Environmental Scoping Assessment

To Support an Application for an **Environmental Clearance Certificate (ECC)** to Permit a Gravel Extraction from a Location situated within the Windhoek Municipality

Windhoek
Khomas Region

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APP007292

Final Report

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INFORMATION SHEET	
Project Title Name	An Environmental Impact Assessment (EIA) Report in Support of an Application for an Environmental Clearance Certificate (ECC) to Permit Gravel Extraction from a Gravel Resource Situated within the Local authority of Windhoek. Windhoek Khomas Region
MEFT Application No.	**APP-007292**
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ABBREVIATIONS

TERM	EXPANSION
amsl	Above Mean Sea Level
CoW	City of Windhoek
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (Act No. 7 of 2007)
EMP	Environmental Management Plan
EMS	Environmental Management System
ha	Hectares
IAPs	Interested and Affected Parties
km	Kilometer
KRC	Khomas Regional Council
m^2	Square meters
m^3	Cubic meter
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mines and Energy
MSDS	Material Safety Data Sheet
NamRa	Namibia Revenue Authority
NSI	Namibia Standards Institute
OEC	Office of the Environmental Commissioner
PPE	Personal Protective Equipment
PPM	Parts Per Million
PV	Photovoltaic
SANS	South African National Standards
SME	Small and Medium Enterprises
SSC	Social Security Commission
STC	Shifengula Trading CC (the Applicant)
VAT	Value Added Tax
WGBCL	Windhoek Green Belt Conservation Landscape
WHO	World Health Organisation

DEFINITION OF TERMS

Term	Expansion
Aggregate	Aggregate is defined as granular raw materials consisting of gravels, crushed stones, recycled concrete stones, building and plaster sand. Primarily, aggregates are used in the manufacturing of construction products which in turn are used widely in the built environments and road transport infrastructures. When using a square sieve with an aperture of 4.75 mm, 90% of sand will pass through a square sieve whilst at least 90% of coarse stone will be retained by such a sieve. The coarse stones retained on the sieve will constitute aggregates.
Anthropogenic Impact:	Human impacts on the environment which include changes to the biophysical environments, ecosystems, biodiversity and natural resources caused directly or indirectly by human activities including global warming, environmental degradation, etc.
Biodiversity:	The variability among living organisms from all sources including terrestrial marine and other aquatic ecosystem and ecological complexes which they are part of.
Cumulative Impact	In the context of mining, means the impacts of mining activities which in themselves may not be significant but may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertaking in the area.
Decommissioning:	The process which begins after termination or cessation of mining activities or mineral processing and ends with closure. It involves, amongst others, the removal of unwanted infrastructures, making safe of the dangerous excavations and surface restoration so as to minimise the adverse environmental impacts of mining activities remaining after cessation of operation.
Environment:	All physical, chemical and biological factors and conditions which influence an object and or organism. It is also defined as the surroundings within which human beings exist and is made up of the land, water, atmosphere, plants and animal life (micro and macro) including interrelationships between the factors and the physical or chemical conditions that influence human health and well-being.
Environmental Impact:	Environmental impact is any change to the environment whether adverse or beneficial, wholly or partially, resulting from an organization activities, products or services.
Environmental Management Plan (EMP):	A working document on environmental and socioeconomic mitigation measures which must be implemented by several responsible parties during all phases of a proposed development.
General Waste	Means any waste generated on or at any premises used - (a) for residential purposes, and includes agricultural properties and small holdings; or (b) as public and/or private facilities and institutions, but does not include garden waste (unless specifically determined or authorised by Town Council subject to any conditions or limitations the Council may impose), bulky waste, business waste, builder's waste, industrial waste, hazardous waste and health care risk waste.
Gravel Reserve:	A reserve is that amount of the resource which has been quantitatively proven through drilling and other sampling methods for which the level of confidence is high.
Gravel Resource:	The extent of extractable volume is estimated with a low level of confidence, i.e. the resource is only inferred (estimated) from geological evidence and assumptions but has not been verified via drilling and other applicable sampling methods.
Hazardous waste	Means - (a) any waste containing, or contaminated by, poison; (b) any corrosive agent; (c) any flammable substance having an open flash-point of less than 90 degrees Celsius; (d) an explosive or radioactive material and substance; (e) any chemical or any other waste that has the potential even in low concentrations to have a significant adverse effect on public health or the environment because of its inherent toxicological, chemical, ignitable, corrosive, carcinogenic, injurious and physical characteristics; (f) any waste consisting of a liquid, sludge or solid substance, resulting from any manufacturing process, industrial treatment or the pre-treatment for disposal purposes of any industrial or mining liquid waste, which in terms of any law, order or directive relating to drainage and plumbing may not be discharged into any drain or sewer.

Industrial waste	Means any waste generated as a result of business, commerce, trade, wholesale, retail, professional, manufacturing, maintenance, repair, fabricating, processing or dismantling activities, but does not include general waste, garden or bulky waste, builder's waste, business waste, hazardous waste or health care risk waste.
Pollution	Means any change in the environment caused by – (a) any waste, substance or matter; or (b) noise, odour, dust or heat, emitted from or caused by any activity, including the storage or treatment of any waste, substance or matter, building and construction, and the provision of any service, whether engaged in by any person or an organ of state if that change has an adverse effect on public health or well-being of people.
Public Participation Process	The process of involving all affected parties in the design, planning and operation of a project. The process requires that the proponents give the parties to be consulted notice of the matter in sufficient form and detail to allow them to prepare their views on the matter. They are also given a reasonable amount of time to prepare their views and an opportunity to present their views to the proponents, who consider the views presented, fully and impartially.
Scoping Process	Scoping is that process of the EIA during which key environmental issues and impacts that have to be addressed are identified, and ultimately defining the scope and focus of the assessment.
Sensitive Area:	A sensitive area or environment is described as an area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists or where there is high potential for ecotourism.
Sustainable Development	"Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations" –World Commission on Environment and Development (1987). "Improving the quality of human life while living within the carrying capacity of supporting ecosystems" - Caring for the Earth: A Strategy for Sustainable Living, by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).
Waste	Means any substance or matter whether solid, liquid or any combination thereof, irrespective of whether it or any constituents thereof may have value or other use, and includes – (a) any undesirable, rejected, abandoned or superfluous matter, material, residue of any process or activity, product, by-product; (b) any matter which is deemed useless and unwanted; (c) any matter which has been discarded, abandoned, accumulated or stored for the purposes of discarding, abandoning, processing, recovery, reuse, recycling or extracting a usable product from such matter; or (d) products that may contain or generate a gaseous component

