with suitable local 6. vegetation is recommended	Low
2. Soil pollution and contamination during operations.	Operations	-ve	Local	Short	Medium	Medium	High	1. The upper clayish layer should not be exceeded. 2. Deeper excavation would involve soils that are heavily saturated and difficult to work with. 3. Should diesel be stored on site, it will need to be stored on a hard surface and 50m away from any drainage lines. 4. Store fuel, chemicals, and other hazardous substances in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage	Low

								into the environment, flooding, or storm damage. 5. Repairs to vehicles and equipment on site should be avoided. 6. If necessary, repairs must be undertaken on hardened surfaces. 7. Under no circumstances should oil or diesel to be disposed of at the site. 8. A Spill Contingency Plan should be adopted.	
3. Dust pollution due to exposure to loose soils.	Operations	-ve	Local	Short	Medium	Medium	High	1. Soil should be exposed for the minimum time possible once cleared of topsoil, i.e. the timing of clearing and grubbing should be coordinated as much as possible to avoid prolonged exposure of soils to wind and water erosion.	Low
4. Compaction of soils by use of site heavy mobile equipment	Operations	-ve	Local	Short	Low	Medium	Medium	1. Where roads have become compacted, they shall be ploughed, ripped and revegetated.	Low
2. Soil Erosion	Operations	-ve	Local	Medium	Medium	Medium	High	1. Keep surrounding vegetation, especially shrubs, to create a screen that reduces erosion impacts. 2. During the mining activities, there 3. shall be the protection of areas susceptible to erosion by installing necessary temporary and permanent works as soon as possible.	Low

13.2.1.4. Fauna and Flora

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Impact on faunal activity on surrounding properties during activity (e.g. trapping of animals, construction vehicles, etc.).	Operations	-ve	Local	Medium	Medium	Medium	High	1. The total depth of pits must be minimized so that the pits do not create a safety hazard or barrier / obstruction to the movement of wildlife. 2. Any fauna found on the stockpile site needs to be relocated without causing any damage or harm. 3. Any nesting sites of avifauna species must not be disturbed or impacted on and a buffer implemented. 4. Workers may not bring pets onto sand mine site. 5. Any malicious damage to any fauna species present on site will be considered a punishable offence, and the appropriate measures will be followed. 6. Invasive alien plants must be removed from site. 7. No go and sensitive areas must be clearly marked and avoided. 8. A rehabilitation plan must be implemented once mining operations cease.	Low
2. Impact on vegetation (in stockpiling areas)	Operations	-ve	Local	Short	Medium	Medium	High	1. Limit the removal of any vegetation to the sand mining footprint. 3. Prevent illegal removal of any protected vegetation. 4. Minimise scarring of the soil surface and land features. 5. Minimise disturbance and loss	Low

								of topsoil. 6. Keep any surrounding vegetation, to create a screen that reduces flooding impacts.	

13.2.1.5. Archaeological, historical, and cultural significance

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Impact on sites with valuable archaeological, history and cultural significance.	Operations	-ve	Site	Short	Minor	Low	Medium	1. Should any archaeological artefacts be exposed during excavation, work on the area where the artefacts were found, shall stop immediately and the HSEO should notify the Heritage Council as soon as possible.	Low

13.2.1.6. Socio-economic impacts

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Direct and indirect employment creation.	Operations	+ve	Local	Short	Minor	High	Medium	1. No mitigation required	Medium

13.2.1.7. Safety and security

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Potential for increased security risk to adjacent properties and the residents thereof.	Operations	-ve	Local	Short	Medium	Low	Medium	1. Staff should be informed that access to adjacent properties is strictly off-limits and that it will be deemed a serious offence (i.e. no fences should be jumped at any time and no gates are to be opened without permission from the relevant landowner).	Low
1. Similarly, operational activities on site may pose various risks to worker's safety.	Operations	-ve	Local	Short	Medium	Low	Low	1. The site and crew are to be managed in strict accordance with the Labour Act 11 of 2007 No. 156 Labour Act, 1992: Regulations relating to the health and safety Of Employees at work	Low
2. Traffic and spills transporting sand to the market	Operations	-ve	Local	Short	Medium	Low	Low	1. When transporting silica sand on public roads, these should be kept clear of spills, leaks, mud and sand. Should any mud and sand deposited onto public roads by the mining activities, it will need to be cleared immediately	Low
3. Slope stability	Operations	-ve	Local	Medium	Medium	Medium	High	1. This site is literally covered by dune sand with small, scattered outcrops, therefore, any slopes created on site within the transported and residual soil horizons should be battered back to 1V:1.5H to ensure temporary safe working conditions. Excavations in very loose sand may be battered 1V:1H, and in medium dense sand or better at	Medium

								2V:1H. Steeper excavated slopes were observed in borrow pit areas; therefore, it is recommended that all excavations exceeding a depth of 1,0m should be trimmed/battered back at 30° to the vertical to ensure the safety of construction personnel.	

13.2.1.8. Potential environmental impacts

Nature	Phase	Type	Extent	Duration	Intensity	Probability	Inherent Risk	Mitigation	Residual Risk
1. Increase in air pollution (dust). 2. Impact on the ambient air quality due to HME tailpipe emissions from increased traffic volumes.	Operations	-ve	Local	Short	Medium	High	Medium	1. Air filters on all mechanized equipment must be properly designed and maintained. 2. Onsite burning of waste is not permitted. 2. Speeds on the gravel access road should be kept to a minimum 20km/h to reduce dust liberation	Low
3. Increase in ambient noise level affecting surrounding properties.	Operations	-ve	Local	Short	Low	High	High	1. Silencers on diesel-powered equipment must be properly designed and maintained. 2. Construction activities should be limited to normal office hours. 3. Adjacent landowners should be notified of extremely noisy activities at least 24 hours prior to such activities commencing. 4. Mining should take place between 07:00- 17:00. Mondays to Fridays.	Low
4. Increase in waste	Operations	-ve	Local	Long	Low	High	High	1. Waste generated on site must	Low

								be collected, taken with and disposed of at operator's waste bins in Swakopmund. 3. No waste may be stored, buried or burned onsite.	
5. Impact on water quality and quantity	Operations	-ve	Local	Short	Low	Medium	Low	1. All watercourses including drainage lines must be strictly avoided. 3. Prohibit the washing of vehicles or machinery on site 4. Chemical toilets must be provided by the contractor. 5. Measures must be put in place to ensure water saving techniques are implemented.	Low

13.3. Operational Phase EMP

The mitigations measures proposed herein must be implemented and managed continuously during the operations phase and, includes the necessary mitigation and recommended actions as well as the timeframe and person responsible for the actions.

Aspects and hazards	Impacts	Mitigation/Management Action measures (objectives and targets)	Timeframe	Responsible Party
Aesthetics	• Land pollution	• The site shall be kept visually and aesthetically pleasing. • The HSEO shall regularly inspect the site to ensure that it is neat and clean.	Continuous	Tenants/Operators HSE Officer
Archaeology and heritage	• Destruction of Archaeological sites.	• If any artifact on site is uncovered, work in the immediate vicinity shall be stopped immediately. • Should any archaeological sites be uncovered during operations, their existence shall be reported to the National Heritage Council immediately. • The position of any known sites shall be demarcated and such areas shall be marked as no go areas. • Artifacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. • The permit shall be obtained from the National Heritage Council by a reputed Archaeologist.	Continuous	Tenants/Operators HSE Officer
Site Establishment and sanitation	• Soil pollution • Water pollution	• Site establishment shall take place in an orderly manner and all required amenities shall be installed before the main workforce move onto site. • All the necessary ablution facilities with chemical toilets at must be installed onsite.	Continuous	Tenants/Operators HSE Officer

		• The Tenants/Operators shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed other than in supplied facilities. • Ablution facilities shall be within 100m from workplaces but not closer than 50m from any natural water bodies. • Toilets shall be serviced regularly • The Tenants/Operators shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at Municipal skips in town. • The disposal of waste shall be in accordance with all relevant legislation. • Under no circumstances may solid waste be burnt on site. • Ensure that the HME equipment is properly maintained. Equipment must be regularly serviced and inspected to make sure there are no leaks of oil, diesel, fuel, detergents or hydraulic fluids. • Servicing and maintenance of vehicles as far as possible must occur outside of the boundaries of accessory works area. If maintenance does occur on site due to breakdown, all steps must be undertaken to avoid hydrocarbon spills/leakages. • Minimise petrol, diesel, and oil leaks by allocating a loading zone, which is protected against such leaks. Drip trays must be secured and emptied regularly. • Should diesel be stored on site, it will need to be stored on a hard surface.		

		• Store fuel, chemicals and other hazardous substances in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage into the environment, flooding or storm damage. • Spilled hydrocarbon must be treated as a hazardous waste and must be disposed of as it occurs in appropriate hazardous waste containers and removed off site as soon as possible. • No washing of equipment or machinery may occur on the permit site or in any watercourse		
Limit the disturbance and destruction of vegetation, fauna and habitat	• Intentional or unintentional killing of fauna on site. • Unnecessary removal of flora.	• The HSEO and Manager must establish and clearly demarcate the mining footprint and the access road footprint and prohibit any vehicle or activity outside of the demarcated footprint areas. • The "no go" areas where possible must be clearly demarcated. There shall be no unauthorised entry, litter, stockpiling, dumping or storage of equipment or materials within the demarcated "no go" areas. If this does occur the Manager shall be liable for rehabilitation. • The surrounding areas are inhabited by sparse woody shrubs of the Dollar bush and the hardy shrub Ink/Pencil bush and there are no trees. • The only species of fauna found in the areas to be developed are geckos, lizards, beetles and birds • Special care should be taken not to damage or remove any such species unless absolutely necessary. • Permits for removal must be obtained should such species be affected. • All shrubs and bush not interfering with the operation of the developments shall be left	Continuous	Tenants/Operators HSE Officer

		undisturbed, clearly marked and indicated on the site plan. • All effort must be made to minimise the disturbance of wild animals on and within the close vicinity of the borrow pits accessory works area. • The tenants/operators must ensure that no faunal species are disturbed, trapped or killed during the operations phase. • Any nesting sites of avifauna species must not be disturbed or impacted on and a buffer implemented • The tenants/operators and their employees shall not bring any domesticated animals onto the site. • The tenants/operators shall ensure that the work site be kept clean, tidy and free of rubbish that would attract animals. • Any fauna found on the stockpile site needs to be relocated without causing any damage or harm. • The total depth of pits must be minimized so that the pits do not create a safety hazard or • barrier / obstruction to the movement of wildlife.		
Occupational Health and Safety	• Health and Safety of employees on site	• The operations phase is expected to present the most challenges from a health and safety point of view. • A clear operating plan should be in place to guide the health and safety requirements during the construction phase. • This plan should guide construction staff in terms of their responsibilities in terms of health and safety during the construction phase.	Continuous	Tenants/operators HSE Officer

		• It should be ensured that construction activities are conducted in such a manner that it does not increase the risk of injury or fatalities of construction staff and that the appropriate measures are in place to prevent any incidents and accidents		
Clearing and Grubbing & Erosion Control	• Topsoil • Flora	• The extent of all sand mining site footprints will be minimised and limited to existing and / or already disturbed areas wherever possible. • The areas needing to be mined and the extent of mining required will be determined and demarcated in consultation with the HSEO before sand mining begins. • The tentants/operators shall at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage. • Prior to sand mining, all topsoil and as much of the existing vegetation must be stockpiled away from the pits and above the margin of the pits. Because of the extended time of storing stock piled material, seeding the stockpiles with suitable local vegetation is recommended. • All topsoil removed during the mining phase must be conserved and used in the rehabilitation and close out phase. No topsoil may be sold. This soil must be kept safe from erosion • Topsoil shall be cleared of woody vegetation, and specifically exotic vegetation, before ripping and removing. • The topsoil is regarded as the top 30 cm of the soil profile	Continuous	Tenants/Operators HSE Officer

		• Topsoil is to be handled twice only – once during clearing and stockpiling & once during rehabilitation • Soil stockpiles shall not be higher than 2.5m or stored for a period longer than one year. • Stock piles of top soil should be positioned so that they act as a barrier between wind and other elements and the borrow pits. • The slopes of soil stockpiles shall not be steeper than 1 vertical to 2.5 horizontal. • Excavated filled slopes and stockpiles must be kept at a stable angle and be capable of accommodating normal expected water flows. • Stockpile area will be covered with gravel during mining operations to prevent erosion. • Gravel will be removed on completion of mining. • The topsoil will be used as a berm for the stockpile pad and ramp, to protect the area from prevailing winds and rain water erosion. • During the sand mining activities, the Manager shall protect areas susceptible to erosion by installing necessary temporary and permanent works. • On any areas where the risk of erosion (due to sand mining operations) is evident, special measures may be necessary to stabilise the areas and prevent erosion. These may include, but not be restricted to: • Using mechanical cover or packing structures such as geofabric to stabilise steep slopes or hessian, gabions and mattress and retaining walls • Constructing anti-erosion berms		

		• No vehicles shall be allowed access onto the stockpiles after they have been placed. • Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation. • The tenants/operators shall apply soil conservation measures to the stockpiles to prevent erosion. • Where erosion does occur on any completed work/working areas, these areas shall be reinstated to previous condition. • Rehabilitation must be treated as an on-going process to ensure erosion is controlled and its impacts limited		
Prevention of disease	• Health of workers	• The tenants/operators shall take all the necessary precautions against the spreading of disease such as flu, TB, etc. • All employees that come onsite must obey Covid-19 protocols and measures must be put in place. • The workforce shall also be sensitised to the effects of sexually transmitted diseases, especially HIV/AIDS. • General health issues shall be brought under the attention of the site staff.	Continuous	Tenants/Operators HSE Officer
Site Buildings / Construction Camp	• Visual pollution • Aesthetics • Injury to workers and damage to property	• The planning and design for the Construction Camp must ensure that there is minimal impact on the environment. • The Construction Camp will be placed within an existing disturbed area as far as possible. • The Construction Camp site will be identified by the Contractor in consultation with the HSEO, and	Continuous	Tenants/Operators HSE Officer

		negotiated by the Site Manager with the Town Planner of the Municipality of Swakopmund • All site buildings to be of a container or prefabricated type. No permanent structures will be permitted. • With the decommissioning of the structures all compacted platforms and slab foundations must be ripped and removed. • All buildings will be soundly built and will not pose a danger to personnel. • No fires are allowed outside the Construction Camp. • Adequate and well maintained fire fighting equipment according to the fire hazard strategies must be maintained on site during the construction period (at least two all purpose 12.5 kg extinguishers). • The tenants/operators shall be liable for any costs related to extinguishing fires started by the tenants/operators representatives / employees. • Additional penalties for infringements will also be imposed by the HSEO or Site Manager.		
Storm water management	• Hydrology and Storm water • Downstream siltation • Erosion	• It is expected that storm water will be adequately managed during the operations phase. • Storm water will be allowed to be absorbed into the soil through the assistance of the gravel distributed especially on the soil surface of the area where infrastructure is located.	Continuous	Tenants/Operators HSE Officer
Natural Drainages	• Blocking and diversion of natural Watercourses • Downstream siltation	• Under no circumstances shall the tenants/operators interfere with any watercourses in the vicinity of the site.	Continuous	Tenants/Operators HSE Officer

	• Erosion	• Should deviation of such watercourses be required as part of the contract design specification, the specifications shall be adhered to strictly. • The HSEO shall ensure that all watercourses are adequately protected to prevent downstream siltation due to erosion on site • The normal flow of runoff water must not be impeded, as this will enhance erosion		
Groundwater	• Groundwater pollution	• No impacts are expected on the groundwater of the area during the operational phase as there is no groundwater sources • Containment of waste water will be put in place and to prevent runoff	Continuous	Tenants/Operators HSE Officer
Access roads to the site	• Impacts on traffic movement • Nuisance traffic • Congestion	• The gravel access road to the accessory works area is established and shall be used as far as possible. • Construct approved vehicle turning areas, avoiding selected ecological sensitive areas or species, and have turning area routes approved by the HSEO. • All agreements reached should be documented and no verbal agreements should be made. • Continual use of dirt access roads by heavy machinery and increased transport loads means they will have to be carefully monitored and regularly graded as soon as potholes or rutting occurs. • Vehicle access must be strictly contained onsite. • Vehicles may only use designated roads and access points as determined by the HSEO and Manager.	Continuous	Tenants/Operators HSE Officer

		• The tenants/operators shall properly mark all access roads. • Roads not to be used shall be marked with a "NO ENTRY " sign. • When transporting sand on public roads, spills, leaks, mud and sand must be prevented. Should any mud and sand be deposited onto public roads by the mining activities, it will need to be cleared immediately. • Access road and loading area will be properly maintained, and this includes appropriate storm water management and dust control. • Temporary access roads must be rehabilitated after usage		
Waste Management	• Land pollution • Soil pollution • Visual pollution	• Waste generated on site must be stored and taken back to Swakopmund at the end of each shift and disposed off in the municipal skips. • No waste may be buried or burned on site. • Provide portable toilets where work is being done. • Workers onsite must be informed of correct waste management practises, • The use of toilets must be adhered to. No open urination and defeaction must be allowed.	Continuous	Tenants/Operators HSE Officer
Claims for damages	• Theft • Reputational damage • Negative publicity	• The HSEO shall keep a photographic record of any damage to areas outside the demarcated site area. • The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable.	Continuous	Tenants/Operators HSE Officer