1 GENERAL BACKGROUND INFORMATION

1.1 Introduction

Shifengula Trading CC (hereinafter '**STC'**) has been given provisional approval by the City of Windhoek ('CoW') to abstract gravel materials from a location situated within the geographical boundaries of the City in the Khomas Region. The allocation is subject to STC providing these reports /documents to CoW:

- An Environmental Impact Assessment (scoping) Report relating to the gravel/sand mining activities;
- Conducting a stakeholder consultations (Minutes/Newspaper Notices to Interested and Affected Parties (IAPs);
- Preparing a geotechnical report with details of the stated available quantities to be extracted under the current application to be verified by a geotechnical engineer;
- A surveyed diagram prepared by a registered surveyor clearly indicating the locality of the proposed gravel/sand mining site, and
- A zoning certificate relating to the proposed site.

This document constitutes the scoping assessment report conducted by Ekwao.

1.2 Scope of Work

This assignment is confined to the first two requirements with the outcome intended to produce an Environmental Clearance Certificate (ECC) in terms of the Environmental Management Act and Environmental Impact Assessment (EIA) Regulations. The ECC is granted by the Environmental Commissioner (EC) in the Ministry of Environment, Forestry and Tourism (MEFT).

The brief was for Ekwao:
To gather adequate information to assess and determine potential adverse impacts, which the envisaged gravel extraction would bring to bear on the biophysical and socio-economic environments.

To develop an Environmental Management Plan (EMP) outlining practical mechanisms on how any adverse impacts associated with the gravel extraction can be eliminated, avoided, reduced or sufficiently mitigated such that the proposed activity is operated in a manner which is technically sound, economically feasible and environmentally sustainable, and

To comply with EMA by providing sufficient information to Office of the Environmental Commissioner that would allow the EC to make an informed decision when reviewing the ECC application of STC.

1.3 Methodology

The methodology adopted for this EIA has considered and involved the following aspects:

- Physical site observation of the aggregate resource, inspection of the potential on-channel extraction sites, inspection of the potential off-channel or floodplain extraction sites, taking of photographs and examination of methods proposed to extract the in-situ gravel including the downstream processing.
- Physical inspection of the existing farm roads and suitability for use as haulage routes for aggregates to end-users in the city of Windhoek, and
- To conduct a comprehensive Public Participation Process during which Interested and Affected Parties (IAPs) are provided with information on the proposed project and to invite such IAPs to provide comments or concerns.

1.4 Need for the Project

Aggregate is the lifeblood of the construction and building industry. For Namibia to achieve its objectives of becoming a developed industrialised nation, with the majority of its citizens lifted out of poverty and enjoying a good standard of living as encapsulated in Vision 2030, an adequate supply of good quality aggregates (building

stones and sand) is critically needed for the construction of infrastructure which improve the livelihood of mankind. Amongst these infrastructure is:

- affordable decent housing,
- schools,
- hospitals,
- highways & street roads,
- water storage facilities,
- sport facilities, and
- shopping malls.

Aggregate is the basic ingredient in the construction of all such infrastructure. The applicant, STC would like to exploit the gravel resource to help quench Windhoek's gravel and sand thirsty. It is has been estimated that, in any single year, Windhoek alone consumes approximately 50% of all building sand, gravel and bricks produced in the entire territory of Namibia.

The quality of aggregates used is a critical component in determining the use and lifespan of the infrastructure developed. It is therefore of great importance that the aggregates supplied to the building and construction industry is of high quality (meeting all industry standards and specifications), affordable, durable and available for long term supply.

This proposed project will deliver aggregates to end-users in Windhoek, but targeting specifically, the upgrading of the B1 highway to a dual carriageway which is currently underway. The other project targeted by the promotor is the Windhoek Waterfront being developed around the Goreangab Dam that is planned to deliver over 300 free standing houses and over 1 000 apartments or flats built on the periphery of the dam, complimented by a modern shopping mall. Water based sport facilities will be created as part of the development.

2 DESCRIPTION OF THE ACTIVITY

2.1 Introduction

In the Khomas region, naturally occurring gravel suitable for use as coarse aggregate is found, in abundance, around the towns of Windhoek and Okahandja. In other regions with high levels of coarse aggregate consumption have to rely on quarried aggregates. The gravel resources around Windhoek, which are a mixture of sand and quartzite stones, are sourced from several non-perennial river streams in and around the city.

2.2 Gravel Extraction Site

The site allocated to STC for gravel extraction is, as depicted on the Google Earth Image presented in Figure 1, located to the west of the A1 highway, about 3km away as the crow flies. It has a footprint of approximately 8 hectares (Figure 2) with the GPS coordinates as inserted on the image.