		• All claims for compensation emanating from damage should be directed to the HSEO for appraisal. • The tenants/operators shall be held liable for all unnecessary damage to the environment. • A register shall be kept of all complaints from the community. • All claims shall be handled immediately to ensure timeous rectification/payment by the responsible party.		
Public Safety	• Theft of equipment on site • Injury and fatalities	• Access to the construction site should be strictly controlled by a security company. • Trespassing on private / commercial properties adjoining the site is forbidden	Continuous	Tenants/Operators HSE Officer
Dust pollution	• Land pollution	• The tenants/operators shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring Communities at NONIDAS. • Speed limits can also be installed, especially on private dirt roads leading to the site to minimise dust liberation and the need of watering of access roads. • Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the tenants/contractors.	Continuous	Tenants/Operators HSE Officer
Air Pollution	• Coughs, wheezing and shortness of breath. • Cardiovascular and respiratory diseases. • Lung cancer. • Strokes.	• Reduce the uneccessry idling of diesel engine exhausts of plant and other vehicles • Wear appropriate PPE, such as the correct type of respiratory protective equipment (RPE) depending on the task.	Continuous	Tenants/Operators HSE Officer

	• Exacerbation of asthma.	• Reduce exposure to dusts and fibres, such as silica, as well as the fumes and gases emitted by vehicles and machinery. • Never burn waste materials. • Use low sulphur diesel to power equipment and vehicles. • Improve existing equipment by using particulate filters and catalyst converters. • Use water sprays or sprinklers to control some types of dust and stop it spreading.		
Littering	• Land pollution • Visual pollution	• Littering by the employees of tenants/operators shall not be allowed under any circumstances. • The HSEO shall monitor the neatness of the work sites.	Continuous	Tenants/Operators HSE Officer
Hazardous waste and materials	• Soil pollution • Health	• Compliance to local, national and international legislation and management practices with regard to the storage, transport, use and disposal of fuel, chemicals, harmful and hazardous substances and materials will be enforced. • Fuel, chemical, harmful and hazardous waste throughout the site must be stored in appropriate, well maintained containers. • Any accidental chemical / fuel spills to be cleaned up immediately. • Storage of all hazardous material is to be safe, tamper proof and under strict control. • Emergency procedures for dealing with spills or releases of solvents and fuel must be put in place. • The training and education of all personnel on site who will be handling the material about its proper use, handling and disposal must be put in place.	Continuous	Tenants/Operators HSE Officer

Noise Pollution	• Noise pollution • Local residents experience varying levels of stress, • Sleep disturbance or high blood pressure. • Workers gradual hearing loss	• Use quiet power tools and equipment to manage noise pollution. • Where possible, use modern HME equipment that has been designed specifically to produce less noise. • Schedule work during sociable hours rather than when residents are likely to be sleeping. For example, between 8h00 Am to 17h00 on weekdays and half days on Saturdays. • Also notify local residents of the working hours and keep them updated on the project. • Machinery and vehicle silencer units are to be maintained in good working order. • Offending machinery and / or vehicles will be banned from use on site until they have been repaired. • Switch off plant when it's not in use. • Near source employees must be provided with appropriate personal protective clothing and equipment such as earplugs and earmuffs where required. • The movement and operation of heavy mobile equipment and machines will be restricted to daytime operational hours only.	Continuous	Tenants/Operators HSE Officer
Interaction with Affected Parties	• Relations with next door neighbours • Health and safety of next door neighbours	• The success of any project depends mainly on the good relations with the Municipality of Swakopmund and its Communities. • It is therefore required that the HSEO and the tenants/operators establish good relations with all the affected parties in the immediate vicinity of all operational activities.	Continuous	Tenants/Operators HSE Officer

		• All negotiations for any reason shall be between the HSEO, the affected parties and the tenants/operators. • NO verbal agreements shall be made. All agreements shall be recorded in writing and all parties shall co-sign the documentation. • The affected parties shall always be kept informed about any changes to the operations programme should they be involved. • If the HSEO is not on site the tenants/operations should keep the affected parties informed. • The contact numbers of the tenants/operators and the HSEO shall be made available to the affected parties. • This will ensure open channels of communication and prompt response to queries and claims. • All contact with the affected parties shall be courteous at all times. The rights of the affected parties shall be respected at all times		
Infrastructure	• Nuisance to communities • Inconveniencing next door neighbours	• No interruptions other than those negotiated shall be allowed to any essential services. • Damage to infrastructure shall not be tolerated and any damage shall be rectified immediately by the tenants/operators. • A record of any damage and remedial actions shall be kept at the Municipality. • All existing private access roads used for operational purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. Speed limits shall be enforced in such areas and all drivers shall be sensitized to this effect.	Continuous	Tenants/Operators HSE Officer

		• Any possible disruptions to essential services must be kept to a minimum and should be well advertised and communicated to the Municipality of Swakopmund and surrounding Communities.		
Traffic impacts	• Injured or fatalities as a result of being struck by moving plant • vehicles or their loads striking people, particularly when reversing • vehicles striking services and obstructions • manufacturers instructions for safe use being disregarded • inadequate training of drivers and signallers; and • unsafe loading and transportation of materials on vehicles. • Obstruction of adjacent roads • Increased heavy mobile equipment traffic in neighbourhood • lost productivity, • added project costs, and	• Drivers of the operational vehicles should be in possession of valid and appropriate driving licenses • The routes need to be suitable for the persons or vehicles using them, in suitable positions and sufficient in number and size • Provision and maintenance of safe workplaces, safe vehicles, safe drivers and safe work practices. • Drivers must not be allowed to operate vehicles and machinery while impaired due to medication, alcohol, drugs and medical conditions. • Selecting and maintaining vehicles; and implementing safe driving and working practices. • Control entry to the work area; and • Employers should take steps to make sure that all workers are fit and competent to operate the vehicles, machines and attachments they use on site. • Install turning circles so that vehicles can turn without reversing. • Safe loading, hauling and offloading zones must be identified onsite. • Make sure that all drivers and pedestrians know and understand the routes and traffic rules on site. Use standard road signs where appropriate. • Provide induction training for drivers, workers and visitors and send instructions out to visitors before their visit.	Continuous	Tenants/Operators HSE Officer

	• bad public relations with the surrounding communities.	• Install aids for drivers, plant and vehicle marshallers, lighting and pedestrians on site should wear high-visibility clothing • Set up appropriate vehicle movement signage on local roads/intersections surrounding the project site to direct traffic flow in a safe manner. • Whenever feasible, HME's should avoid leaving the site at peak traffic periods (07:00 to 08:30 AM, 12:00PM to 14:00PM and (17:30PM to 18:30 PM). • All necessary reflective and lighting signs should be placed on project and HME's to maximize visibility and reduce potential accidents that may have occurred otherwise.		

Aspects and hazards	Impacts	Mitigation/Management Action (objectives and targets)	Timeframe	Responsible Party
Environmental Health and Safety	• Environmental pollution	• A health & safety and environmental management training session(s) prior to commencing work on site shall be conducted for all tenants/operator's staff members. • A follow up session(s) shall be conducted as needed to ensure all staff members have received training.	Continuous	Tenants/Operators HSE Officer
Lack of enforcement	• Manpower support	• Employ qualified and competent teams and manpower to implement all the practical environmental conservation measures as proposed in this EMP. • Manage the programme i.e., coordinating with an environmental consultant. • Implement necessary prevention or best practice method in the event of poor environmental quality.	Continuous	Tenants/Operators HSE Officer
Visual impact	• Adjustment of terrestrial habitat	• Morning Take 5 talks to be made routine and all employees must be given and undergo induction. • Always determine the route of activities beforehand and restrict all activities to demarcated areas. • Reinstate and rehabilitate where necessary during operational activities.	Continuous	Tenants/Operators HSE Officer
Sewerage management	• Attraction of pests • Offensive odours • Visual pollution • Nuisance to neighbours	• Only portable flush toilets equipped with French drains/septic tanks will be erected at operational sites. • No foreign object may be flushed down the toilets to prevent damage and maintain integrity	Continuous	Tenants/Operators HSE Officer

	• Community complaints	of the sewer system and maintain a healthy environment.		
HME equipment	• Visual impact • Loss of aesthetic value	• Only key and required mobile equipment and machinery needed must be kept on site in and on the operational site in an orderly fashion.	Continuous	Tenants/Operators HSE Officer
Dust liberation	• Dust generation from construction and excavation activities exposure to land and next-door neighbours	• All personnel working in dusty areas and or around heavy mobile equipment will be provided with dust masks. • Dust spraying methods to be implemented for high volume or frequently used roads and surfaces to be excavated in especially those near boundaries to suppress dust liberation.	Continuous	Tenants/Operators HSE Officer
Dust liberation and storm runoff on excavated land and open trenches	• Soil erosion • Dust liberation • Downstream siltation	• Excavation, handling and transporting of layer materials must be minimised under high wind conditions. • Dust protection masks must be provided to all staff members working in dust polluted environment. • All vehicles' speeds should be controlled to reduced dust production; hence appropriate road signs should be placed to control the traffic speed. • Excavated and disturbed land should be contoured and landscaped after excavation activities. • Artificial drainage systems should be erected where natural drainage systems have been cut off, interrupted to rerouted.	Continuous	Tenants/Operators HSE Officer

Occupational Health and HIV and AIDS	• Prevalence of HIV might increase due to the developments. • The immigration of mainly single persons to the construction site presents a perfect opportunity for sex workers and for local community members to engage in unsafe, sex-for-cash sexual relations.	• HIV/AIDS awareness and prevention, and general hygiene training programmes should be developed and implemented. • The main target group is the staff members, but the public may also be encouraged to attend. • Follow up awareness raising, and education should be conducted at least every six months.	Continuous	Tenants/Operators HSE Officer
General Nuisance of the Construction Activities	• Aesthetics and inconvenience caused to persons trying to access/exit the construction site, or other general nuisances arising from the construction activities.	• Tenants/operators should always maintain housekeeping and tidiness on site. • Contractors must ensure that all excavations are rehabilitated at the end of operations to reduce unwanted aesthetic impacts. • Tenants/operators should always keep "an open-door policy" towards the local community. This will encourage cooperation and strengthen relationships.	Continuous	Tenants/Operators HSE Officer

Aspects and hazards	Impacts	Mitigation/Management Action (objectives and targets)		Responsible Party
Safety and Security	• Earthmoving equipment used on site may increase the possibility of injuries to both staff members and the public. • The presence of equipment and materials not securely stored may encourage theft of equipment and material.	• The Contractor must ensure that all staff members are briefed daily about the potential risks of injuries on site. • All staff members shall receive health and safety training prior to working on any construction work. • Flammable materials (e.g., fuel for construction vehicles) should be stored as far as possible from sensitive receptors. • Storage of hazardous materials and substances shall be strictly in accordance with the appropriate risk and fire prevention standards. • Material Safety Data Sheets (MSDS's) for all chemicals and any hazardous substance used on site should be always readily available on site. • The tenants/operators are urged to ensure that adequate emergency facilities, including first aid kits, are available on site. • Adequate traffic and safety signs must be placed at the operational site to warn and inform all stakeholders about the operations and traffic conditions. • The tenants/operators must adhere to all relevant laws, regulations, guidelines, and policies with regards to labour aspects, health and safety standards. • Remote CCTV cameras should be installed at the borrow pit access road T-junction of the gravel	Continuous	Principal contractor Contractors Municipality of Swakopmund

		road into the B1 Highway to record and monitor how many loads of sand leaves the site per day and to keep an accounting balance in the absence of a weighbridge. • Correct signage must be erected at the main access road and entrance of haul road to mining areas - includes mining authorization, access authorization, warning of mining activity, safety warning signs (protective equipment, fire & medical equipment) and contact numbers. • Concrete traffic barrier bars should be erected alongside the B1 highway on the borrow pits accessory works area to prevent illegal entry and exit from the borrow pits. Exit and entry should be confined to the gravel access road covered by the remote CCTV system proposed to prevent and deter illegal harvesting and theft of sand. • Any person or institution or company not complying with these specifications are liable to fines and penalties as indicated in relevant contracts conditions, relevant laws, and regulations.		
Protection of Biodiversity and Cultural Heritage	• Motorised disturbances that could threaten biodiversity, ecosystems functions and services and cultural heritage.	• Site Management Plans depicting preferred site for permanent way for materials collection and storage, etc. need to be developed by the tenants/operators with the assistance of the Manager. • These plans need to be documented, reviewed, updated, and implemented prior to the commencement of work at any location.	Continuous	Principal contractor Contractors

		• There are no structures of cultural heritage observed during assessments at the project site. • Construction works can only resume with written approval from the relevant authorities the Heritage Council. • To minimise land degradation, no off-road driving is allowed except on demarcated access and hauling roads. • The confines of the site, especially haul and access roads shall be clearly marked and signposted by the Contractors at the direction of the HSEO. • All necessary measures should be implemented to minimise fauna displacement and flora destruction. • No fires are always allowed on site. • Soils from areas infested with invasive flora should not be hauled from those specific areas. The risk of such species dispersing and displacing natural vegetation is very high, thus the HSEO should be always consulted to ensure that invasive plants are not accidentally dispersed. • Any person or institution or company not complying with these specifications are liable to fines and penalties as indicated in relevant contracts conditions, relevant laws, and regulations.		
Job creation, Skills development and business	• Positive socio-economic impacts and spinoffs	• Semi-skilled and unskilled jobs should target local community members.	Continuous	Principal contractor Contractors

opportunities		• Prioritise local employment and spend in local business where reasonably possible. • Enhance the use of local labour and local skills as far as reasonably possible. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.		

13.4. Closure and rehabilitation Phase EMP

The operational phase is followed by the closure and rehabilitation phase of a project. This is also a site-specific plan drawn up to ensure that appropriate environmental management practices are put in place during the finalisation of the Municipal Council borrow pits and to put in place remediation measures of works.

Closure and rehabilitation phase.

- Provide site specific and fit for purpose mitigation measures to finalise operational phase, site clean-up, remediation of contaminated sites, waste and restoration activities.
- Reduce and eradicate any long-term liability issues related to the sand mining operations.
-

The mitigation measures and activities should commence during the operational phase and be finalised at closure and completion of operational activities.

Aspects and hazards	Impacts	Mitigation/Management Action (objectives and targets)	Timeframe	Responsible Party
Soil erosion	• Erosion of site	• All topsoil removed during the sand mining operations must be conserved and used in the rehabilitation and close out phase. • No topsoil may be sold. This soil must be kept safe from erosion.	Continuous	Principal contractor Contractors

		• Stockpile area will be covered with gravel during construction operations to prevent erosion. • Gravel will be removed on completion of construction. The topsoil will be used as a defensive wall for the stockpile pad and ramp, to protect the area from prevailing winds and rainwater erosion. • Topsoil and vegetation from the ramp must be used to create a defensive wall along the perimeter of the ramp and stockpile area. The pile should be used as windbreaks to shield the ramp and stockpile area from the prevailing winds. • Stockpiles should be stabilised by securing with nets or other suitable sheeting material. • The stockpile pad will be re-shaped to remove any steep embankments during the final rehabilitation and closure phase. • After rehabilitation is complete, no topsoil shall be left over		
Rehabilitation of access roads and surrounding site	• Visual pollution	• Any access road or portions thereof, constructed by the tenants/operators shall be removed and or rehabilitated to the satisfaction of the HSEO. • Any gate or fence erected by the tenants/operators which is not required by the landowner, shall be removed and the land restored to the pre-construction state	Continuous	Principal contractor Contractors
Removal of construction equipment, vehicles, machinery and infrastructure	• Visual pollution • Nuisance Infrastructure	• All construction equipment/vehicles and machinery should be removed immediately from the site at the end of defects liability period. • The removed materials should be transported and kept in safe place for use by the owners and tenants/operators in other works. • The area should be cleaned and all domestic wastes, debris/waste metals, grease and oils must be cleaned up	Continuous	Principal contractor Contractors

		and disposed of in a manner approved by competent authorities. • There must be a removal of all portable toilets, bins, machinery, and other equipment on site as according to relevant legislation		
Monitoring	• Compliance management	• Monthly HSEO inspections will take place during construction and during rehabilitation to ensure that objectives are being met.	Continuous	Principal contractor Contractors

13.5. Implementation of the EMP

All operations activities will be carried out in compliance with the relevant legal requirements. No significant impacts are anticipated for the activities that have been identified and management and mitigation measures are in place for potential risks and mitigation.

This EMP.

- Has been prepared pursuant to identified aspects and hazards involved in sand mining operations at the Swakopmund Municipality sand mining borrow pits and their tenants/operators will be required to comply and will be a contractual requirement.

13.6. Location of the Environmental Management Plan

The HSEO should ensure that a copy of this EMP is always available on site. This includes any EMP, or other document used to guide the overall management of environmental, health and safety aspects of the entire sand mining operations.

The following are also examples of documents to be kept on site or at the tenants/operations offices:

- Site Diary
- I & AP Complaints register.
- Environmental incidents register.
- Non-conformance Reports.
- Method Statements.
- Material Safety Data Sheets (MSDS).
- Written Corrective Action Instructions.
- Safe disposal certificate for all types of waste disposed of.
- Health, Safety and Environmental Training Records.
- Notification of Emergencies and Incidents.
- Copies of monthly reports
- Minutes of site meeting including discussions on environmental issues

13.7. Compliance Assessment

The HSEO should ensure that the requirements contained in this EMP are complied with. Clear records of compliance issues and/or the compliance status with this EMP should be kept for assessment either as part of any environmental audits or performance assessments conducted for the land servicing and construction developments.

Should any issues of non-compliance be identified, these should be rectified immediately, or a clear action plan complied to ensure that the issues are addressed as quickly as possible.

13.8. Conclusion

This EMP has a long-term objective to ensure that:

- Environmental management considerations are implemented from the design phase of the project.
- Contractors can and shall include any costs of compliance with this EMP into the tender prices.
- Precautions against environmental damage and claims arising from such damage are taken timeously.
- The completion date of the various contracts is not delayed due to environmental problems with the landowner, communities or Regulatory Authorities arising during the project execution.

This EMP is legally binding because it will form part of the contract between the Municipality of Swakopmund and the tenants/operators and their staff members.

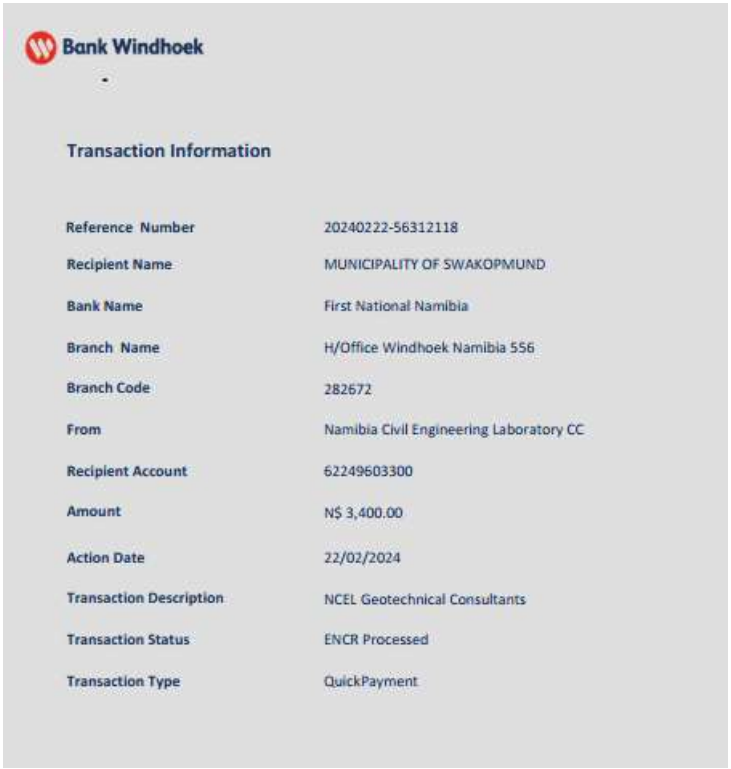
It is crucial for all recommendations made in this EMP to be appropriately implemented on site during the sand mining operations. Compliance monitoring by an appropriately qualified HSEO will serve as a means of verifying the degree to which the EMP is being implemented on site.

14. APPENDICES

Appendix A: Stakeholder Engagement

A stakeholder meeting was scheduled for Friday, 15 March 2024 at 09h00, venue paid for and was held at the Tamariskia Community Hall. However, no one pitched up for the scheduled meeting.

Picture 23 Proof of Booking of Stakeholder Engagement Venue



Picture 24 Proof of Payment for the Stakeholder Engagement Venue

Picture 25 Entrance to the Tamariskia Community Hall.

Picture 26 Provisions made for I&AP attendance

Picture 27 Provision made for I&AP attendance

Picture 28 BID Documents printed and availed for I&AP's

Appendix B: Newspaper Adverts

The Namibian 22 February 2024

THE NAMIBIAN

THURSDAY 22 FEBRUARY 2024 9

Spescare
Your Partner in Rehabilitation

WE ARE HIRING

Spescare Swakopmund Sub-Acute hospital opened in August 2017. Our modern hospital is a great endorsement of how we aim to improve the lives of our patients and aid them to recover with the support of professional nursing staff, a multidisciplinary team of specialists and the latest rehabilitation equipment. Spescare is an Equal Opportunity Employer in Namibia and invites suitable qualified candidates to apply for our **Reception & Admission Clerk** role to

PUBLIC NOTICE
ENVIRONMENTAL IMPACT ASSESSMENT

NCEL Geotechnical Consultants Cc hereby give notice to all potentially interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the following:

Project Details:

The Municipality of Swakopmund (the proponent) plans to perform a thorough geotechnical assessment of its current sand mining borrow pits located 11.2 kilometres from the Swakopmund Town Centre on the left side of the B1 national highway opposite Nonidas.

This assessment aims to determine the remaining material reserves, formulate recommendations for effective management, and carry out an environmental impact assessment to address all associated environmental issues. Additionally, the municipality seeks to obtain an Environmental Clearance (ECC) for the entire sand mining borrow pits site measuring 55.97 hectares.

NCEL Geotechnical Consultants Cc has been appointed as the Environmental Assessment Practitioner to undertake the EIA and, all Interested and Affect Parties (IAP's) are requested to attend a Stakeholder's meeting to be held at the Tamariskia Community Hall, Swakopmund, Date: Friday, 15 March 2024 at 09h00 in the morning.

The Proponent: Municipality of Swakopmund
Environmental Assessment Practitioner (EAP):
NCEL Geotechnical Consultants Cc

Registration of I&AP's and Submission of Comments
In line with Namibia's Environmental Management Act (No. 7 of 2007) and EIA regulations (GN 30 of 6 February 2012), all I&APs are hereby invited to register, request a BID document, submit their comments, concerns, or questions before 05 April 2024 in writing to:

Mail: Po Box 2112, Swakopmund, Post Code 13001, Namibia
Email: theo.uwanga@gmail.com and info@ncel.com.na
Mobile: +264814815077

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Picture 29 The Namibian 22 February 2024 Advert

Namib Times 23 February 2024

23 FEBRUARY 2024

NAMIB TIMES 11

NOTICES & VACANCIES

KINGLAW

ESTATE NOTICE

ESTATE NUMBER: E 222/2024

In the estate of the late Hannes Kögl, Id No 570918 0057 2, who died on 21 August 2023, resided at 857 Bernhardt Esau Street, Tamariskia, Swakopmund, Namibia and who was widowed.

Creditors and debtors of the above estate are called upon to lodge their claims or pay their debts to the estate at the undermentioned address within a period of 30 days from date of publication of this notice.

H E A-HENS
Agent of the Executrix
c/o KINGHORN ASSOCIATES
Incorporated
Hilya Allons
2 - 6 Tobias Hainyeko Street
P O Box 1450
Swakopmund
(REF: HEA/kv EST 330/0081-50)

KINGLAW

ESTATE NOTICE

ESTATE NUMBER: E 219/2024

In the estate of the late Erika Schlaacke, Id No 380827 0014 7, who died on 30 September 2023, resided at Frail Care Centre, Antonius Residence, Daniel Tjongarero Avenue, Swakopmund, Namibia and who was divorced.

Creditors and debtors of the above estate are called upon to lodge their claims or pay their debts to the estate at the undermentioned address within a period of 30 days from date of publication of this notice.

H E A-HENS
Agent of the Executrix
c/o KINGHORN ASSOCIATES
Incorporated
Hilya Allons
2 - 6 Tobias Hainyeko Street
P O Box 1450
Swakopmund
(Ref: HEA/kv EST 330/0081-50)

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The Proponent: Municipality of Swakopmund
Environmental Assessment Practitioner | EAP:
NCEL Geotechnical Consultants Cc

Registration of I&AP's and Submission of Comments
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Mail: Po Box 2112, Swakopmund, Post Code 13001,Namibia
Email: theo.ncelgis@gmail.com and info@ncel.com.na
Mobile: +264814815077

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- Follow safe w
site specific a
- Health and S
- Operate the m
requirements

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- Minimum 3 y
- Valid drivers'
- Competent t
Loader, Truc

RESPONSIBILITI
- Good comm
- Be able to w
- Be willing to
- He/ She mu

LIONS

Vacancy - Swakopmund Lions Frail Care Centre

is seeking an experienced Sister-In-Charge for a full-time position.

Essential Criteria

* Namibia Citizen between the age of 40 - 55 years
* An understanding and knowledge of Geriatric Disease
* Current registered with the Nursing Council of Namibia
* Minimum Requirements

Picture 30 Namib Times 23 February 2024 Advert

The Namibian 29 February 2024

16 THURSDAY 29 FEBRUARY 2024

EMBASSY OF THE UNITED STATES OF AMERICA

INVITATION TO TENDER FOR 19WA8024Q0007 – SUPPLY AND INSTALLATION OF AIR CONDITIONERS AT US EMBASSY RESIDENTIAL PROPERTY, WINDHOEK. CLOSING DATE: MARCH 20, 2024.

The Embassy of the United States of

PUBLIC NOTICE
ENVIRONMENTAL IMPACT ASSESSMENT

NCEL Geotechnical Consultants Cc hereby give notice to all potentially Interested and Affected Parties (I&APs) that an application will be made to the Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the following:

Project Details:

The Municipality of Swakopmund (the proponent) plans to perform a thorough geotechnical assessment of its current sand mining borrow pits located 11.2 kilometres from the Swakopmund Town Centre on the left side of the B1 national highway opposite Nonidas.

This assessment aims to determine the remaining material reserves, formulate recommendations for effective management, and carry out an environmental impact assessment to address all associated environmental issues. Additionally, the municipality seeks to obtain an Environmental Clearance (ECC) for the entire sand mining borrow pits site measuring 56.97 hectares.

NCEL Geotechnical Consultants Cc has been appointed as the Environmental Assessment Practitioner to undertake the EIA and, all Interested and Affect Parties (IAPs) are requested to attend a Stakeholder's meeting to be held at the Tamariskia Community Hall, Swakopmund, Date: Friday, 15 March 2024 at 09h00 in the morning.

The Proponent: Municipality of Swakopmund
Environmental Assessment Practitioner (EAP):
NCEL Geotechnical Consultants Cc

Registration of I&AP's and Submission of Comments
In line with Namibia's Environmental Management Act (No 7 of 2007) and EIA regulations (GN 30 of 6 February 2012), all I&APs are hereby invited to register, request a BID document, submit their comments, concerns, or questions before 05 April 2024 in writing to:

Mail: Po Box 2112, Swakopmund, Post Code 13001, Namibia
Email: theo.uvanga@gmail.com and info@ncel.com.na
Mobile: +264814815077

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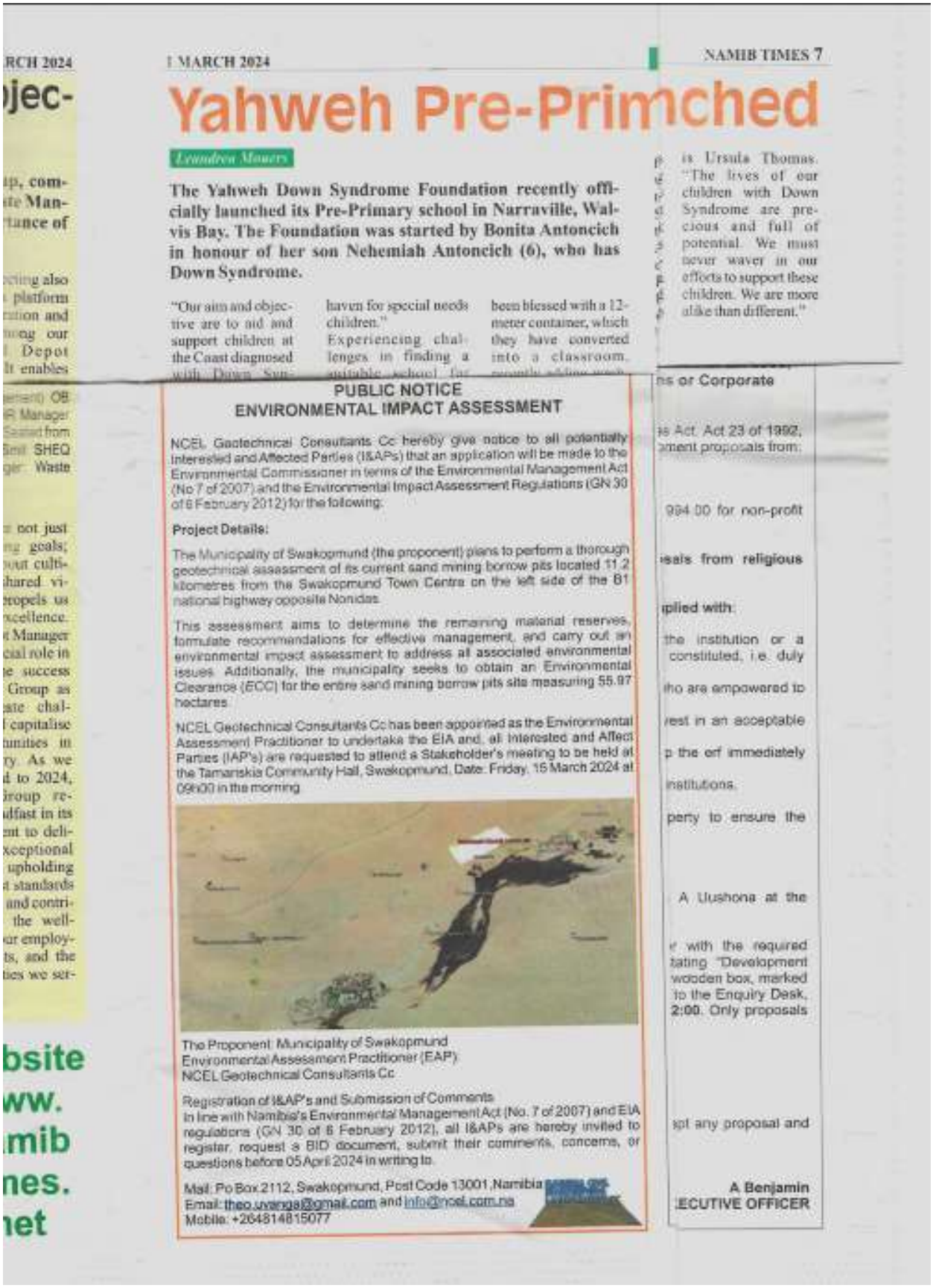
Etana: Henry van Rooi

Picture 31 The Namibian 29 February 2024 Advert

Namib Times 01 March 2024



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1 MARCH 2024 NAMIB TIMES 7

Yahweh Pre-Primched

Lyndsey Mouers

The Yahweh Down Syndrome Foundation recently officially launched its Pre-Primary school in Narraville, Walvis Bay. The Foundation was started by Bonita Antoncich in honour of her son Nehemiah Antoncich (6), who has Down Syndrome.

"Our aim and objective are to aid and support children at the Coast diagnosed with Down Syn- haven for special needs children."

Experiencing challenges in finding a suitable school for been blessed with a 12-meter container, which they have converted into a classroom,

is Ursula Thomas. "The lives of our children with Down Syndrome are precious and full of potential. We must never waver in our efforts to support these children. We are more alike than different."

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A Benjamin
ECUTIVE OFFICER

PUBLIC NOTICE
ENVIRONMENTAL IMPACT ASSESSMENT

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Mail: Po Box 2112, Swakopmund, Post Code 13001, Namibia
Email: theo.uvanga@gmail.com and info@ncel.com.na
Mobile: +264814815077

Picture 32 Namib Times 01 March 2024

Appendix C: Copy of Request for Consultancy Services Procurement Reference # CS/RP/SM-012/2023

MUNICIPALITY OF SWAKOPMUND

(064) 4104100
(064) 4104120
Fax2email: 0886519126
53 Swakopmund
NAMIBIA
www.swkmun.com.na
pmu@swkmun.com.na

Ref No: 16/1/1/1
16/1/3/2 16/1/3/4

Enquiries: Ms P Engelbrecht

DEPARTMENT OF ENGINERING SERVICES
REQUEST FOR CONSULTANCY SERVICES

PROCUREMENT REFERENCE NO.:	**CS/RP/SM-012/2023**
SUBJECT MATTER:	**GEOTECHNICAL ASSESSMENT OF MUNICIPAL COUNCIL SAND MINING BORROW PIT AREA**
INVITATION:	The Municipality of Swakopmund invites you to submit your sealed quotation with the best offer for the procurement as per specifications in the prescribed document available.
SEALING & MARKING OF QUOTATIONS	Quotations should be **sealed in a single envelope, clearly marked** with the **Procurement Reference Number**, addressed to the Municipality of Swakopmund with the **Bidder's name and contact information at the back of the envelope**
SPECIFICATIONS:	As per specified documentation Only quotations made on the **official document** will be accepted.
ENQUIRY	**Ms P. Engelbrecht, Environmental Officer - Engineering & Planning Services or pmu@swkmun.com.na** **☎+264 64 4104400**
DOCUMENTATION:	Documents are available at the Municipal Website at www.swakopmun.com and no documents will be handed out or collected from the PMU until further notice.
SUBMISSION OF SEALED QUOTATION	**Monday, 27 November 2023 @ 11:00** ***RED* Quotation Box located in the foyer of the Municipal Head Offices, cnr Rakotoka Street & Daniel Kamho Avenue, Swakopmund**

25 October 2023
DATE OF INVITATION

C McClune
GENERAL MANAGER: ENGINEERING & PLANNING SERVICES

Picture 33 Copy of Request for Consultancy Services Procurement Reference # CS/RP/SM-012/2023

Appendix D: Appointment Letter from Municipality of Swakopmund

MUNICIPALITY OF SWAKOPMUND

(064) 4104100
(064) 4104213
53 Swakopmund
NAMIBIA
Web www.swkmun.com.na
swkmun@swkmun.com.na

Ref No: 16/1/3/4 – 16/1/2/2

Enquiries: Mr H Kanandjembo

27 December 2023

NOTICE TO BIDDER SELECTED FOR AWARD

NCEL GEOTECHNICAL CONSULTANTS CC
P O BOX 26667
WINDHOEK
10005

Dear Sir/Madam

info@ncel.com.na

PROCUREMENT REFERENCE NUMBER: CS/RP/SM-012/2023 – GEOTECHNICAL ASSESSMENT OF MUNICIPALCOUNCIL'S SAND MINING BORROW PIT AREA

Kindly note that in terms of section 55(5) of the Public Procurement Amendment Act 2022 (Act No. 3 of 2022) **NCEL GEOTECHNICAL CONSULTANTS CC** has been selected for award.