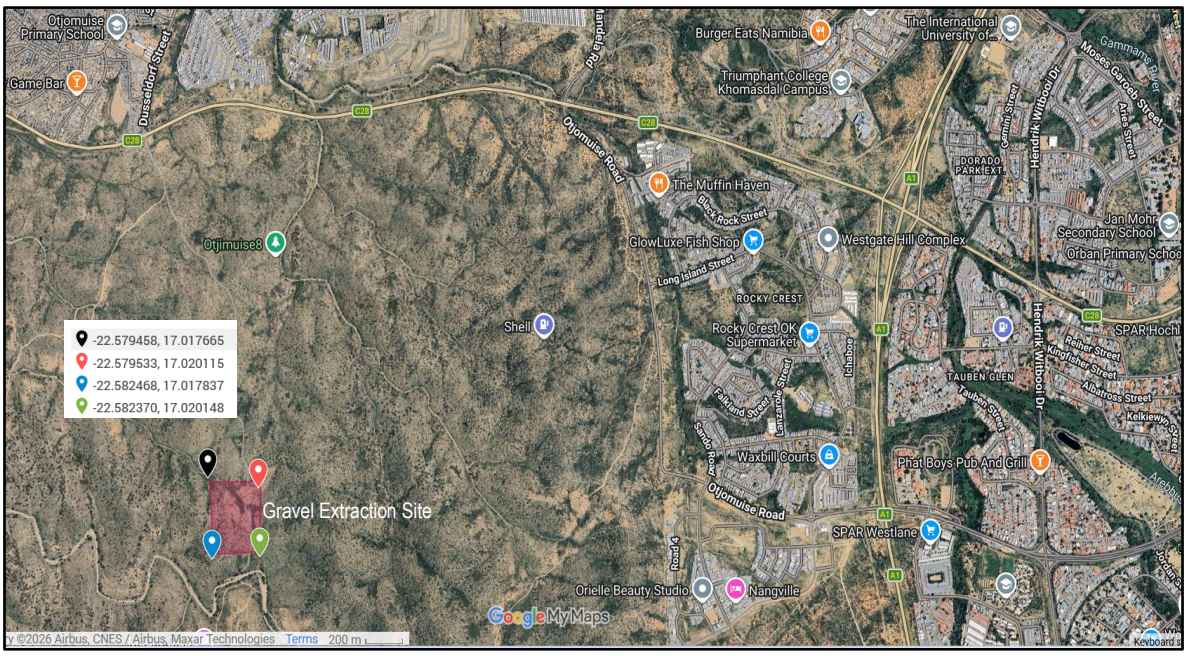

Figure 1: Google Earth Image - Gravel Extraction Site

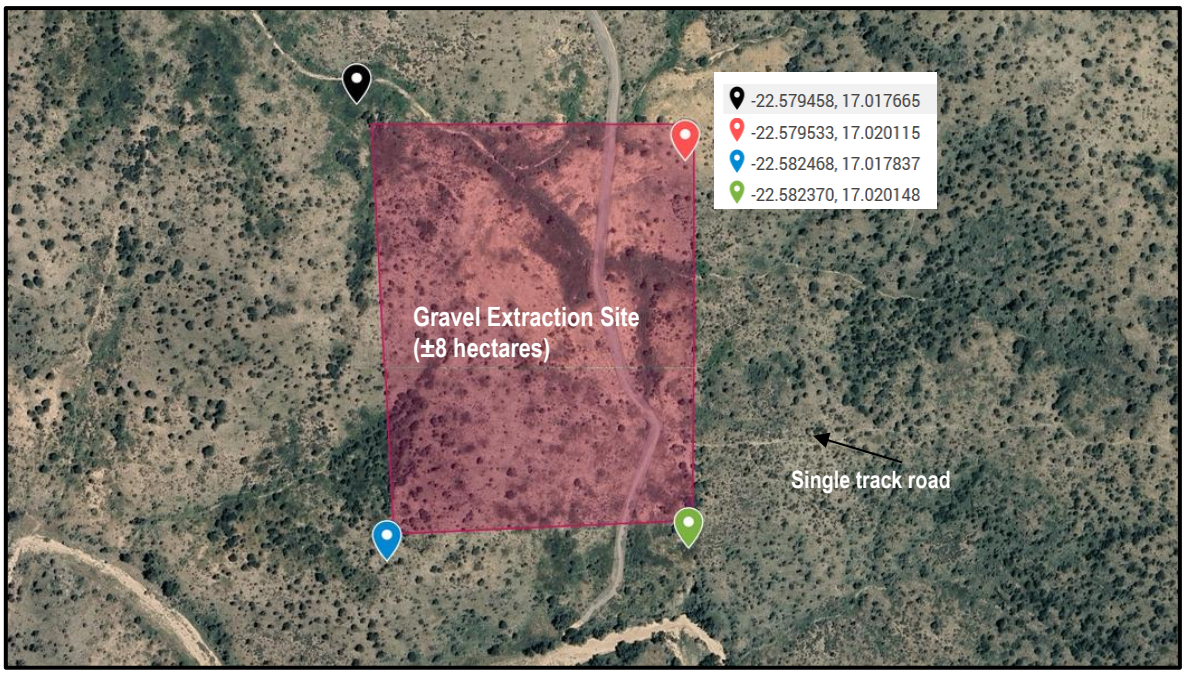

Figure 2: Allocated Gravel Extraction Site

2.3 Planned Products

STC intends to exploit the gravel resource on the ±8 hectares land at the extraction rate of approximately 50 000 tons per year for the production of these construction materials:

- Building sand
- Building stones
- Aggregates - for various concrete applications
- Base and sub-base products - G1, G2 & G3 materials for road building
- Pavement layers - G4 & G5

The gravel materials will be extracted from both on-channel and off-channel zones of the dry river which runs through the allocated tenement. Since a geotechnical report with details of the stated available quantities to be extracted was unavailable at the time of conducting the EIA, extractable gravel has been estimated based on physical observation of shallow trenches excavated by STC with a backhoe actor or a JCB machine across the 8ha land. The gravel materials should be sufficient to meet requirements for A1 highway upgrade.

Figure 3: A Pile of Gravel Materials from a Shallow Trench Excavated Away from the Active Dry River Channel

Figure 4: In-situ Gravel Materials in the middle of the Active Dry River Channel

2.4 The Gravel Extraction Process

It is understood that no permanent structures will be erected at the extraction site, but a campsite will be established where to store machinery and equipment for use in the operation. The campsite will be manned by security personnel on a 24/7 basis while the personnel will be bussed to and from work each day.

Water for use at the gravel extraction site will be sourced from CoW, transported to the site where it is stored in a suitable container. The gravel extraction operation does not need the installation of grid power to the site as the core machinery (mobile crushing and screening plant) have onboard electricity generating units.

The gravel extraction activity will be performed with the following types of machines:

Table 1: Machinery and Equipment for the Operation

Machine Type	Quantities	Remarks /Application
Hydraulic Excavator	One (1) unit	A 30 ton unit should be able to handle the required work
Frontend Loader	One (1) unit	To load tipper end trucks
Road Grader	One (1) unit	To grade the access road from time to time
Mobile Crushing & Screening Plant	One (1)	To crush and screen the gravel materials into different commercial sizes
Tipper Trucks	Three (2) units	Three units with payloads ranging from 10 m^3 to 15 m^3 should be enough to meet the delivery requirements

Gravel is excavated by a hydraulic excavator loading directly into a tipper truck which delivers the gravel to the mobile screening/crushing plant combination. In the mobile screening plant, the sand is screened out while the gravel or the coarse materials proceed to the mobile crushing plant for two stage crushing. The final products are stockpiled ready for delivery to end-users.

2.5 The Gravel Resource

Based on visual observations and experience of working similar deposits, the 8 ha provisionally allocated to STC has a huge gravel resource. Theoretically, the off-channel zone will have more gravel materials for extraction because it covers about 75% of the allocated land area (about 6 ha) while the on-channel zone has a smaller footprint. A new cemetery site for the City of Windhoek is under construction to the east and about 2 km of the proposed gravel material extraction.