You are hereby informed that the abovementioned bid with the total value **N$ 267 963.18 (VAT Incl.)** has been accepted by the Accounting Officer.

Should you require more information, please do not hesitate to contact the Head of Procurement Management Unit, Mr H Kanandjembo, at telephone number (064) 4104104 or by e-mail, pmu@swkmun.com.na.

Yours faithfully

A Benjamin
ACCOUNTING OFFICER
/id

Picture 34 Appointment Letter from Municipality of Swakopmund

Appendix E: Curriculum Vitae of Environmental Assessment Practitioner

D.O.B. September, 24th 1977
P.O. Box 2112, Swakopmund, Namibia
Mobile: +264811405898 or +2648140815077
Email: theo.uvanga@gmail.com & quintessentialtrading@gmail.com

Skills and Attributes

- Demonstrates strong attention to detail in all aspects of work, meeting organisational standards in both the operational and strategic aspects of a role.
- Excellent analytical and critical thinking ability, with a postgraduate qualification in Human and Sustainable Development and a graduate qualification in Public Administration
- More than ten (10) years hands on working experience in Occupational Health, Safety, Environment & Communities in a Mining and Processing environment at middle and senior management level.
- More than seven (7.9) years hands on experience in sustainable development and socio-economic justice work at Management Level.
- 6 years working experience within a Development Finance Institution in the field of environment and social governance and sustainability as well as Enterprise Risk Management at Senior Management Level.
- Project Management skills in property development and construction management.
- Strong knowledge and combined working experience of more than twenty-four (24) years on sustainable development, poverty-related issues, trade politics, rural development, occupational health and safety and environmental protection, public health (HIV/AIDS), gender equity issues and development finance and land servicing and construction on senior management level.
- Strong Health, Safety & Environmental acumen, working knowledge and 1st and 2nd Party ISO14001:2015 and ISO45001 implementation, management, and certification audit experience.
- Hands on experience in conducting Environmental Social Impact Assessment (ESIA) and Environmental and Social Management (ESMP) Plans.
- Strong knowledge and working experience of the Environmental Impact Assessment framework.
- Strong workshop facilitation and training skills
- Substantial development policy work experience.
- Proven ability to work effectively in a team environment and strong interpersonal skills.
- Outstanding writing skills including the ability to synthesise complicated policy issues into digestible, actionable briefings and to communicate our agenda to non-specialist audiences.
- Excellent time management, forward planning, and prioritisation skills, with the ability to work under pressure and to deadlines.
- Proven researching ability and attention to detail.
- A clear understanding of the links between policy, lobbying, campaigning, and media work.
- Adding value by integrating sustainable development management with the business context and process
- Track record in mobilising support from donors and can demonstrate beneficial, tangible outcomes.
- Ability to undertake vigorous networking, investing in relationships to continually inform, challenge, and improve advocacy messaging and tactics.
- Proven team leadership, decision making, effective management skills, can demonstrate ability to work both collaboratively and independently.
- Ability to coordinate and delivery of agreed plans or strategies.
- A commitment to the highest standards of professional endeavour and the ability to take a leadership role in the community.
- An awareness of ethical, social, gender and cultural issues and their importance in the exercise of professional skills and responsibilities.
- Ability to do research appropriate for an applied research project.
- Influencing internal and external teams and stakeholders to achieve optimal environmental and sustainable development outcomes.
- Taking responsibility and accountability for own behaviour, performance, and development
- Experience of effectively influencing outside own team and successfully representing specific programme or specific issues
- Ability to represent organisation at a strategic level and in high profile environments.
- Ability to travel at short notice including willingness to travel and work unsocial hours when necessary to meet and exceed programme goals.
- Track record of managing teams across various industries

Qualifications and Training

Dates (dd/mm/yyyy)	Qualifications obtained/complete	Place of Training
20 October 2017	**Certificate if Advance Business Lending for Development Programme for Development Financiers**	Development Bank of Namibia & On Track Learning Solutions Namibia

9 months during 2016 completed on 20 January 2017	**Practical 6-day session on Applied Systems Thinking**	Development Bank of Namibia & Systems Thinking Africa
13-15 April 2016	The SADC Development Finance Resource Centre, **Management Development Programme**	The SADC Development Finance Resource Centre, Safari Hotel, Windhoek, Namibia
8th November 2014	Activity Number: ORG00323-2014-001 Level 1 Clinical: 7 CPD Points Ethics: 1 CPD Point	NASOM Congress Namibia Society of Occupational Medicine. Otjiwa Safari Lodge, Otjiwarongo, Namibia
12-13 August 2014	**Certificate of Completion in Advanced Excel**	Empowered Mind Training Consultancy Reg. No D/2014/0589 Windhoek, Namibia
12-15 July 2014	**The Assessment of Impacts of Mining on the Environment: The geochemist's approach**	University of the Witwatersrand, South Africa
15-16 June 2014	**Environmental Geochemistry, Mineralogy, and Microbiology of Arsenic short course,**	Mineralogical Society of America and the Geochemical Society 15-16 June 2014, Miners Foundry, 325 Spring Str, Nevada City, California, 95959 USA
20/05/2013 – 05/06/2014	**NEBOSH National Environmental Diploma** Student No: 00233542 *Only obtained the certificate.*	SHEilds Ltd UK Head Office Tel: +44(0)1482 806805 Web: www.sheilds.org SHEilds House, Unit 24 Priory Tec Park, Saxon Way, Hessle, HU13 9PB. Registered business number: 4623681 England. VAT registration number: 808949875
09/06/10 - 29/11/10	**Rio Tinto Global Front Line Leadership Programme:** • Leading for a Zero Harm Culture • Understanding Self as Leader • Building & Maintaining an Engaged Team • Budgeting Management, Continuous improvement & Change management	Rio Tinto: Rössing Uranium, 28 Hidipo Hamutenya Avenue Private Bag 5005 Swakopmund, Namibia Tel. +264 64 520 9111 Fax +264 64 520 3017 http://www.rossing.com/index.html
23/08 – 27/08/2010	**Rio Tinto Health, Safety, Environmental Quality (HSEQ) Business Conformance Auditor Training for Auditors and Lead Auditors**	Richards Bay Minerals, Kwazulu Natal - South Africa Presented by Det Norske Veritas (DNV)
07-09 July 2009	Understanding Seismograph Equipment Setup & use of Instantel Seismographs Instantel Compliance Software Intro to ground vibration & air blast from blasting operations	Blast Management & Consulting Trainer: JD Zeeman Address: 61 Sovereign Drive, Centurion, 0157, South Africa Phone:+2712 345 1445 www.blastmanagement.co.za
09/2002 – 09/2003	**Master's degree: MA Africa Human & Sustainable Development** **Majors:** Development Studies, Politics, International relations, Political economy of resources and development Student ID: 200-014-360	Institute for Politics and International Studies [POLIS] Social Sciences Building **University of Leeds** Leeds, LS2 9JT, United Kingdom http://www.polis.leeds.ac.uk/
17-20/04/2001	**Budgeting Made Simple**	**Polytechnic of Namibia / Namibia University of Science and Technology (NUST)** Centre for Entrepeneurial Development 13 Storch St, Whk-West P/bag 13388, Windhoek, Namibia

		http://www.nust.na/?q=centres/centre-enterprise-development-ced
02/1996 – 11/1999	**Bachelor of Administration (4YR)** **Majors:** Politics, Public Administration, Industrial Psychology, Marketing & Economics Student ID: 9615946	**University of Namibia** Faculty of Economics and Management Science, P/bag 13301, 340 Mandume Ndemufayo Av, Pioneerspark, Windhoek www.unam.edu.na/
01/1990 – 11/1995	**High School - Grade 12** **EXAMS**: Higher International General Certificate of Secondary Education [HIGCSE} & International General Certificate of Secondary Education [IGCSE] Student ID: NA 202 52	**Deutsche Oberschule Swakopmund** currently known as Namib High School P.O. Box 118, Swakopmund, Namibia Tel: +26464404478 http://namibhigh.school.na/

Employment History

Messrs Quintessential Trading and Consultancy Pty Ltd
Quintessential Trading and Consultancy CC
Job Title: Board Chair and Executive Managing Director (Self-employed)
Jan 2015 to Present

The primary focus of this role is to provide a strategic, operational management direction and plan, which will ensure successful project delivery of Matutura Proper, Swakopmund new Township Development-Land servicing and construction of 143 houses.

- Soliciting finance and raising mezzanine finance of debt and equity instruments
- Giving presentations to funders, regulatory authorities, and prospective clients
- Negotiating Joint Venture Agreements with Local Authority and stakeholders
- Networking and stakeholder engagement
- Taking full responsibility for delivery of the construction phase,
- Maintain high health, safety, environmental and social standards and implementation thereof.
- Delivering projects to programme.
- Manage and motivate our skilled team of Site Managers, Assistant Site Managers, Ground workers, Procurement Department, Quantity Surveyors, Town Planners, CAD Designers, Mechanical and Electrical Consulting Engineers, Architect and Project Co-ordinator. ·
- Engage and motivate the team to achieve process and programme improvements.
- Support commercial teams with sub-contractors and other parties.
- Drive quality and process improvement. ·
- Ensure insurers, funders, Clients, and Building Inspectors are fully satisfied.
- Identify future resource requirements and recruit appropriately.
- Understanding what the company wants to achieve.
- Agreeing timescales, costs and resources needed to deliver a serviced and constructed Matutura Proper
- Drawing up a detailed plan for how to achieve each stage of a servicing and constructing Matutura Proper
- Selecting and leading a project team
- Negotiating with contractors and suppliers
- Directing a multi-disciplinary team
- Communicating with staff at every level, in a calm, personable way
- Ensuring that each stage of the project happens on time, on budget and to a high standard.
- Reporting regularly on progress to the client and stakeholders
- Coordinating market and customer research
- Resolving any issues or delays
- Demonstrating knowledge of all areas of construction
- Writing bids for tender and negotiating tender amounts with Contractors
- Managing several projects simultaneously with the support of junior project managers

Development Bank of Namibia, 01 Oct to 31 December 2018
Reports to Chief Executive Officer
Job Title: Acting Head: Risk and Compliance: Managed 4 direct reports.

The primary focus of this role is to enable DBN to achieve its strategic objectives by implementing and monitoring the Risk Management Framework and advising EXCO, Board of Directors, Audit, Risk and Compliance Committees on appropriate risk management strategies, with overall responsibility for risk monitoring, risk evaluation and risk measurement.

The role also focusses on creating, designing and implementing a compliance function and framework that supports the strategic goals of the Bank;

KPA 1: STRATEGIC DEFINITION, RISK, COMPLIANCE PLANNING AND ASSESSMENT

1. Planning for Risk Management
   - To ensure that strategies applied by the business are in support of the Vision and mandate of the Bank and that it is within the risk appetite/tolerance levels reflects expectations of the board and shareholders.
   - To ensure that the Risk and Control frameworks of the bank are operating effectively.
   - To ensure that these frameworks are maintained and updated as approved by the Board of Directors
   - To ensure that the risk controls required by the Frameworks remain within agreed risk appetite.
   - To ensure that risk identification, assessments, mitigation and monitoring are taking place and reported risk information to the CEO and the Board
2. Planning for Compliance Risk Management
   - To provide an effective compliance risk management framework and appropriately resourced specialized regulatory compliance support to the Bank.
   - To ensure strategic direction and focus and need to develop Bank wide compliance coverage plans and achieve the Compliance Function's targets.
3. Risk Identification and Assessment
   - To identify; evaluate; accept and/or transfer risk in line with the Bank's Risk Appetite and Tolerance levels that may ultimately impact achieving the Bank's strategic objectives.
   - To track and monitor risks assigned to business owners/risk assurers and ultimately control the risk appetitive of DBN.
4. Relationship building, communication and coordination to synergize inter-departmental dependencies
   - To minimise the bank's credit; market; investment; operational and liquidity risk exposure.
   - To understand and interpret changes in the environment and their impact on the organisation and make recommendations and changes accordingly.

KPA 2: OPERATIONAL RISK EVALUATION AND MONITORING

1. Monitoring and Evaluating Risk
   - To track implementation and outputs systematically and measure the effectiveness of programmers in order to determine exactly when a programme is on track and when changes may be needed.
   - To maintain current information on risk assessments and ensure that all relevant parties are informed.
2. Reporting and Compliance
   - To ensure compliance to reporting requirements and professional standards (disclosure).
3. Oversee, lead and monitor evaluation of department
   - To ensure smooth running of departmental functions.
4. Lead and direct financial needs and resources
   - To ensure control of financial needs and resources and remain accountable for all financial resources and departmental expenditure.

KPA 3: HUMAN RESOURCE LEADERSHIP AND DIRECTION

- To ensure ownership and buy-in is created with each team member to achieve the set objectives of the credit risk department in terms of performance and delivery.
- To ensure development and retention of employees and critical competence for the successful functioning of the credit risk department.

Development Bank of Namibia, 18 January 2016 to 30 March 2022
Reports to Head: Risk and Compliance
Job Title: Manager: Environment and Social Development: Manages 2 direct reports.

The primary focus and role were to set up an Environment and Social Management System (ESMS) to attract and meet compliance to International Financiers requirements which was ultimately used for the DBN to screen new projects, assigning environmental risk category, and conducting due diligence to evaluate environmental, occupational health and safety and social risks of projects under consideration. This helped the DBN to avoid and manage loans with potential environmental and social risks by conducting environmental and social due diligence prior to loan disbursement and adequate supervision and auditing of projects during the term of the loan agreement. I also acted as Risk and Compliance Officer in assessing enterprise risk of all applications.

- Set up, revise and implement the DBN Environmental and Social Management System (ESMS)
- Communicate ESMS requirements.
- Screen projects against Applicable Requirements (e.g., Exclusion List/national laws)
- Ensure that all loan decisions are supported by appropriate environmental and social reviews.
- Screen and review all Environmental Impact Assessments and Environmental and Social Management Plans submitted by clients.
- Participate in loan decision-making process.
- Determine and include environment, occupational health, and safety covenants in loan agreements.
- Provide in-house training to staff on the ESMS and provide guidance where required.
- Monitor, inspect, audit and track project performance.
- Report to AfDB and KFW on accidents/incidents and on a quarterly and annual basis
- Represent the DBN on forums and steering committees with like-minded organisations
- Enterprise Risk Management, appraisals, due diligence and advise to Exco.

Swakop Uranium at Husab Mine, Namibia, 08 June 2015 to 15 January 2016
Reports to Safety, Security, Health and Environmental Manager and Senior Vice President Operations
Job Title: Environmental Superintendent: Managed 12 direct reports

The primary purpose of this role was leading the development, implementation, management of the Swakop Uranium Environmental Management System (ISO14001), the delivery of quality support and technical advice to stakeholders, concentrating on compliance with legal and other requirements as well as continuous improvement of Environmental performance through the prevention and mitigation of Environmental impacts and footprints of SU's operations.

- developing and implementing environmental strategies and action plans that ensure corporate sustainable development.
- taking the lead on sustainable procurement for all goods and services.
- coordinating all aspects of pollution control, waste management, recycling, environmental health, conservation, and renewable energy.
- leading the implementation of environmental management system, standards, policies, and practices.
- ensuring compliance with environmental legislation and keeping up to date with Namibian and international regulation and legislation.
- liaising with relevant bodies such as local authorities, public bodies, and competent bodies.
- auditing, analysing, and reporting environmental performance to internal and external clients and regulatory bodies.
- give input and review impact assessments to identify, assess and reduce Swakop Uranium's (SU) environmental risks and financial costs.
- promoting and raising awareness, at all levels of SU, of the impact of emerging environmental issues, whether legislative or best practice, on corporate, ethical, and social responsibility.
- developing and implementing environmental management systems to continually improve the impact of SU on the environment and implement the commitments of the Consolidated Environmental Management Plan (EMP)
- coordinating public hearings and consultations on environmental matters.
- managing relations with the board of directors, senior management, and internal staff.
- training staff at all levels in environmental issues and responsibilities.
- participating in environmental education and research.
- negotiating environmental service agreements and managing associated costs and revenues.
- writing environmental reports, assuming the lead responsibility with the company.
- being proactive about corporate social responsibility issues and taking action to ensure these are met.
- setting organisational sustainability targets and developing plans to meet those targets and oversee their delivery.
- Represent SU on stakeholder forums such as the Sustainable Development Forum

Dundee Precious Metals Tsumeb, Tsumeb, Namibia, 10 September 2012 – 5 June 2015
Reported to DPM Vice President Environment, DMPT Senior HSE Manager & DPMT Vice President & GM
Job Title: Environmental Manager: Managed 16 direct reports.

The primary purpose of this role was the development, implementation, management, and auditing of the Dundee Precious Metals Tsumeb Environmental Management System (ISO14001), delivery of quality support and technical advice to stakeholders, concentrating on compliance with legal and other requirements as well as continuous improvement of Environmental performance through auditing, internal reviews and the prevention and mitigation of Environmental impacts and footprints.