Judging from the gravel materials heaped on site during the site clearance, the volume of gravel materials contained on 75% of the allocated land is about 225 000 tons down a depth of 2.5 meters. If the split between gravel and sand is assumed at 60% and 40%, yields of approximately 135 000 tons of building sand and 90 000 tons of gravels can be realised.

Figure 5: Civil works at the new cemetery (a) & (b) to the east of the gravel extraction site

3 CONSIDERATION FOR ALTERNATIVES

The provisions of EMA requires for various project alternatives to be considered and evaluated, with 'alternatives' being defined as different ways of meeting the general purpose and requirements of the activity. The following alternatives have been considered:

- The nature and scope of the activities to be undertaken;
- The extraction methods to be employed;
- The land ownership
- Alternative gravel resources
- The 'No Go' Gravel Extraction Option

3.1 The Nature and Scope of the Activities

The project is undertaken to supply aggregate materials to a section of A1 highway which is currently being upgraded to a dual carriageway and covers a distance of approximately 4 km, starting from the northwest corner of Unam Veterinary Academic Hospital up to the intersection of A1 highway and C28 (Sam Nujoma road) in Windhoek. The scale of the operation is fairly small, and extraction activities will be confined to daylight hours of 07h00 to 17h00 from Monday to Friday.

Having a small scale gravel extraction site means that potential adverse environmental impacts are localised including shorter haulage distance to the consumption site – over 3 km away. The alternative would be to source gravel materials from established sites that are distant resulting in long hauling distances with associated gaseous emissions.

3.2 The Extraction Method

The gravel extraction method is fairly straightforward and entails utilising one heavy duty hydraulic excavator using its hydraulic arm and bucket to mechanically scoop gravel, lift and discharge the scooped materials into a tipper truck. One heavy duty hydraulic excavator with an operation weight of 30 tons should be able to meet the required production targets.

Methods used at existing aggregate quarries within the Khomas region include drilling and blasting using explosives to break down the rock mass into manageable pieces. The proposed extraction method is therefore less destructive to the receiving environment when compared to traditional aggregate production methods used at existing quarries.

3.3 Land Ownership

Erf 320 of Farm Windhoek Town and Townlands No. 31 on which the proposed gravel extraction is situated is owned by the City of Windhoek. There is no permanent structures constructed on the property itself or on its periphery. There are no agricultural activities conducted on the land and it is therefore laying furrow.

3.4 Alternative Gravel Resources

No alternative gravel resources were considered because the provisional allocation was already made and based on the 8 ha. There could possibly be other better gravel resources elsewhere, but such gravel resources could be land not legally owned by CoW.

3.5 The 'No Go' Gravel Extraction Option

The alternative for 'No Go' gravel extraction option from the resource was considered from three perspectives:

- Environmental Impacts
- Social & economic impacts
- Rehabilitation potential

3.5.1 ENVIRONMENTAL IMPACTS

The impacts on the environment have been evaluated as part of this assessment. Low to moderate impacts are expected in terms of riparian habitat, possible soil erosion and destruction of vegetation. This specific gravel resource site is the closest to consumption site which the upgrading of A1 highway just three 3 km away.

In the EMP formulated for this project, clear mitigation measures have been provided under which a sound gravel mining activity could be carried out from this location in the best interest of Windhoek's local economy, the environment and its people. The economic gains from proposed gravel extraction by far outweigh the limited impacts to the environment.

3.5.2 SOCIAL-ECONOMIC IMPACTS

It is projected that up to fifteen (15) people will be directly employed in the aggregate extraction activity promoted by STC. However, the positive economic benefits which accrue to the broader society as a result of the upgraded A1 highway to dual carriageway and other related infrastructure supported by the construction materials sourced from the site in question are huge and by far outweigh the negative impacts associated with the gravel extraction.

3.5.3 REHABILITATION POTENTIAL

Provided gravel mining is conducted in a responsible manner following a systematic extraction/mining plan, rehabilitation of the excavated trenches is quite possible such that the land can be successfully restored to pre-gravel mining conditions.

4 DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section provides an overview of those aspects of the natural environment that are considered opportunities or constraints upon the project or those aspects of the natural environment that may be impacted by the gravel extraction activities proposed by STC. Impacts are considered with respect to the physical, biological and socio-economic environments:

4.1 Land Use and Capabilities

At present the land allocated to STC is vacant with no activities performed on it. In the general, the biomass potential of the Khomas Hochland is comparatively marginal to support commercial beef production. The average farming units in the region is over 6 000 ha. On such units, cattle and gaming farming are being conducted in the wider Khomas Hochland area which is very dry and receives below average rainfall. Judging by the amount of grass and vegetation on the project site, the land should be able to support livestock farming. It is suitable for rearing goats, sheep and cattle.

Figure 6: Grass and vegetation on the Land

4.2 Access to the Gravel Extraction Site

Access to the project site is provided via an existing single-track (one lane) road, which leads from the Pionierspark waste disposal site. Using this road, the distance between the extraction site and B1 highway is about 3 km. The shortest route to the gravel site will be from the C28 (Sam Nujoma Road) at about 2.1 km. Work has to be done on the existing single-track road if it is to be used to haul the extracted gravel materials to end-users.

While an access road linking the project site to C28 is the shortest, the promotor will have to weigh up the costs of constructing the shortest access road to widening the existing single truck road joining the consumption site (A1 highway upgrade) through the waste disposal site.

Figure 7: A single-track road leading to the Project Site

Potential Impacts

In choosing whether to construct a new access road or to widen the existing single-track road, the option which results in the least environmental impacts should be selected and implemented. Consideration should also be given to terrain elevations – an access road over a steep terrain will result in higher haulage costs because tipper trucks have to burn more diesel to navigate steep terrains while carrying heavy loads.

Figure 8: Topographic Relief towards C28 from the Gravel Extraction Site

4.3 Topography and Drainage

The project site area is characterised by the typically Khomas Hochland Plateau with big Acacia trees growing along the banks of the dry river. When viewed from the eastern direction, i.e. from the single-track road which runs through the project site, the topographic relief over the entire project site is quite moderate with the imposing Khomas Hochland highlands directly to the northwest at 1950 m amsl. The elevation at the ground level is approximately 1760 m amsl which is a vertical drop of approximately 190 m in elevation.