Core Focus of work and areas which I engage on (and plan to) on a daily, weekly, and monthly basis.

- ensuring compliance with environmental legislation.
- managing the development and implementation of an environmental management system (ISO14001).
- coordinating all aspects of pollution control, waste management, recycling, environmental health, conservation and renewable energy.
- auditing, analysing and reporting environmental performance to internal and external clients and regulatory bodies.
- development and implementation of the Dundee Precious Metals Group HSEMS Auditing Framework
- developing and implementing environmental strategies and action plans that ensure corporate sustainable development.
- overseeing consultants carrying out impact assessments to identify, assess and reduce an DPMT's environmental risks and financial costs and approving reports.
- leading the implementation of environmental policies and practices.
- promoting and raising awareness, at all levels of DPMT, of the impact of emerging environmental issues, whether legislative or best practice, on corporate, ethical and social responsibility.
- coordinating public hearings and consultations on environmental matters.
- managing relations with Exco, senior management and internal staff.
- training staff at all levels in environmental issues and responsibilities.

- participating in environmental education and research.
- negotiating environmental service agreements and managing associated costs and revenues.
- writing environmental reports, assuming the lead responsibility with the company.
- leading on corporate social responsibility issues and action.
- taking the lead on sustainable procurement for chemicals and hazardous materials.
- Overall environmental management to ensure environmental compliance and stewardship for the smelter.

Rio Tinto Plc: Rössing Uranium Limited, Swakopmund, Namibia, 01 May 2012 – 6 September 2012
Front Line Manager: Reported to Manager Sustainable Development and Environment
Job Title: Advisor Product Stewardship – Environment and Communities

Rössing is committed to maintain, manage, and improve world class performance with a second-to-none reputation in Product Stewardship. By implementing and applying the relevant Rio Tinto standards and complying with the relevant legislative and regulatory frameworks, the Product Stewardship program is based on knowledge of risks, impacts and consequences and pro-active support through a simple, effective, and user-friendly system.
Core Focus of work and areas which I engaged on a daily, weekly, and monthly basis.

1. Understand and manage all current and future effects.
   - Establish, maintain, and improve an efficient documentation system and database relevant to Product Stewardship.
   - Understand and evaluate significant and potential risks, impacts and consequences which are posed by Rössing.
   - Conduct and direct necessary research and developing mitigation strategies and action plans to address significant and potential risks in conjunction with key stakeholders.
   - Mitigate and drive continuous improvement.
   - Assess direct and indirect and cumulative impacts of past, present and future activities relevant to Product Stewardship.
   - Analyse data to identify improvement opportunities and emerging areas of concern.
   - Research literature to continuously assess RUL's standards compared to relevant Product Stewardship practices.
2. Compliance
   - Assist in meeting obligations of legislative and regulatory frameworks and Rio Tinto reporting and compliance requirements on Product Stewardship.
   - Compile and provide accurate reporting of Product Stewardship data as required by Rössing, Rio Tinto and other stakeholders to ensure compliance and to track progress of objectives and targets.
   - Conduct inspections, 1st and 2nd party audits.

3. Support
   - Provide sound technical guidance and support to ensure that Rössing meets its obligations and remains a leader in assessing, avoiding, and mitigating adverse impacts.
   - Support stakeholders with the necessary knowledge and tools to drive continuous improvement.

4. Engage and networking.
   - Ensure that the concerns or complaints from the local communities are addressed in time.
   - Design and provide risk-based awareness materials and give training on Product Stewardship to employees and community.

Rio Tinto Plc: Rössing Uranium Limited, Swakopmund, Namibia, 02 June 2008 – 30 April 2012
Front Line Manager: Reported to Manager Sustainable Development and Environment
Job Title: Environmental Specialist/Advisor- GHG Emissions & HSE EMS Plant Operations
Environmental Management Section

Core Focus of work and areas which I engaged on a daily, weekly, and monthly basis.

HSE MS Maintenance: I was responsible for the day-to-day environmental matters in relation to the Rössing Processing plant/Production (*Primary crusher, fine crushing plant, extraction operations, comminution, recovery operations, tailings and water management and maintenance areas in production*) area at Rössing Uranium Limited. This includes the identification of hazards and ensuring, with support, that the risks are appropriately managed. I was a Lead Auditor for Rio Tinto conducting periodic internal audits as well as surveillance and recertification HSE audits at all Rio Tinto operations around the globe.

Areas of emphasis are but not limited to:

- Maintenance of ISO 14001 certified Environmental Management Systems (EMS)
- Ensure that all operational HSE aspects and impacts have been identified, ranked, and appropriately managed according to ISO14001, HSEMS and the performance standards for the production area.
- All Environmental related incidents reported, investigated, risks are analysed and communicated lessons learnt of significant incidents and Significant Potential Incidents (SPI's)

- Applies an appropriate level of technical knowledge in the management of Environmental Risk
- Communication and engagement: Provision of environmental technical support and feedback to operational teams
- Develops and delivers relevant Environmental messages to internal and external audiences.
- Provide competent environmental inputs at Hazard Identification and Risk Assessment (HIRA's), Hazard, and Operability Analysis (HAZOP's) and, design reviews etc.
- Participation in site investigations, EMS audits and good practice forums
- Mentoring / supporting the line i.e. incident and action management.
- Continuous interaction and regular engagement with employees and contractors
- Bi-annual engagement with Rio Tinto internal auditors
- Annual engagement with external auditors
- Conduct internal (1st Party) and external (2nd party) HSEMS and HSE Performance Standards Audits at Rio Tinto operations.
- Adds value by integrating environmental issues with the business context and processes.
- Technical input to policies and procedures
- Training provision to the line on Health, Safety & Environmental Management Systems, Rio Tinto Environmental Performance Standards and incident and action management
- Subject specific advice
- Influences internal and external stakeholders to achieve optimal environmental outcomes.
- Aligns behaviours, decisions and actions with the values and principles in the Rio Tinto "The way we work" and related guidelines and standards at Rössing.
- Monthly reporting to the line and mine wide on actions, activities, successes, and failures

1. **Implement, maintain and management of Rio Tinto Environmental Standards (E4- Greenhouse Gas Emissions)** Mine wide and with Rio Tinto Energy & Climate Strategy

- To implement and maintain RT E4-Greenhouse Gas Emissions Standard at Rössing to conform to the RT standard requirements on a continuous basis.
- Understand all current and future GHG emissions inventories and their factors.
- Identify, evaluate and prioritize significant GHG sources and
- Design and implement a Greenhouse Gas and climate change action plan with appropriate control, reduction, and mitigation measures.
- Ensure that appropriate measures are in place for metering or estimating the emissions.
- Conduct periodic reviews to identify potential risks associated with achieving set targets for GHG emissions performance.
- Ensuring that the relevant stakeholders are appropriately trained in the areas of policies, procedures, and analysis of GHG data.
- Research literature to continuously assess Rössing's standards compared to local and international practices.
- Monitor legislation and assess impact.
- Based on legislation changes, implement programmes to ensure compliance.
- Maintain audit integrity of standard for internal and third-party auditing.
- Inspections, internal and external HSEMS auditing.
- Regular engagement with external stakeholders (e.g. government, customers and public) through awareness programmes and sessions
- Monthly reporting mine wide, Rio Tinto Energy & Climate Strategy on activities and business performance to the targets
- Build relationships with outside agencies and stakeholders who specialise in GHG management and regulation to enhance RUL capacity.
- Business Engagement on Climate Change Adaptation
- Coordination with departments on GHG emissions reduction mine wide.
- RT collaborative forums (Environment, Energy & Climate Strategy, Electricity Metering & Monitoring)
- Contribute to E-bulletin articles on Climate Change, energy efficiency and GHG management.

2. **Occupational Health, Safety and Environment Representative (OHSE)** *for Environmental and Safety departments*

- Regularly inspect the workplace areas I was elected to represent, at agreed times and frequency.
- Immediately investigate the scene and details of any accident, dangerous incident or risk of serious injury or harm to any person.
- Keep up to date with workplace safety and health information provided by the employer and liaise with government and other bodies.
- Report hazards in the workplace to the employer.
- Where there is a HSE committee for the workplace, to refer any matters that I think should be considered by the committee.
- Consult and cooperate with the Management on HSE matters.
- Liaise with Management about HSE matters.
- Keep records of tasks related to the functions of a health, safety, and environmental representative.

- Where requested, participate in discussions on OHSE during the regular department/output team meeting(s) for the sections, I have been elected to represent.
- Key point of contact for staff/contractors working in Environmental and Safety building area with regard to OHSE issues/enquiries.
- Provide feedback to the Management accountable for the sections, regarding HSE areas of concern, issues to be resolved, accident or near-miss investigations.
- Chair the OHSE Representative Committee meetings on a rotational basis.
- Maintain minutes and records for the OHSE Representative Committee meetings.
- Attend OHSE Committee meetings.
- Provide support to the section Superintendents in meeting their responsibilities for ensuring employees have received appropriate HSE training, including safety refresher training etc.

Global Call to Action against Poverty (GCAP) Africa Secretariat, Dakar, Senegal, 08 August – 31 December 2007, **GCAP Africa Policy Consultant**

- Conduct research on African trade pacts & policies with the rest of the World e.g. EU-Africa Strategy, AGOA, WTO, EPA
- Formulate GCAP policy positions based on the Millennium Development Goals for African coalitions and mobilise them to engage their governments, regional trade groupings, civil society and other stakeholders.
- Organise and mobilise African national coalitions to hold events and lobbying meetings in their countries to coincide with key world summits such as the G8 Summit, WTO meetings etc.
- Organise and facilitate workshops and train African coalitions on GCAP policy demands.

Namibia Development Trust, Windhoek, Namibia, 02 February 2004 – 06 August 2007
Reported to Executive Director and Namibia Country Projects Manager
Programme Officer

- Working with the Director and National Programmes Manager to deliver policy support for the organisation's strategic priorities.
- Ensuring that NDT's campaigning, media, and lobbying products have policy credibility and effectiveness.
- Researching, monitoring, and analysing the policies of key ministries.
- Drafted and submitted proposals to funding agencies for fundraising for social programmes.
- Contributing research and analysis to NDT's policy development. Areas of focus included the following: CBNRM, GCAP, HIV/AIDS, education, poverty alleviation, development assistance, trade, and governance.
    - Implementation and Management of the Community Based Natural Resource Based Management (CBNRM) programme with non-profit organizations.
    - Partake in specific development programmes at National Office and with NDT field staff at regional office level and assist with the implementation of such programmes and projects.
    - Maintain regular contact with various Regional Offices and assist them in the maintenance of organizational and developmental activities (rural development community projects).
    - Train community-based individuals/groups in environmental awareness, management, environmental legislation and management systems and basic self-management and operational skills.

Assist in rolling out and continuous engagement of the Bristol Meyers Squib Foundation outreach HIV/AIDS education and prevention programme in Hardap and Karas regions.

- Coordinate the NANGOF/NDT Coalition on the UN Millennium Development Goals Campaign and the Global Call to Action Against Poverty in Namibia 2005-2007 on a voluntary basis.
- Steering Committee Member on the One World Action's Voices, Influences and Access Project in Southern Africa (action on Economic Partnership Agreement's and equitable trade campaign (Cotonou Agreement). 2005-2008 on a voluntary basis

- Keeping on top of key policy developments in think tanks, the wider policy community, NGOs, and media related to SADC and Africa, and communicating these internally and externally where appropriate.
- Using independent judgment in balancing and adhering to long and short-term deadlines and completing activities.
- Driving forward lengthier, longer-term research projects.
- Providing general support to the Management team at peak moments as required.
- Acts as public relations officer for NDT by engaging the media, programme recipients, donors, external and local civil society organisations in related matters.

Oxfam Canada, Ben-Hur Rural Development Centre, Gobabis, Namibia, January 2000 – 19 September 2002
Reported to Oxfam Country Representative and Toronto Head Office
Programme Manager (Jan – September 2002) Managed 25 direct reports.
Assistant Programme Manager (Jan 2000 – December 2001) Managed 20 direct reports.

- Implementation and management of the Omaheke Integrated Development Programme (OIDP) in the Omaheke Region from Ben-Hur R.D.C
- Assist marginalised rural communities to improve their lives and livelihoods through coordinating health, literacy and poverty reduction programmes.

- Overall Management and Implementation of programmes and Projects including Administration, HR, Finances, Marketing.
- Host, engage and mentor local and internship students at BHRDC.
- Implement and manage the Community Based Natural Management Programme
- Training of community groups and individuals in basic project management and human rights issues from a development perspective
- Ensure that activities @ BHRDC are implemented according to programme/project objectives and plans and in accordance with Ministry of Agriculture, Water and Rural Development (MAWRD) policy and Oxfam Canada Policy.
- Plan, Manage, Supervise and Monitor BHRDC Activities in Coordination with Oxfam Canada Country Representative.
- Liaise and coordinate with MAWRD and other partners on issues relating to management of BHRDC.
- Draft project proposals for funding to international donors for development projects
- Advise and assist the Oxfam Canada Country representative on decisions relating to BHRDC.
- Ensure that financial and narrative reports are prepared and submitted in a timely manner according to agreed formats and schedule e.g. [monthly, quarterly, annually]
- Participate at the BHRDC Steering Committee Meetings.
- Independently solve problems with creative solutions developed collaboratively with parties concerned.
- Drawing up a marketing plan and marketing of the Centre to potential clients and customers

Oxfam Canada, Windhoek, Namibia, July -October 1999

- Development internship with an international non-profit organisation working to ensure poverty and injustice is reduced and reversed through programme work.
- Researched information and helped develop policies and performed various administrative support tasks for programme support.

Accomplishments

1. Founding member and Coordinator for the UN Millennium Development Goals Campaign and Global Call to Action Against Poverty in Namibia residing within the NDT/NANGOF Socio-Economic Justice Sector from 2005-2007
2. Working Group Steering Committee Member of the One World Action, Voices, Influence and Access (VIA) Project in Southern Africa (action on Economic Partnership Agreements and equitable trade campaign Cotonou Agreement) 2005-2008
3. Steering Committee Member of the Namibia Climate Change Committee 2007 to present.
4. Conducted and undertaken various Environmental Impact Assessments throughout Namibia

Publications

UVANGA, T. & DEMPERS, R. (eds), (2006). Making trade work for women, The likely impact of the economic partnership agreements on women's rights and gender. Beef Sector in Namibia. One World action, London and Namibia Development Trust, Windhoek, Namibia

Computer Skills

- Microsoft Word, Excel, Power Point, Internet and Window's PC; standard office equipment, SAP, Taproot

Language Skills

- Fluent in English, Afrikaans (speaking, reading, writing); Fair in German (speaking, reading, writing) Otjiherero (native language), rudimentary spoken Oshiwambo

Environmental Impact Assessments done

- I have done various Environmental Management Plans for the Rio Tinto: Rossing Uranium Mine (RUL), Dundee Precious Metals Tsumeb and the Swakop Uranium at Husab Mine during my employment as Environmental Manager, Environmental Advisor and Environmental Superintendent at these mines.
- Environmental Management Plan (EMP) for the operation of Central Brick and Paving CC's brickmaking plant at Farm 19 Krumhuk, portion 7, Aris Settlement, Windhoek Rural Constituency. -July 2017
- Scoping Report and Environmental and Social Management Plan (ESMP) for the proposed construction and operation of a Gas filling, selling and storage depot on Erf 7979 and 7980, Extension 29 "DRC", Swakopmund - May 2018

- Final Environmental and Social Impact Assessment (ESIA) Report for the proposed construction and operation of a salt mine, processing facilities and ancillary infrastructure on EPL 6968 near mile 100 North of Cape Cross, Dorob National Park, Erongo Region-July 2018
- Final Report-Environmental Impact Assessment for the proposed Lafrenz Service station Situated on Erf No 327, Lafrenz Industrial Extension 3, Windhoek, Khomas Region, zoned for light industrial use opposite the junction of Ekundi and Hereford Streets -March 2019
- Environmental Management Plan (EMP) for the Township Establishment on Block 23, Matutura (Extension 1 -5, Extension 6-12, Proper, Extension 24-25, Extension 27, Extension 29-31, Extension 36-37), Remainder of Portion 5 of Swakopmund Town and Townlands No.41 Erongo Region – March 2021
- Environmental Scoping Assessment (ESA) for the proposed for the proposed Construction of ancillary infrastructures and Operation of a Briquette Factory on Farm 19 Krumhuk, portion 7, Aris Settlement, Windhoek Rural Constituency. -August 2021
- Environmental Scoping Assessment (ESA) for the Subdivision of Public Open Spaces (POS) namely, POS Erf 231 and POS Erf 233 and Rezoning of Remainder to Parastatal to erect Erongo Red Substations on Remainders (120 sqm portion of each Erf) at Matutura Proper, Swakopmund – April 2022
- Environmental Scoping Assessment (ESA) the proposed Construction of infrastructure and operation of an Abattoir on Portion 1 of Otjiwarongo Portion 15 NIDA Industrial Park -May 2023
- Environmental Scoping Assessment (ESA) for the Municipal Council Sand Mining Borrow Pit Area, Across Nonidas Swakopmund. Reference number CS/RP/SM-012/2023 – April 2024

International Conferences attended [Presented position papers and facilitated discussions]

1. Towards Action by Namibian Civil Society on Millennium Development Goals – Organized under the auspices of NANGOF in collaboration with One World Action (VIA Project) and Namibia Development Trust, Workshop held at Hotel Fürstenhof- Windhoek, Namibia March 09,2005
2. Southern Africa UN Millennium and GCAP Campaign meeting, Harare Zimbabwe 1st September 2005
3. Draft Steering Committee Meeting: Taking Stock and Moving Forward: Consolidation GCAP Africa in 2005 &
4. the future Workshop" Harare, Zimbabwe November 7-9th 2005 Convened by GCAP Africa Steering Committee and organised by Mwelekeo wa NGO
5. Southern Africa GCAP Regional Planning Consultation, Rosebank Hotel, Rosebank, Johannesburg South Africa, 17 February 2006
6. One World Action: Voices Influences and Access Project: Regional Steering Committee Group Meeting and
7. Capacity Building Session, Rosebank Hotel, Rosebank, Johannesburg South Africa, 8th –10th March 2006
8. GCAP Africa and International Facilitation Group Meeting, Crown Plaza Hotel, Hamra, Beirut, Lebanon, 11- 15 March 2006
9. GCAP Ambassadors Orientation Meeting, Victoria Falls, Zimbabwe 21 –24 September 2006
10. World Social Forum Meeting: Millennium Development Goals and Trade Liberalisation. Moi International Sports Centre, Kasarani, Nairobi, Kenya, 20-25th January 2007
11. One World Action: Voices Influences and Access Project 4th VIA Project Partners Meeting, Intercontinental Hotel, Lusaka, Zambia, 07-11 March 2007
12. Conference on Poverty Reduction and Unemployment and Entrepreneurship development in Namibia, Safari Hotel, Windhoek, Namibia 4-6 June 2007
13. GCAP AFRICA REPS TO AU SUMMIT: Continental Civil Society Conference on the Proposed African Union
14. Government & Accelerating Africa's Integration and Development in the 21st Century: Prospects and Challenges of Union Government, Ghana Institute for Management and Public Administration (GIMPA), Greenhill, Accra, Ghana, 22-25 June 2007
15. Africa-Asia NGO Network Workshops in Kenya and Japan, - Creating and Strengthening Relations and Policy Capacity of NGO Networks in Africa and Asia including Japan, 17 – 18 September 2007 (Nairobi, Kenya workshop)
16. One World Action: Voices Influences and Access Project. Civil Society debate on implications of SADC-EU Economic Partnership Agreements on gender and trade in Southern Africa. Hotel Avenida, Maputo, Moçambique, 22-24 April 2008
17. National Climate Change Awareness-Raising Workshop, Safari Hotel, Windhoek, Namibia 23-25 September 2008
18. The Assessment of Impacts of Mining on the Environment: The geochemist's approach, 12-15 July 2014, University of the Witwatersrand, South Africa
19. Environmental Geochemistry, Mineralogy, and Microbiology of Arsenic short course, Mineralogical Society of America and the Geochemical Society 15-16 June 2014, Miners Foundry, 325 Spring Str, Nevada City, California, 95959 USA
20. 9th International Conference on Mine Closure, 1-3 October 2014, The University of the Witwatersrand (WITS), Johannesburg, South Africa, 1-3 October 2014, Sandton Convention Centre, Johannesburg, South Africa
21. Namibia Society of Occupational Medicine Congress, Otjiwa Safari Lodge, Otjiwarongo, Namibia, 8th November 2014. Activity number: ORG00323-2014-001
22. Management Development Programme, The SADC Development Finance Resource Centre, 13-14 April 2016, Safari Hotel, Windhoek, Namibia
23. Transformative Scenario Planning, The University of Namibia (UNAM), the University of Cape Town (UCT) and Oxfam, in collaboration with the Desert Research Foundation of Namibia, 30-31 May 2016, Heja Game Lodge, Windhoek
24. Consultation Workshop to discuss the Draft National Science, Technology and Innovation Policy, 22 June 2016 at the Safari Hotel and Conference Centre, Windhoek

25. African Drought Conference, Ministry of Environment and Tourism,15-19 August 2016, Windhoek Country Club and Resort, Namibia
26. Attendance of the COP23 to the United Nations Framework Convention on Climate Change from 6 to 17 November 2017 in Bonn, Germany
27. Attendance of negotiations and deliberations on the COP24 and the CMP14 to the United Nations Framework Convention on Climate Change (UNFCCC) taking place from 3-14 December 2018 in Katowice, Poland.
28. Attendance of negotiations and deliberations on the COP25 and the CMP15 to the United Nations Framework Convention on Climate Change (UNFCCC) taking place from 25 November -13 December 2018 in Madrid, Spain.

References

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DECLARATION: I declare that all particulars furnished in this document are true and correct and can be verified by official certified documents and sources.

Mr. Theofelius Uvanga
Thursday, 11 January 2024

EAPAN

ENVIRONMENTAL ASSESSMENT PROFESSIONALS OF NAMIBIA

PROFESSIONAL MEMBERSHIP 2024

This is to certify that

Theo Uvanga

Is a registered member of EAPAN under the following membership category

"ENVIRONMENTAL MANAGER"

President *Secretary*

Membership No: 137

Valid from 01 January 2024 to 31 December 2024

Appendix F: GEOTECHNICAL REPORT GEOTECHNICAL ASSESSMENT OF MUNICIPAL COUNCIL SAND MINING BORROW PIT AREAS, IN THE ERONGO REGION APRIL 2024

GEOTECHNICAL REPORT

GEOTECHNICAL ASSESSMENT OF MUNICIPAL COUNCIL SAND MINING BORROW PIT AREAS, IN THE ERONGO REGION

APRIL 2024

PREPARED BY:

NAMIBIA CIVIL ENGINEERING LABORATORY CC
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PREPARED FOR:

MUNICIPAL OF SWAKOPMUND
53 SWAKOPMUND
NAMIBIA

Geotechnical Investigation Report

NCEL-2024-Geotech-Ref-N0: 06: Geotechnical assessment for sand mining borrow pits in Swakopmund.

Report title: Geotechnical assessment of Municipal Council sand mining borrow pit areas, in the Erongo Region, Namibia.

NCEL Reference No: 06/2024

Date of issuing: 30 March 2024

For **Namibia Civil Engineering Laboratory cc**
Compiled By:

P. Ngeno, Inc. Eng.		25/04/2024
Initials & Surname	Signature	Date

Reviewed By: 

Geotechnical Investigation Report

NCEL-2024-Geotech-Ref-N0: 06: Geotechnical assessment for sand mining borrow pits in Swakopmund.

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Geotechnical Investigation Report

NCEL-2024-Geotech-Ref-N0: 06: Geotechnical assessment for sand mining borrow pits in Swakopmund.

1 INTRODUCTION

1.1 General

NCEL Geotechnical Consultants cc was appointed by Municipality of Swakopmund, on the 27th of December 2023, to carry out geotechnical assessment for Municipal Council's Sand Mining Borrow Pits area in the Erongo Region: Procurement Reference No: SC/RP/SM-012/2023.

The Terms of Reference supplied sufficient background and description of the Scope of Works to conduct geotechnical assessment for the sand mining borrow pits within the Swakopmund jurisdiction. This assessment aims to determine the remaining material reserves, formulate recommendations for effective management, and carry out an environmental impact assessment to address all associated environmental issues. Additionally, the municipality seeks to obtain an Environmental Clearance for the sand mining site.

The main objectives of this study are as follows:

- ✓ To assess the status of the sand mining borrow pits within the Municipal Council's jurisdiction.
- ✓ To estimate the remaining sand reserves in identified borrow pits.
- ✓ To evaluate the geological and geotechnical characteristics of these borrow pits.
- ✓ To identify potential risks and hazards associated with ongoing sand mining operations.
- ✓ To provide recommendations to the Municipal Council on sustainable management practices and revenue optimization.

The investigation was conducted according to the SAICE Site Investigation Code of Practice, (Site Investigation Code of Practice, 2010).

Geotechnical Investigation Report

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2 SITE LOCATION AND DESCRIPTION

The project site is located in the eastern direction of Swakopmund, across Nonidas at Latitude 22°37'43.00"S and Longitude 14°38'35.00"E, **Figure 2-1** below shows the project site. The site measures approximately 43.3174 ha in sizes and is accessible via surrounding earth roads traversing the whole site, which is currently being used by sand miners.

Topographically, the site is relatively flat, as per Google Earth Topographical Image below, slightly sloping toward the sea (east direction) with surface elevations of roughly 74.0 m above mean sea level (mamsl).

Figure 2-1: Site location (Google Earth Map)

3 FIELD INVESTIGATION

The field exploration was carried out on the 09th to 10th of February 2024 with the emphasis placed on field testing methods for determining the engineering properties of underlying material, depth of available building sand, volume of available building sand, perched water level and the excavatability. The field investigation was conducted as follows:

- ✓ Desk-top studies (site walk over or site drive, use existing information and natural features). Since the extent of the site is roughly 43.3174 ha in sizes.
- ✓ Excavation of eleven (11) test pits at pre-determined positions, with a hired backhoe to determine the depth of suitable materials (sand) and collection of samples for testing purposes. Soil profile of test pits to determine available volumes.
- ✓ Take sand samples for grading analysis, chloride content, Methylene blue adsorption value and compactability. The main purpose of carrying out testing is to determine if this material conform to Table 1, SANS 1083 minimum requirements for fine aggregate to be used in concrete.
- ✓ Sampling of test pits different soil horizons, profiling, and logging of test pits.
- ✓ Laboratory tests, analysis of findings and Reporting.

3.1 Test Pits

The subsurface conditions were assessed in eleven (11) shallow trial pits excavated across the study area by means of a hired Caterpillar Machinery to depths of 3.0m from natural ground level (deepest test pit). Test Pits were strategically placed across the site to adequately evaluate the subsoil conditions and this allocation was done by NCEL's representative on site. The test pits were labelled TP 1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10 and TP11. Representative disturbed samples were retrieved from test pits for laboratory analyses. Each pit was backfilled to original ground conditions immediately after profiling and sampling. The location and GPS coordinates are shown on **Figure 4-1 and Table 4-1 below.**

Alluvial coarse SAND has been shown to be the dominant soil types across the site. The trial pits were profiled according to the method and terminology of Jennings et al (1973) and the Core Logging Committee (1976). The detailed profiles of the individual holes and photographs are presented in **Appendix A & B**.

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Figure 3-1: Site Plan with Test Pit Positions

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Table 3:1: Trial Pits Positions (GPS Coordinates)

Trial Pit No	Final depth (m)	Elevation (m)	Coordinates	
			S	E
TP1	0 - 1.50	92	22°37'49.00"S	14°38'35.00"E
TP2	0 - 2.30	94	22°37'43.00"S	14°38'35.00"E
TP3	0.00	94	22°37'48.34"S	14°38'18.38"E
TP4	0 - 0.65	87	22°37'54.00"S	14°38'07.00"E
TP5	0 - 0.32	86	22°37'58.00"S	14°38'05.00"E
TP6	0 - 0.50	86	22°38'03.00"S	14°38'02.00"E
TP7	0 - 1.20	78	22°38'14.00"S	14°37'54.00"E
TP8	0 - 3.00	80	22°38'15.00"S	14°37'44.00"E
TP9	0 - 1.20	79	22°38'20.00"S	14°37'34.00"E
TP10	0 - 3.00	78	22°38'22.00"S	14°37'21.00"E
TP11	0 - 0.00	77	22°38'29.00"S	14°37'05.00"E

4 GEOLOGICAL SUMMARY

Available information indicates that Swakopmund is underlain by Banded gneiss, interbedded mica and graphitic schist, quartzite as well as mass flow deposits of that Swakop Group in Damara Sequence. The proposed site lies which in a flat area, consists of unconsolidated sediments of undetermined depth.

All the test pits exhibited coastal SANDs originating from littoral processes to a typical depth of 3.0m+ below ground level. These coarse sands are generally dry to slightly moist but become very moist with depth. The consistency is very loose on the surface becoming loose to medium dense with depth.

5 GROUNDWATER

No groundwater seepage encountered in any of the test pits excavated on this site.

6 LABORATORY TEST RESULTS

Representative soil samples were extracted to be subjected to laboratory tests consisting of sieve analysis, Chloride, Organic Impurities, Presence of Sugar, Deleterious Clay Content – MBT (MBV, Methylene Blue Adsorption) and Compactability Factor. The purpose of subjecting the samples to different tests is to identify the engineering properties of the various materials encountered within the study area.

All testing methods for soils were conducted as per TMH1.

6.1 Sand for concrete

In general, the transported sand that occur over this area are suitable for use in concrete. This was confirmed by the current situation, where residents are sourcing this sand for building purposes. Table 6:1 below shows the grading results obtained from sand samples taken within the Project area.

Table 6:1: Summary of Test Result of Building Sand

Screen Size	Percentage Passing Screens											
	Test Results											Specified Limits (SABS 1083)
	1	2	3	4	5	6	7	8	9		10	Natural Sand
26.5	99.8	100	100	100	100	100	99.8	99.9	100	100	100	
19	99.8	100	99.6	100	100	99.9	99	99.2	100	100	100	
13.2	99	99.6	98.8	100	99.5	99.9	97.7	97.8	98.7	99.6	97.7	
9.5	97.6	98.2	96.4	99.1	98.3	99.9	96.8	96.6	96.3	99.5	96	
6.7	94.6	97	93.9	97.5	97.1	98.9	94.2	94.5	93.7	98.2	92.8	
4.75	90	95.5	90.2	95.8	95.1	97.4	91.4	92.1	90	96.4	89.4	90 - 100
2.36	75.9	86.7	67.9	88.1	87.4	89.2	81.8	82.3	78.3	82	77	
1.18	56.6	71.6	55	69.5	67.1	70.6	55.7	71.7	66.4	61.1	64.1	
0.6	41.8	39.5	44.7	41.2	36.2	39.3	30.1	58.5	56.6	50.8	56.2	
0.425	34.6	28.7	39.2	27.4	24.8	26.8	21.7	52	51.5	45.2	51.8	
0.3	25.8	14.7	31.4	4.5	13.4	14.7	13.4	44.5	43.5	38.1	42.8	
0.15	8.2	4.2	16.4	3.6	3.2	3.1	4.5	30	26.2	17.7	29.8	5.0-25.0
0.075	2.9	1.7	5.5	1.1	0	1.2	2.4	14.3	4.5	4.3	14.6	5
F.M	3.017	2.878	2.944	2.973	2.976	2.857	3.231	2.209	2.39	2.539	2.407	1.2-3.5

Geotechnical Investigation Report

NCEL-2024-Geotech-Ref-N0: 06: Geotechnical assessment for sand mining borrow pits in Swakopmund.

Chloride (% m/m Cl)	0.045	0.058	0.002	0.358	0.021	0.233	0.262	0.002	0.283	0.04	0.445	
Organic Impurities	<	<	<	<	<	<	<	<	<	<	<	
Presence of sugar	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	
Deleterious Clay Content - MBT (MBV, Methylene Blue Adsorption)	1.4	1.4	2.1	1.5	1.6	1.5	1.8	1.3	1.9	1.2	3.3	
Compatibility Factor	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	
Plasticity Index (PI)	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	

Based on Table 6:1 above, the test results were summarised and interpreted as follows:

1) Grading Analysis, not all samples conform to the grading requirements, however, samples not conformed to minimum requirements are revealed with red texts and mostly only on 0.150 mm sieve size.

2) Fineness Modulus, all samples conform to minimum requirements.

3) Chloride and methylene blue, not conform to the requirements

4) Compactability factor conform to the minimum requirement but when this material is being used for pipeline bedding, the material should be sieved to one size.

The test results revealed coarse sand with clay content (0.075mm) of not exceeding the limit given in table 1 of SANS 1083, 2002 and based on this property, we accept and approve this material to be used in concrete, plaster, and mortar. However, we recommend this material (sand) to be sieved before use, for the purpose of removing lumps and oversize.

7 FINDINGS OF THE STUDY

The recommendations in this report were created using the information gathered during test pitting & laboratory testing. Visual observations of the in-situ material, as well as laboratory testing results, were used to provide meaningful recommendations as follows:

7.1 Estimate the volume and qualify of remaining sand reserves in the Borrow Pit.

The project area was seen to have erratic material depth across the area, therefore we subdivided the project area into five (5) LOTs to enable to calculate quantities of remaining material. Table 7:1 below summarised the dimension and available volumes of building sand.

Table 7:1: available volume of building sand

LOTS	LENGTH (m)	WIDTH (m)	DEPTH (M)	VOLUME (m3)
LOT 1	297	118	1.5	**52,569**
LOT 2	700	168	2.0	**235,200**
LOT 3	800	330	0.0	**0**
LOT 4	493	63	0.7	**21,741**
LOT 5	311	260	1.2	**97,032**
			TOTAL	**406,542**

Based on table 7:1 above, there is roughly 406,542 m3 of available building sand, which can be used in concrete, plaster, and mortar. The remaining life of this borrow pit depends on the rate of development in Swakopmund.

7.2 Potential revenue optimization strategies

The strategy employed for this project was to carry out a Direct Comparable Approach Method, which compares the charges per cubic meter (m3) of similar building sand sold in various local authorities across the Country, with the main target of the Erongo Region or Coastal Towns. After considering the above approaches of comparing building sand rates per cubic meter, the Direct Comparable Approach/method was used to determine the present market value and below is the list of building sand charges from different local authorities and private firms.

- Ondangwa Town Council N$50.00 per m3
- Usakos Municipality N$47.53 per m3

- Walvis Bay Private Firm N$159.15 per m3
- Omaruru Private Firm N$140 per m3
- Henties Bay Private Firm N$150 per m3

From the above, one can see that most local authorities are charging between N$47.53/m3 to N$50.00/m3, while private firms are charging between N$140.00/m3 to N$159.15/m3. Therefore, we recommend at least Municipality of Swakopmund to charge the average price of other local authorities, which is N$49/m3, with 10% increment every five years. We believe this is the best rate for this building sand and allows private firms / individual to buy this sand and still make profit due to sifting sand involved and mining process.