The significance of this height elevation is that the tipper trucks which will be delivering the products to end-users will be handling fairly steep roads from the project site. The natural drainage from the north and south is towards the active dry river channel.

Figure 9: Topographic Relief to the East (A1 Highway Side)

Potential Impacts

Trucks hauling gravel materials over steeply located terrains will burn more diesel compared to trucks operated on less steeply terrains hence resulting in more gaseous (smoke) emissions, increased operating costs and cause notable adverse environmental effects. There are also potential risks associated with accelerated wear and tear on braking and transmission systems, and road safety due steep gradients and

4.4 Climatic Conditions

According to weather-and-climate.com, the project site receives an average annual rainfall of 380 mm. The highest precipitation is received in the summer months from December to February. The dry months are May, June, July, August, September and October with August being the driest month. November is the warmest month with an average maximum temperature of 30 ºC while July is usually the coldest month with an average maximum temperature of 20 ˚C. Applicable climatic conditions are as shown in Figures: 10 to 12. (*Weather-and-climate.com*)

There are no prevailing wind directions and the wind blows in any direction with a slightly greater frequency from the east to the northwest. Calm conditions occur for 60% of the time.

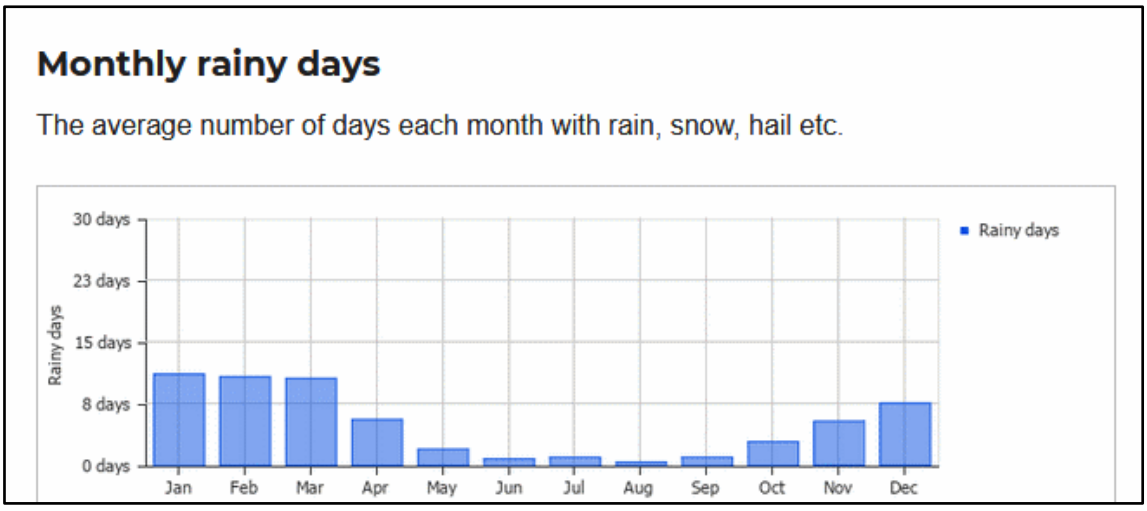

Figure 10: Average Monthly Rainfall Days

Potential Impacts

It is advisable not to extract gravel during the rainy seasons as doing so presents significant challenges, ranging from safety hazards, unstable excavation trenches, waterlogged terrain which hinders movements of heavy machineries and equipment, increased risk of environmental hazards like sediment runoff and erosion. Accessing the site and transporting wet materials becomes very difficult and cumbersome.

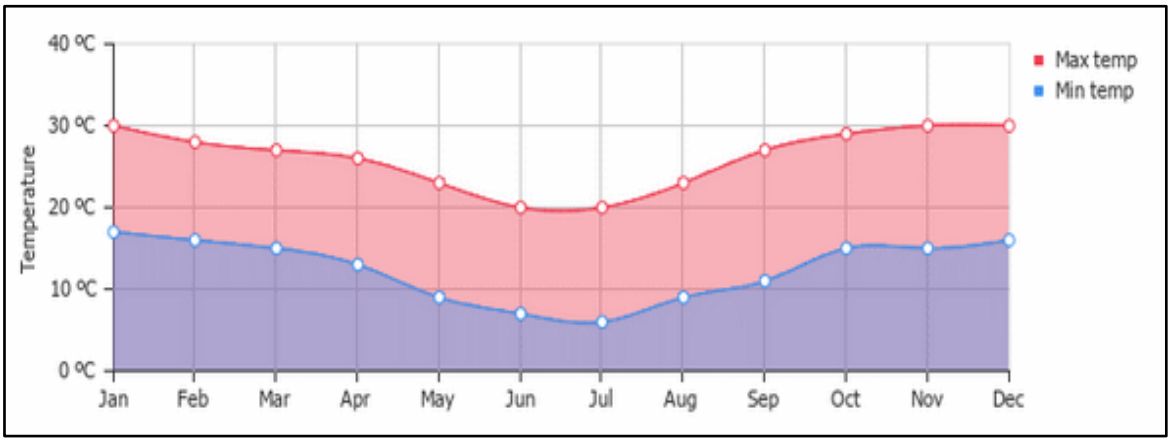

Figure 11: Average Monthly Temperatures

Potential Impacts

Intense heat places strain on heavy equipment, such as hydraulic excavators, front-end loaders, and tipper trucks, leading to over-heating and increased mechanical breakdown risks.