7.3 Slope stability

The project site topographical is flat. This site is literally covered by dune sand with small, scattered outcrops, therefore, any slopes created on site within the transported and residual soil horizons should be battered back to 1V:1.5H to ensure temporary safe working conditions. Excavations in very loose sand may be battered 1V:1H, and in medium dense sand or better at 2V:1H. Steeper excavated slopes were observed in borrow pit areas, therefore, it is recommended that all excavations exceeding a depth of 1,0m should be trimmed/battered back at 30° to the vertical to ensure the safety of construction personnel.

7.4 Rehabilitation of Sand Borrow pits

Rehabilitation of sand mining should be conducted in accordance with Roads Authority's rehabilitation of borrow pits along the national road network, environmental guidelines, July 2013.

8 GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

Based on visual assessment and test results, there is enough sand mining reserves of roughly 406,000 m3. This material can be used as fine aggregate for concrete, plaster and mortar. However. It is recommended that this sand to be sifted before use, for the purpose of removing oversize. Steep excavation was noted in old borrow pits and this could be dangerous to people and animals traversing this site, therefore, it is recommended that all excavations exceeding a depth of 1,0m should be trimmed/battered back at 30° to the vertical

9 CONCLUSION

The findings contained within this report are the results of investigations in accordance with normal geotechnical practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, can it be considered that these findings represent the actual state of the ground conditions away from our investigation locations.

If the ground conditions encountered during construction are significantly different from those described in this report and on which the conclusions and recommendations were based, then we must be notified immediately.

The report has been prepared for use by Municipality of Swakopmund in relation to the investigation for the geotechnical assessment for sand mining borrow pits in Nonidas, in accordance with generally accepted consulting practice. No other warranty, expressed or implied, is made as the professional advice included in this report. Use of this report by parties other than Municipality of Swakopmund and their respective consultants and contractors is at their risk as it may not contain sufficient information for further purposes.

Geotechnical Investigation Report

NCEL-2024-Geotech-Ref-N0: 06: Geotechnical assessment for sand mining borrow pits in Swakopmund.

10 REFERENCES

- Jennings JE and Knight KA (1975). A guide to construction on or with materials exhibiting additional settlement due to collapse of grain structure Proceedings 6th Regional Conference for Africa Sm and FE Durban 1975.
- Jennings, Brink and Williams (1973). Revised Guide to Soil Profiling for Civil Engineering Purposes in South Africa. The Civil Engineer in South Africa, January 1973.
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- Geology Map of South Africa and kingdoms of Swaziland and Lesotho. 1:1 000 000.

LIST OF APPENDIXES

APPENDIX A: SOIL PROFILES

APPENDIX B: TEST PIT PHOTOGRAPHS

APPENDIX C: LABORATORY TEST RESULTS

Geotechnical Investigation Report

Geotechnical assessment for sand mining borrow pits in Swakopmund - Appendixes

APPENDIX A: TEST PIT PROFILES

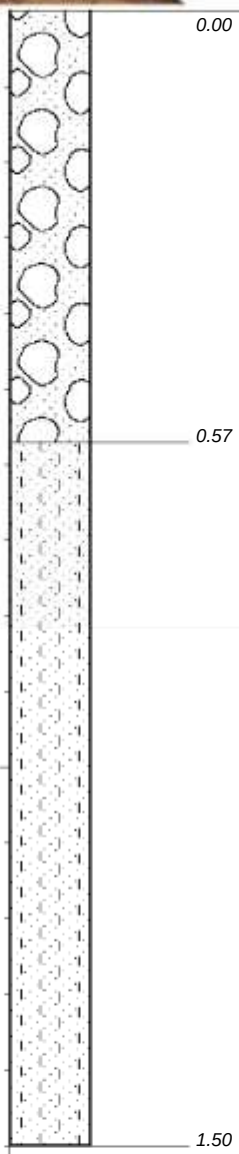
NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP1
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10



0.00 Dry, reddish brown, loose, pinholed, coarse sand with cobbles to boulders. AEOLIAN SOIL.

0.57 Dry to slightly moist, reddish-brown, loose to medium dense, voided, HARD CEMENTED COARSE SAND WITH SILTY FINE SAND. TRANSPORTED SOIL.

1.50

NOTES

1) No ground Water table encountered.
2) No plant roots.
3) Collapsing of test pit side wall noticed during test pit excavation.
4) Disturbed sample DS1 at 0.4m depth. Disturbed sample DS2 at 1.0m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 99
X-COORD : 14 38 35.0
Y-COORD : 22 37 49.0

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

HOLE No: TP1

D0CB Namibia Civil Engineering Laboratory cc *dotPLOT 7022 PpH67*

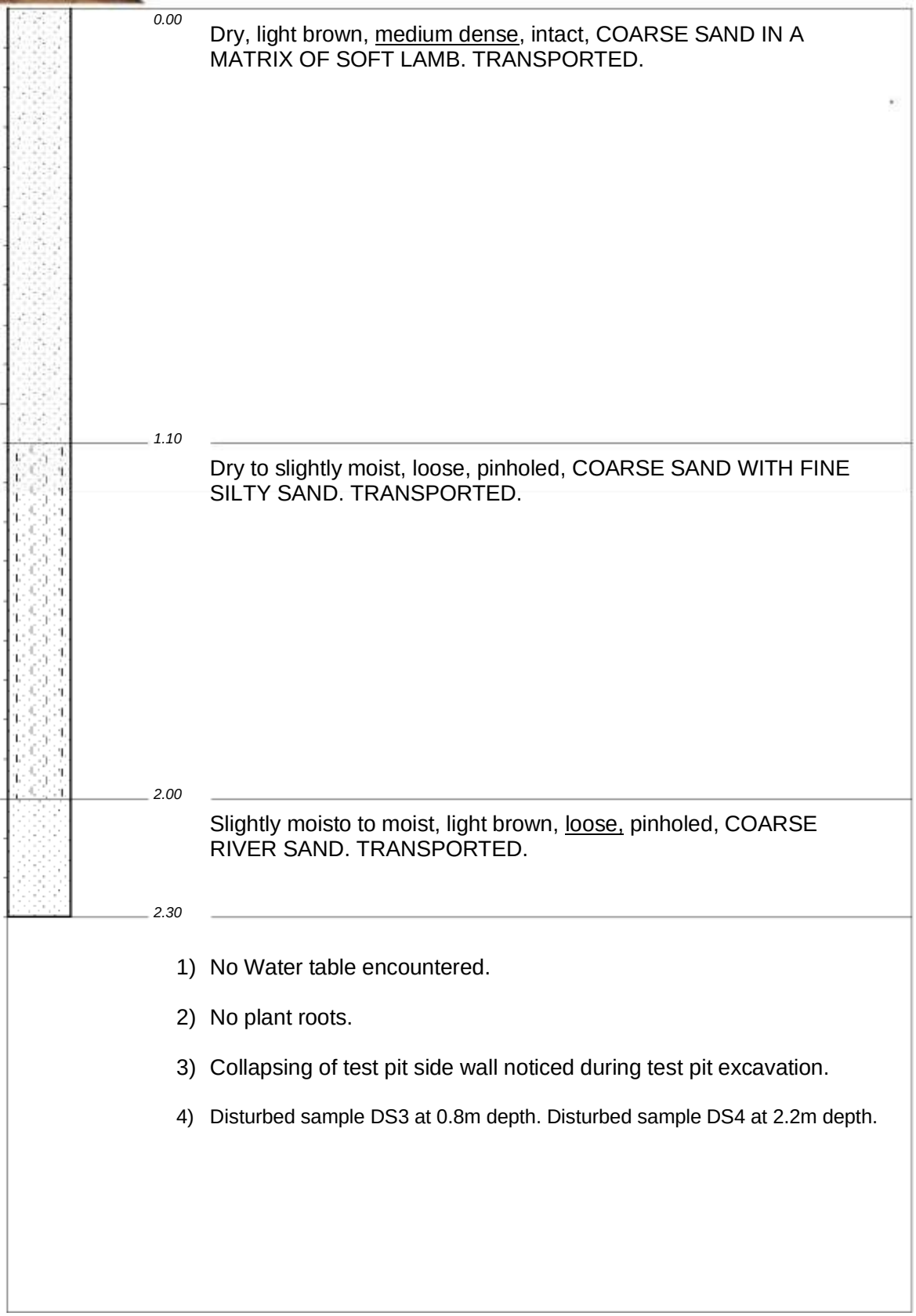
NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP2
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:15



NOTES

1) No Water table encountered.
2) No plant roots.
3) Collapsing of test pit side wall noticed during test pit excavation.
4) Disturbed sample DS3 at 0.8m depth. Disturbed sample DS4 at 2.2m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 100
X-COORD : 14 38 35.00
Y-COORD : 22 37 43.00

HOLE No: TP2

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

D0CB Namibia Civil Engineering Laboratory cc *dotPLOT 7022 PpH67*

NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP3
Sheet 1 of 1

JOB NUMBER: 06/2024

Scale 1:10

0.00 Dry, reddish brown, intact, dense, Residual Bedrock. RESIDUAL.

0.20

NOTES

1) No ground Water table encountered.
2) No plant roots.
3) Small stockpile noticed and not sampled and bedrock on the surface

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno
TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

ELEVATION : 99
X-COORD : 14 38 35.0
Y-COORD : 22 37 49.0

HOLE No: TP3

D0CB Namibia Civil Engineering Laboratory cc dotPLOT 7022 PpH67

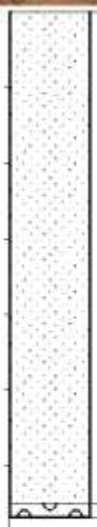
NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP4
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10



0.00
Dry, light brown, medium dense, pinholed, COARSE SAND. TRANSPORTED.

0.65
Dry to slightly moist, dense, intact, HARD GRAVEL. RESIDUAL.

0.67
NOTES

1) No Water table encountered.
2) No plant roots.
3) Shallow Test Pit due to hard gravel
4) Disturbed sample DS5 at 0.5m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 100
X-COORD : 14 38 07.00
Y-COORD : 22 37 54.00

HOLE No: TP4

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP5
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10

0.00 Dry, light brown, medium dense, fissured, COARSE CLAY SAND. TRANSPORTED.

0.32 Dry to slightly moist, dense, intact, HARD GRAVEL. RESIDUAL.

0.35

NOTES

1) No Water table encountered.
2) No plant roots.
3) Shallow Test Pit due to hard gravel
4) Disturbed sample DS6 at 0.2m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 100
X-COORD : 14 38 05.00
Y-COORD : 22 37 58.00

HOLE No: TP5

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

D0CB Namibia Civil Engineering Laboratory cc *dotPLOT 7022 PpH67*

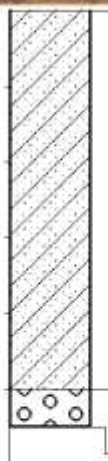
NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP6
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10



0.00 Dry, light brown, medium dense, fissured, COARSE CLAY SAND. TRANSPORTED.

0.50 Dry to slightly moist, dense, intact, HARD GRAVEL. RESIDUAL.

0.55

NOTES

1) No Water table encountered.
2) No plant roots.
3) Shallow Test Pit due to hard gravel
4) No sample taken

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 100
X-COORD : 14 38 02.00
Y-COORD : 22 38 03.00

HOLE No: TP6

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

D0CB Namibia Civil Engineering Laboratory cc *dotPLOT 7022 PpH67*

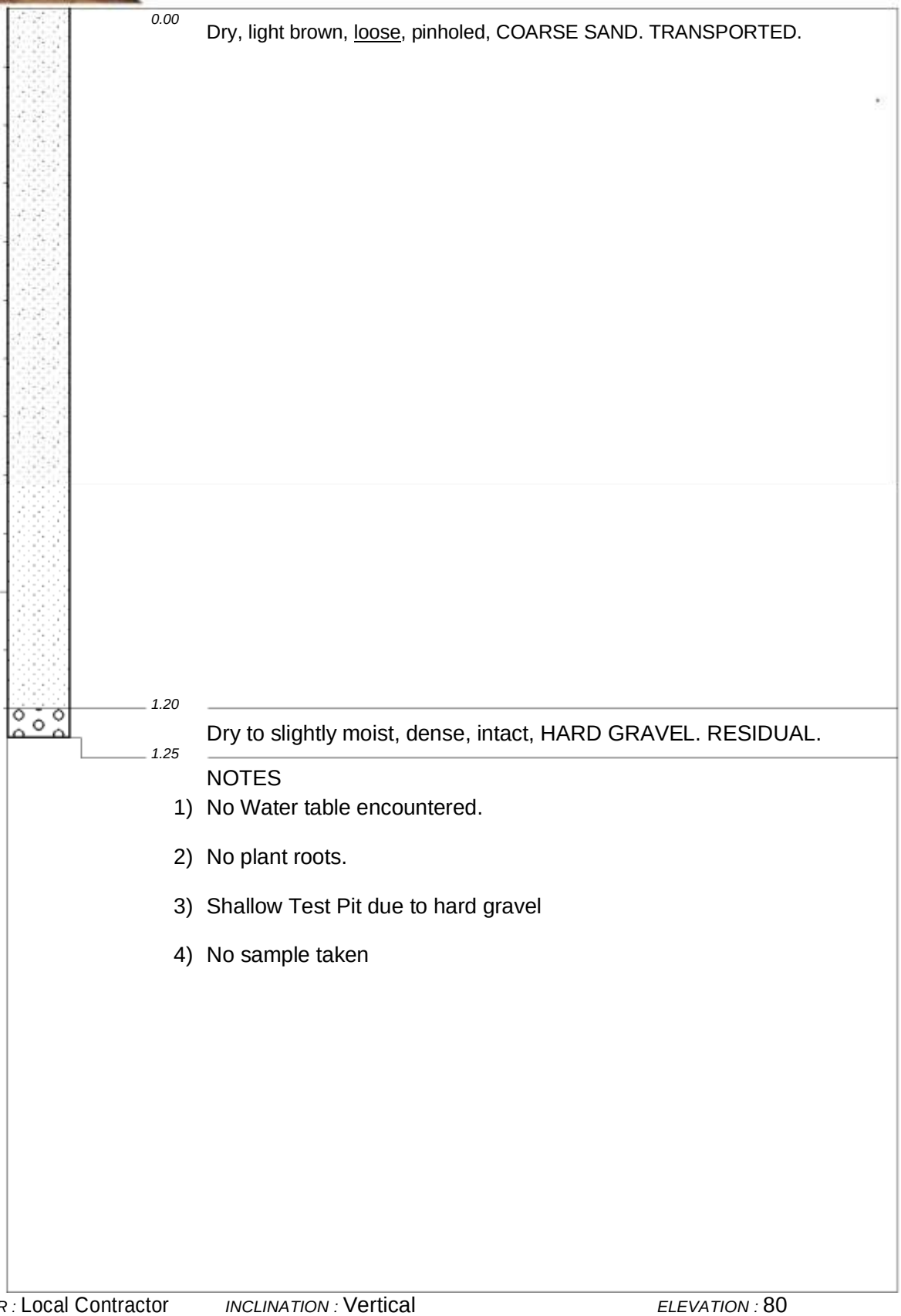
NAMIBIA CIVIL ENGINEERING LABORATORY CC

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP7
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10



0.00 Dry, light brown, loose, pinholed, COARSE SAND. TRANSPORTED.

1.20 Dry to slightly moist, dense, intact, HARD GRAVEL. RESIDUAL.

1.25

NOTES

1) No Water table encountered.
2) No plant roots.
3) Shallow Test Pit due to hard gravel
4) No sample taken

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 80
X-COORD : 14 37 54.00
Y-COORD : 22 38 14.00

HOLE No: TP7

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

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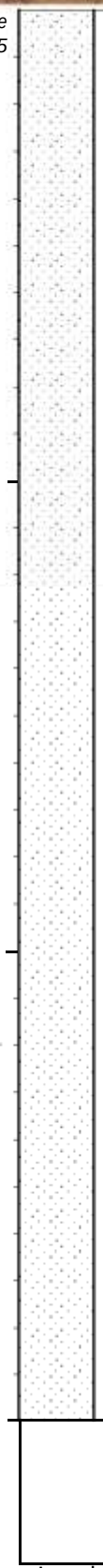
NAMIBIA CIVIL ENGINEERING LABORATORY CC

JOB NUMBER: 06/2024

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP8
Sheet 1 of 1

Scale 1:15



Dry, light brown off-white, loose, pinholed, COARSE SAND. TRANSPORTED.

NOTES

1) No Water table encountered.

2) No plant roots.

3) TLB stopped due to collasing of test pit side wall

4) Disturbed sample DS7 at 2.2m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno
TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

ELEVATION : 80
X-COORD : 14 37 44.00
Y-COORD : 22 38 15.00

HOLE No: TP8

D0CB Namibia Civil Engineering Laboratory cc dotPLOT 7022 PpH67

Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP9
Sheet 1 of 1

JOB NUMBER: **06/2024**

Scale 1:10

0.00
Dry, light brown off-white, loose, pinholed, COARSE SAND.
TRANSPORTED.

DS8

1.20
Dry to slightly moist, dense, intact, HARD CEMENTED SAND.
TRANSPORTED.
1.25

NOTES

1) No Water table encountered.
2) No plant roots.
3) TLB stopped due to hard cemented sands
4) Disturbed sample DS8 at 0.8m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024

ELEVATION : 80
X-COORD : 14 37 34.00
Y-COORD : 22 38 20.00

HOLE No: TP9

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

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NAMIBIA CIVIL ENGINEERING LABORATORY CC

JOB NUMBER: 06/2024

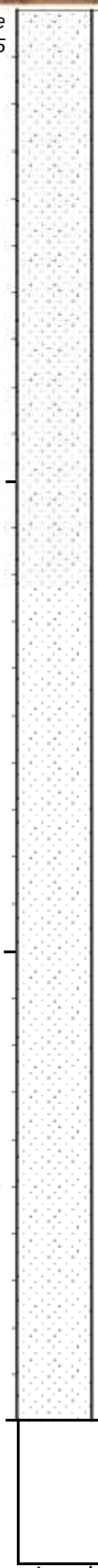
Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP10
Sheet 1 of 1

Scale 1:15

0.00

Dry, light brown off-white, loose, pinholed, COARSE SAND. TRANSPORTED.



DS9

3.00

NOTES

1) No Water table encountered.

2) No plant roots.

3) TLB stopped due to collasing of test pit side wall

4) Disturbed sample DS9 at 2.5m depth.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno
TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

ELEVATION : 90
X-COORD : 14 37 21.00
Y-COORD : 22 38 22.00

HOLE No: TP10

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Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

HOLE No: TP11
Sheet 1 of 1

JOB NUMBER: 06/2024

Scale 1:15

0.00
Dry, light brown off-white, loose, pinholed, COARSE SAND. TRANSPORTED.

DS10

3.00

NOTES

1) No Water table encountered.
2) No plant roots.
3) Disturbed sample DS10 at 2.5m depth. This sample is taken from stockpile.

CONTRACTOR : Local Contractor
MACHINE : Hired TLB
DRILLED BY : P. Ngeno
PROFILED BY : P. Ngeno
TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

INCLINATION : Vertical
DIAM : 2000 mm
DATE : 09/02/2024
DATE : 15/02/2024
DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

ELEVATION : 70
X-COORD : 14 37 05.00
Y-COORD : 22 38 29.00

HOLE No: TP11

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Municipality of Swakopmund
Municipal Council Sand Mining Borrow Pit area

LEGEND
Sheet 1 of 1

JOB NUMBER: **06/2024**

	BOULDERS	{SA01}
	GRAVEL	{SA02}
	SAND	{SA04}
	SILTY	{SA07}
	CLAY	{SA08}
Name	DISTURBED SAMPLE	{SA38}
	COBBLES	{SA58}

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :

INCLINATION :
DIAM :
DATE :
DATE :

ELEVATION :
X-COORD :
Y-COORD :

TYPE SET BY : P.Ngeno
SETUP FILE : STANDARD.SET

DATE : 11/04/2024 13:47
TEXT : ..ndMining\SoilProfile.TXT

LEGEND
SUMMARY OF SYMBOLS

D0CB Namibia Civil Engineering Laboratory cc *dotPLOT 7022 PpH67*

Geotechnical Investigation Report

Geotechnical assessment for sand mining borrow pits in Swakopmund - Appendixes

APPENDIX B: TEST PIT PHOTOGRAPHS

GEOTECHNICAL ASSESSMENT OF MUNICIPAL COUNCIL SAND MINING BORROW PIT AREAS, IN THE ERONGO REGION, NAMIBIA.

Photo 1: Proposed Project Site

Photo 2: TEST PIT NO.1

Photo 3: TEST PIT NO.1

Photo 4: TEST PIT NO.2

Photo 5: TEST PIT NO.2

Photo 6: TEST PIT NO.3 (No building sand)

Photo 7: TEST PIT NO.4

Photo 8: TEST PIT NO.5

Photo 9: TEST PIT NO.6

Photo 10: TEST PIT NO.7

Photo 11: TEST PIT NO.8

Photo 12: TEST PIT NO.9

Photo 13: TEST PIT NO.10

Photo 14: TEST PIT NO.11 (stockpile)

APPENDIX C: LABORATORY TEST RESULTS

NAMIBIA CIVIL ENGINEERING LABORATORY CC

Khomasdal Industrial Area Tel: +264 61 225 800
Buzzard Street ,Erf 5405 Email: Info@ncel.com.na
P.O Box 26667, Windhoek, Namibia
Namibia

Our ref: 16/1/3/4 - 16/1/2/2

Your ref: 0089/W/2024

Order no:

Municipality of Swakopmund
PO Box 53
Swakopmund, Namibia

Attention: Sir / Madam

Project:
Geotechnical Assessment of Municipal Council's Sand Mining Borrow Pit Area

This report contains the results of a tests performed on sand. These test were performed by our laboratory in Windhoek and relates only to the samples tested.

Sampling: The samples were sampled by NCEL Personnel.

Sampling/delivery date: 09-Feb-24

Date tested: 11-Mar-23

Sampling/Test methods: Testing as per methods detailed in the attached test results.

Remarks:

Yours faithfully

Hosea S Haukongo
For Namibia Civil Engineering Laboratory cc
Windoek branch

NAMIBIA CIVIL
ENGINEERING LABORATORY
PO Box 26667
Windhoek
Cell: +264 81 124 5044
Email: info@ncel.com.na

Khomasdal Industrial Area
Buzzard Street, Area 5405
P.O Box 26667, Windhoek, Namibia
Tel: +264-61 225800
Email address: info@ncel.com.na

SUMMARY OF AGGREGATE TEST RESULTS

Tests done according to TMH 1 Methods B1, B2, B3, B4, B6, B9, B11, B13, B14, B15, B18(a), B19, SABS 830, SANS 5832, SANS 5833, SABS 1243:1994

CLIENT: Municipality of Swakopmund **Date:** 11 March 2024

PROJECT: Geotechnical Assessment of Municipal Council's Sand Mining Borrow Pit Area

Source : Municapality's Sand Borrow Pit

Sample Number	0089/W/2024	0090/W/2024	0091/W/2024		Fine Aggregates for Concrete Sand		Fine aggregate for Plaster		Fine aggregate for Mortar		Sand for Selected Granular Fill	Sand for Selected Fill
Material Description	Dune Sand	Dune Sand	Dune Sand									
Your Sample Ref	0089/W/2024											
	Percentage Passing Sieves	**Percentage Passing Sieves**	**Percentage Passing Sieves**		**Specification SANS 1083:2008**		**Specification SANS 1090:2009**				**Specification SANS 1200 LB - Clause 3.1**	**Specification SANS 1200 LB - Clause 3.2**
Sieve Size (mm)	**Results**	**Results**	**Results**		**Max..**	**Min..**	**Max..**	**Min..**	**Max..**	**Min..**		
75.0	100	100	100								Selected granular material shall be material of a granular, that is singularly graded and 19mm between 0.6mm	Selected fill material shall be material that is free from vegetation and from lumps diameter not exceeding 30mm and stones of
53.0	100	100	100									
37.5	100	100	100									
26.5	100	100	100									
19.0	100	100	100		NA		NA		NA			
13.2	99	100	99									
9.5	98	98	96									
6.7	95	97	94									
4.75	90	96	90		100	90	100		100			
2.36	76	87	68			*100*		*90*	*100*	*90*		
1.18	57	72	55			*100*		*70*	*100*	*70*		
0.6	42	40	45		NA	*90*		*40*	*100*	*40*		
0.425	35	29	39				-					
0.3	26	15	31			*65*		*5*	*85*	*5*		
0.15	8	4	16			*20*		*5*	*35*	*5*		
0.075	2.9	2	6	5	0							
Fineness Modulud	3.02	2.88	2.94		3.51.6							

Chloride (% m/m Cl)	*0.045*	*0.058*	*0.002*		*0.03*			
Organic Impurities	<	<	<		*Colour of liquid shall not be darker than the colour of the reference solution*		-	
Presence of sugar	<	<	<		*Free from Sugar*			
Deleterious Clay Content - MBT (MBV, Methylene Blue Adsorption)	*1.4*	*1.4*	*2.1*		*0.7*			-
Compactability Factor	*0.2*	*0.2*	*0.2*			-	*Max 0.4*	
Loose Bulk Density (kg/m3)								
Consolidated Bulk Density (kg/m3)								
Bulk Relative Density (kg/m3)							-	
Apparent Relative Density (kg/m3)					-			
Water absorption (%)								
Plasticity Index (PI)	*NP*	*NP*	*NP*				*NP*	*Max 6*
Sand Equivalent								

Remarks :

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Buzzard Street, Area 5405
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SUMMARY OF AGGREGATE TEST RESULTS

Tests done according to TMH 1 Methods B1, B2, B3, B4, B6, B9, B11, B13, B14, B15, B18(a), B19, SABS 830, SANS 5832, SANS 5833, SABS 1243:1994

CLIENT: Municipality of Swakopmund **Date:** 11 March 2024

PROJECT: Geotechnical Assessment of Municipal Council's Sand Mining Borrow Pit Area

Source : Municapality's Sand Borrow Pit

Sample Number	0092/W/2024	0093/W/2024	0094/W/2024		Fine Aggregates for Concrete Sand		Fine aggregate for Plaster		Fine aggregate for Mortar		Sand for Selected Granular Fill	Sand for Selected Fill
Material Description	Dune Sand	Dune Sand	Dune Sand									
Your Sample Ref	0089/W/2024											
	Percentage Passing Sieves	**Percentage Passing Sieves**	**Percentage Passing Sieves**		**Specification SANS 1083:2008**		**Specification SANS 1090:2009**				**Specification SANS 1200 LB - Clause 3.1**	**Specification SANS 1200 LB - Clause 3.2**
Sieve Size (mm)	**Results**	**Results**	**Results**		**Max..**	**Min..**	**Max..**	**Min..**	**Max..**	**Min..**		
75.0	100	100	100								Selected granular material shall be material of a granular, that is singularly graded between 0.6 mmand19mm.	Selected fill material shall be material that is free from vegetation and from lumps and stones ofdiameternotexceeding30mm.
53.0	100	100	100									
37.5	100	100	100									
26.5	100	100	100									
19.0	100	100	100		*NA*		*NA*		*NA*			
13.2	100	100	100									
9.5	99	98	100									
6.7	98	97	99									
4.75	96	95	97		100	90	100		100			
2.36	88	87	89			*100*		*90*	*100*	*90*		
1.18	70	67	71			*100*		*70*	*100*	*70*		
0.6	41	36	39			*90*		*40*	*100*	*40*		
0.425	27	25	27		*NA*		-					
0.3	5	13	15			*65*		*5*	*85*	*5*		
0.15	4	3	3			*20*		*5*	*35*	*5*		
0.075	1.1	0	1	5	0							
Fineness Modulud	2.97	2.98	2.86		3.51.6							

Chloride (% m/m Cl)	*0.358*	*0.021*	*0.233*		*0.03*			
Organic Impurities	<	<	<		*Colour of liquid shall not be darker than the colour of the reference solution*		-	
Presence of sugar	>	<	>		*Free from Sugar*			
Deleterious Clay Content - MBT (MBV, Methylene Blue Adsorption)	*1.5*	*1.6*	*1.5*		*0.7*			-
Compactability Factor	*0.2*	*0.2*	*0.2*			-	*Max 0.4*	
Loose Bulk Density (kg/m3)								
Consolidated Bulk Density (kg/m3)								
Bulk Relative Density (kg/m3)					-		-	
Apparent Relative Density (kg/m3)								
Water absorption (%)								
Plasticity Index (PI)	*NP*	*NP*	*NP*				*NP*	*Max 6*
Sand Equivalent								

Remarks :

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SUMMARY OF AGGREGATE TEST RESULTS

Tests done according to TMH 1 Methods B1, B2, B3, B4, B6, B9, B11, B13, B14, B15, B18(a), B19, SABS 830, SANS 5832, SANS 5833, SABS 1243:1994

CLIENT: Municipality of Swakopmund **Date:** 11 March 2024

PROJECT: Geotechnical Assessment of Municipal Council's Sand Mining Borrow Pit Area

Source : Municapality's Sand Borrow Pit

Sample Number	0095/W/2024	0096/W/2024	0097/W/2024		Fine Aggregates for Concrete Sand		Fine aggregate for Plaster		Fine aggregate for Mortar		Sand for Selected Granular Fill	Sand for Selected Fill
Material Description	Dune Sand	Dune Sand	Dune Sand									
Your Sample Ref	0089/W/2024											
	Percentage Passing Sieves	**Percentage Passing Sieves**	**Percentage Passing Sieves**		**Specification SANS 1083:2008**		**Specification SANS 1090:2009**				**Specification SANS 1200 LB - Clause 3.1**	**Specification SANS 1200 LB - Clause 3.2**
Sieve Size (mm)	**Results**	**Results**	**Results**		**Max..**	**Min..**	**Max..**	**Min..**	**Max..**	**Min..**		
75.0	100	99.9	100								Selected granular material shall be material of a granular, that is singularly graded between 0.6 mmand19mm.	Selected fill material shall be material that is free from vegetation and from lumps and stones ofdiameternotexceeding30mm.
53.0	100	99.9	100									
37.5	100	99.9	100									
26.5	100	99.9	3									
19.0	99	99.2	100		*NA*		*NA*		*NA*			
13.2	98	97.8	98.7									
9.5	97	96.6	96.3									
6.7	94	94.5	93.7									
4.75	91	92	90		100	90	100		100			
2.36	82	82	78			*100*		*90*	*100*	*90*		
1.18	56	72	66			*100*		*70*	*100*	*70*		
0.6	30	59	57			*90*		*40*	*100*	*40*		
0.425	22	52	52		*NA*		-					
0.3	13	45	44			*65*		*5*	*85*	*5*		
0.15	5	30	26			*20*		*5*	*35*	*5*		
0.075	2.4	14	5	5	0							
Fineness Modulud	3.23	2.21	2.39		3.51.6							

Chloride (% m/m Cl)	*0.262*	*0.002*	*0.283*		*0.03*			
Organic Impurities	<	<	<		*Colour of liquid shall not be darker than the colour of the reference solution*		-	
Presence of sugar	>	<	<		*Free from Sugar*			
Deleterious Clay Content - MBT (MBV, Methylene Blue Adsorption)	*1.8*	*1.3*	*1.9*		*0.7*			-
Compactability Factor	*0.2*	*0.2*	*0.1*			-	*Max 0.4*	
Loose Bulk Density (kg/m3)								
Consolidated Bulk Density (kg/m3)								
Bulk Relative Density (kg/m3)					-		-	
Apparent Relative Density (kg/m3)								
Water absorption (%)								
Plasticity Index (PI)	*NP*	*NP*	*NP*				*NP*	*Max 6*
Sand Equivalent								

Remarks :

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SUMMARY OF AGGREGATE TEST RESULTS

Tests done according to TMH 1 Methods B1, B2, B3, B4, B6, B9, B11, B13, B14, B15, B18(a), B19, SABS 830, SANS 5832, SANS 5833, SABS 1243:1994

CLIENT: Municipality of Swakopmund **Date:** 11 March 2024

PROJECT: Geotechnical Assessment of Municipal Council's Sand Mining Borrow Pit Area

Source : Municapality's Sand Borrow Pit

					Fine Aggregates for Concrete Sand		Fine aggregate for Plaster		Fine aggregate for Mortar		Sand for Selected Granular Fill	Sand for Selected Fill
Sample Number	0098/W/2024	0099/W/2024										
Material Description	Dune Sand	Dune Sand										
Your Sample Ref	0089/W/2024											
	Percentage Passing Sieves	**Percentage Passing Sieves**	**Percentage Passing Sieves**		**Specification SANS 1083:2008**		**Specification SANS 1090:2009**				**Specification SANS 1200 LB - Clause 3.1**	**Specification SANS 1200 LB - Clause 3.2**
Sieve Size (mm)	**Results**	**Results**	**Results**		**Max..**	**Min..**	**Max..**	**Min..**	**Max..**	**Min..**		
75.0	100	100										
53.0	100	100										
37.5	100	100										
26.5	100	100										
19.0	100	100			*NA*		*NA*		*NA*			
13.2	100	97.7										
9.5	100	96										
6.7	98	92.8										
4.75	96	89			100	90	100		100			
2.36	82	77				*100*		*90*	*100*	*90*		
1.18	61	64				*100*		*70*	*100*	*70*		
0.6	51	56				*90*		*40*	*100*	*40*		
0.425	45	52			*NA*		-					
0.3	38	43				*65*		*5*	*85*	*5*		
0.15	18	30				*20*		*5*	*35*	*5*		
0.075	4.3	15		5	0							
Fineness Modulud	2.54	2.41			3.51.6							

Selected granular material shall be material of a granular, that is singularly graded between 0.6 mmand19mm.

Selected fill material shall be material that is free from vegetation and from lumps and stones ofdiameternotexceeding30mm.

Chloride (% m/m Cl)	*0.04*	*0.445*			*0.03*			
Organic Impurities	<	<			*Colour of liquid shall not be darker than the colour of the reference solution*		-	
Presence of sugar	<	<			*Free from Sugar*			
Deleterious Clay Content - MBT (MBV, Methylene Blue Adsorption)	*1.2*	*3.3*			*0.7*			-
Compactability Factor	*0.2*	*0.2*				-	*Max 0.4*	
Loose Bulk Density (kg/m3)								
Consolidated Bulk Density (kg/m3)							-	
Bulk Relative Density (kg/m3)					-			
Apparent Relative Density (kg/m3)								
Water absorption (%)								
Plasticity Index (PI)	*NP*	*NP*					*NP*	*Max 6*
Sand Equivalent								

Remarks :