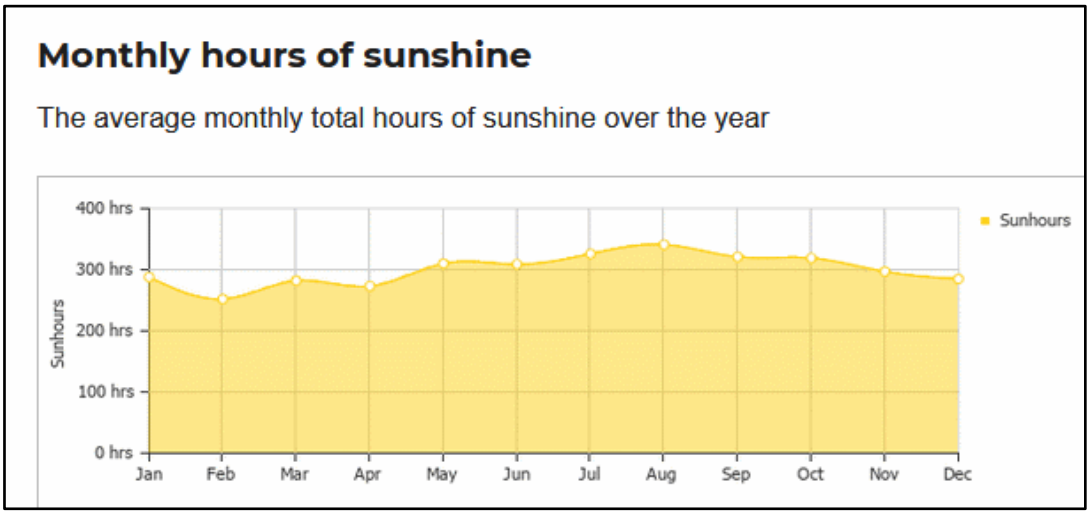

Figure 12: Average Monthly Sunshine Hours

Potential Impacts

The combination of abundant sunshine combined with arid and high altitude terrain makes Namibia a premier location for solar energy exploitation. With some of the best solar irradiation levels, effective use of photovoltaic (PV) and concentrated solar power can be made to generate reliable, clean electricity for the national grid and private use reducing reliance on expensive imports.

4.5 National Geological Overview

Geologically, the history of Namibia is believed to cover just over 2.1 billion years of the existence of planet earth. At that time, the area which is today known as Southern Africa consisted of two main islands – the Kalahari Craton to the South East and the Congo Craton to the North. Over millions of years ago, these islands grew through the creation of mountains exposing greater land mass above the ocean, forming what is today known as the African continent.

The first wave of mountains in Namibia where formed during the Vaalian Age (between 2.1 and 1.6 billion years) and consisted of Epupa Metamorphic Complex, Huab Formation & Grootfontein Formation. The second wave occurred during the Upper Mokolian Age (1.6 to 1 billion years) and resulted in the formation of the Namaqua Metamorphic Complex found in south of Namibia. During the third wave which happened around 800 million years ago, the Kalahari and Congo Cratons collided giving birth to the Damara Sequence. The area between the cratons had been a shallow ocean where thick carbonate deposits had solidified into limestone. Following the collision, the limestone was transformed into marble by the high temperatures and pressure. These marbles are mined at various localities within the regions of Kunene and Erongo.

Most of the landmasses which make up today's major continents of Southern Hemisphere including Antarctica, South America, Africa, Madagascar, India, Arabia, Australia, New Guinea and New Zealand occurred during the global plate movements of about 560 million. During this period many areas were pushed together to form the supercontinent Gondwana or Gondwanaland.

The fourth mountain formation in Namibia began around 300 million years ago - the Karoo Age. During this time period, Namibia was closer to the Antarctic and much of the interior was covered by glaciers. After further plate movements, the Gondwana moved closer to the equator and the ice began to melt leaving behind huge amounts of broken down rocks, i.e. the – the Dwyka Formation in the Kunene which can still be seen to this day. Over time the rocks fell down into lakes and rivers and were naturally transported to widespread deltas – i.e. the Omingonde Formation of central Namibia. Climatic changes followed resulting in dry, hot and sand desert formations – the Etjo Sandstone Formation.

The 5th period of geological development in Namibia took place about 65 million years ago when the mountains of the Karoo Age became severely eroded exposing the lower rock layers of the Precambrian age. Between 20 and 10 million years ago, Namibia had a much higher humidity and many rivers than today. This period was followed by relatively calmer conditions which resulted in the formation of the Namib Desert about 5 million years ago. The sand dunes were created about 2 million years and are still evolving.

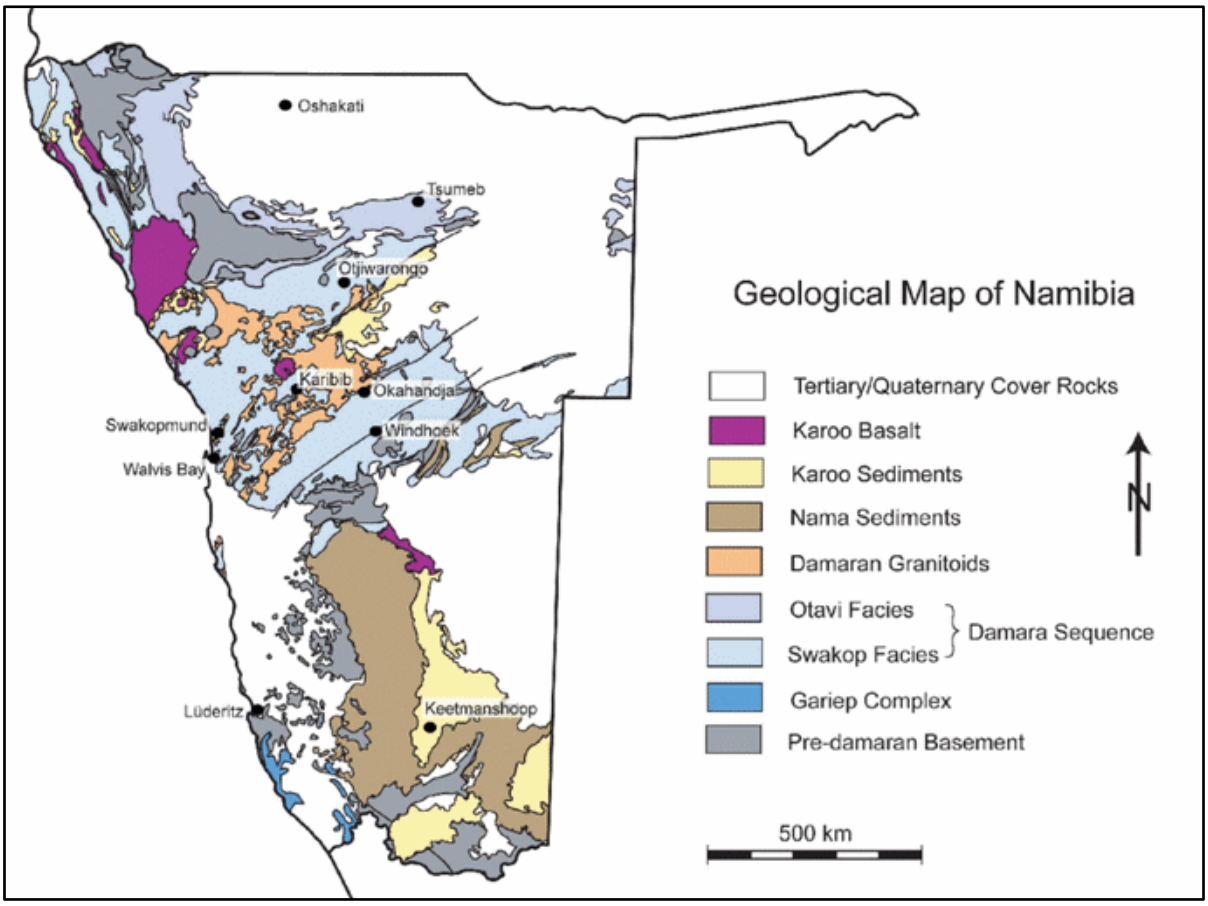

Figure 13: Geological Map of Namibia (Modified after Miller & Grote 1988)

4.6 Site Geological Perspective

The Khomas Highlands were created about 650 million years and are the youngest rocks of the Damara Sequence. They consist of the metamorphic rocks like mica schist, traversed by micaceous quartzite, subordinate calcareous schist and impure marble, and amphiboles schist. Quartz often occurs in drawn out grains to such an extent that a particular form called quartz schist is produced.

Within the project site, the source of aggregate is the banks (old channels) of river streams which have natural sand and gravel, consisting of loose grains formed from chemical weathering and physical breakdown of rock. The range of particle sizes is depended on the original texture of the source and state and degree of weathering and breakdown.

4.7 Hydrology: Surface and Groundwater

There are no sources of open water observed anywhere near the gravel extraction site. The dry river which is the source of gravel intended for extraction only carries water during the rainy season. The proposed extraction activities do not require the use of water except for human use and for machinery & equipment cleaning purposes. Potable water for the project has to be sourced from Windhoek.

There are no known boreholes on the land allocated to STC.

Potential Impacts

Gravel extraction from dry river banks poses significant risks to the local hydrological environment, as the activities disrupt the natural recharge of aquifers and accelerating erosion. Poor waste management of both solid and hazardous products has the potential to lead to contamination and pollution of water sources in the long term. Aggregate extraction activities which lack proper regulatory approvals can damage riverbanks leading to severe environmental degradation.

4.8 The Biophysical Environment

Most of the information provided under this section is sourced from the studies done for the Windhoek Green Belt Conservation Landscape (WGBCL) which covers a surface area of approximately 170 000 ha including about 20 private game and cattle farms. The WGBCL overlaps substantially with the Khomas Hochland Conservancy and was registered as a conservancy in 1992. Some of the farms which constitute the conservancy are listed in Table below. The project site falls under the same biological environment.

Table 2: Windhoek Green Belt Conservancy Land Unit Grouping

Active Members	Non-Active Members
Daan Viljoen Game Park	Farm Otjompaue Sud
Duisternbrook Guest Farm	Farm Augeigas 34 Portion 13
Godeis Farm	Farm Augeigas Residentail Portions
Klein Onduno	Hochfels Airy 386
Otjiseva Farm	Ombunja 5151
Monte Christo	Ongos
	Portion 1 of Kaujetupa

4.8.1 FAUNAL DIVERSITY

Some of the available species are presented in table below:

Species	Expansion
Mammals	Within the WGBCL there are at least 75 species of mammals on the landscape. Of the mammals, six (6) species are endemic to Namibia. Recorded mammals include (2 species) hedgehog, elephant shrews (3), bats (13), bushbaby, baboon and pangolin, hares/rabbits (3), molerate, squirrels (2), porcupine, springhare and dassie rat, rats and mice (17), carnivores (17), aardvark, rock dassie, warthog and antelopes (7).
Reptiles	At least 78 species of reptiles have been recorded within the landscape, comprising at least 36 snakes, (3 blind snakes, 1 thread snake, 2 pythons, 5 burrowing snakes and 25 typical snakes) of which 8 are endemic to Namibia. Also recorded were 2 tortoises, and 1 terrapin and 34 lizards, with 13 of these being endemic to Namibia.
Amphibians	The occurrences of at roughly 13 species of amphibians have been recorded within the wider WGBCL landscape. They include 3 species of toads, 2 rubber frogs, 2 puddle frogs and 1 each for bull frog and sand frog, kassina, rain frog, cacos and platanna. The last three species are endemic to Namibia.
Arthropods	Arthropods are invertebrates with exoskeleton, segmented body and jinted limbs. They include the insects, arachnids, and crustaceans and are vital components in the cycling of nutrients throughout the ecosystem. A diverse arthropod fauna occurs with many species which are specially adapted to the particular environmental conditions in the area. Many species are considered threatened by habitat degradation and the impacts of agriculture, alien species and pollution.
Birds	Within the said landscape, bird diversity is high and the species present include many of Namibia's endemic bird species such as Rüppell's parrot, Monteiro's hornbill, rockrunner and white-tailed shrike. Other notable species recorded include the blackfaced waxbill, short-toed rockthrush, whitebacked mousebird, Cape penduline tit, ashy tit, shaft-tailed whydah, and cinnamon breasted bunting. Over 300 bird species have been recorded within the landscape. One of the main features of the Daan Viljoen Game Park is the reservoir around which the bungalows and picnic sites are situated. As this is a permanent source of water, it attracts bountiful birdlife and other wildlife.

Potential Impacts

Gravel mining from river banks has the potential to severely impact faunal diversity by destroying habitats, degrading land, and leaving dangerous, unfilled pits that trap wildlife. Such activities cause erosion, disrupt riparian ecosystems, and lead to biodiversity loss through noise, dust, and habitat destruction. Gravel extraction has therefore to be extracted in line with an approved EMP.

4.8.2 FLORAL DIVERSITY

According to botanist Ms Coleen Mannheime, the dry river banks, floodplains and valleys around Windhoek are the preferred habitats for *Acacia erioloba,* a protected species, as well as other protected tree species.

Considerable impact has been caused on those species along the Klein Windhoek River valley in the northern industrial area and Brakwater. In the near future, the Acacia erioloba species and some protected tree species in the Windhoek district will face the safe fate. Any sand mining and residential development without taking these trees into consideration and applying suitable protection measures and requirements are of very high concern.

Acacia erioloba is a 'keystone species', regarded as one that has a disproportionate effect on its environment relative to its biomass. Its removal initiates significant changes in the ecosystem structure and loss of overall biodiversity due to losses of resources such as food, shade, perching and nesting sites.

Mannheime further commented that loss of large woody species will result in erosion, increasing runoff from the lowlands and alluvial plains, thus reducing aquifer replenishment. Uncontrolled gravel mining without suitable mitigation measures is a major concern.

The sand mining that has been done on farms Monte Christo and Gross Okapuka has been extremely damaging. The damage is even visible on satellite images taken over such properties. It would seem that sand mining activities on such properties has been unmitigated and uncontrolled.

The botanist strongly urged gravel and sand harvesting throughout the Windhoek Townlands to be strictly controlled. It is not acceptable to remove all sand right up to within a metre or two of a tree base and expect it to survive. Appropriate EIAs stipulating mitigation measures, such as building weirs to capture sand in areas that are to be, or have been harvested, as well as allowing a broader base of sand around trees to be retained are absolutely a priority.

Potential Impacts

Extracting gravel materials from dry river banks is inherently associated with significant environmental damages ranging from loss of riparian vegetation, reduced biodiversity, destruction of habitats, disruption of soil structure, lowering of water tables essential for the arid-zoned flora leading to increased spreading of invasive alien species. Gravel extraction must be done in compliance with the recommendations of an EMP approved by the Environmental Commissioner.

4.9 Dust Disturbances

At present, dust is generated from ongoing construction activities for the development of a new cemetery situated about 1.5 km to the east of the gravel extraction site. The current activities involve vegetation clearing from one third of 21 hectares of the land allocated for the cemetery development as well as from the installation of services (water, roads, sewerage, fencing, etc.).

Furthermore, dust is also generated from the upgrading of the A1 highway to the east about 3.2 km away. The proposed gravel extraction will generate some dust from these activities:

- Excavation of gravels from the off-channel zones
- Crushing and screening of excavated gravel materials
- Loading and hauling of finished products to the main client
- Some dust is also released during the offloading of gravel materials from tipper trucks

The dust generated during the above mentioned activities will impact on the ambient air quality, but through good practice and complying with the EMP such impacts can be reduced if not completely eliminated.

4.10 Noise Disturbances

The main sources of noise in the immediate vicinity of the gravel extraction site are the adjacent two main roads – the A1 highway to the east, about 3.2 km away, and the C28 highway to the north which is about 1.7 km away. Minimal noise will be generated by the project activities which is localised, and of a short duration because the operation will be confined to daylight hours only.

At about 1.8 km away, the Otjomuise residential area to the north of C28 is closest to the extraction site, however any potential noise generated by the operation is expected to be minimal, localised and restricted to daylight time. The surroundings as depicted in Figure 8 will also act as an effective sound barrier.

4.11 Visual Intrusions

The gravel extraction site is a located in a natural depression or valley and therefore completely concealed from the motorists using adjacent roads – A1 highway and C28.

Figure 14: Proposed Gravel Extraction in a Natural Depression and Concealed by Surroundings Hills

4.12 Archaeological, Heritage & Cultural Aspects

According to De Villiers H, 1972, *'The first human skeletal from South West Africa' Transactions of the Royal Society of South Africa 40 (3) 187-196,* in 1964 fossilized human remains were discovered in the Khomas region on the Farm Otjivera 42, which upon testing were found to be over 3000 years old. The report describes the findings as follows:

'The remains are essentially Khoisanoid in character but show a blend of the small-headed, short-statured Bush variety and of the large robust variety. If the skeleton is old enough, it may represent a type of proto-Khoisanoid, or even a type of proto-negriform, from which the Khoisan and Negro people diverged. Or, if the remains are more recent than the date at which the proto-Khoisanoids dichotomized into derivative Bushman and Hottentot populations, they may represent a little-changed survivor of the ancestral population'.

In addition, rock paintings are found on a number of farms in the Khomas Hochland area. The project area has therefore a rich history of cultural and heritage resources.

Potential Impacts

Dry riverbeds are 'national archives' containing items such as stone age tools, pottery shards and evidence of human settlements spanning hundreds of years. River banks are particularly sensitive areas as they were historically hubs of resource gathering, and migration. Colonial-era structures and or foundations may also be encountered which have the potential to cause damage to heavy machinery used in the operation. The measures recommended in the EMP section should be complied with during the gravel extraction.

5 THE LEGAL FRAMEWORK

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

- The Namibia Constitution
- Statutory law
- Common law
- Customary law, and
- International law

As the main source of legislation, the Constitution of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and to mitigate against adverse environmental impacts. The environmental regulations are guided and implemented by the Environmental Commissioner who heads the Department of Environmental Affairs (DEA) within the Ministry of Environment, Forestry and Tourism.

In Table 3 below, relevant legislation pieces are presented and their applicability to the proposed project:

Table 3: Legislations Applicable to the Proposed Project

Legislation	Main Aspects	Applicability
The Constitution of Namibia	• Supreme law of the land. • Encourages the welfare of the people. • Provides for environmental protection. • Recognises international agreements and corporations.	Provides for the welfare of the people and protection of the environment.
Environmental Management Act (Act. No. 7 of 2007)	• Provides for the definition of the environment. • Promotes and encourages sustainable management of the environment when natural resources are exploited/extracted for the benefit of the residents/citizens.	Provides for a process of assessment and control of activities likely to harm the receiving environment.
Environmental Management Regulations (GG No. 4847 of February 2012)	• Heralded the implementation of the EMA almost five years after the Act was approved by the legislature; • Presents a list of activities that require an ECC prior to commencement, and • Regulates and provides guidelines on how EIAs must be conducted.	The proposed project is listed under the category: **Mining and Quarrying Activities** Section 3.2 : 'Other forms of mining or extraction of any natural resources whether regulated by law or not.'
Petroleum Products Regulations and Petroleum Products and Energy Act (GG Notice 2000	The Act regulates the licensing and certification of fuel outlets including related facilities such as FROs, LGP bottling plants, etc. **Section 3 (1)** states that (1) No person shall • operate a retail outlet or conduct the business of a wholesaler, unless authorised to do so under a retail license or wholesale license; • operate a consumer installation, unless authorised to do so under a certificate, and • shall possess or store any fuel. (2) No person shall possess or store any fuel except under authority of a license or a certificate approved by the Minister of MIME.	The project will be making use of fuel products – oil, petrol, diesel, grease, etc.

	(3) The Minister of Mines and Energy has under regulation 44 of the Petroleum Products Regulations approved the use in Namibia of these specifications, standards and code of practice: • the American Standards Institute (ASI); • the British Standards Institute (BSI); • the South African Bureau of Standards (SABS, and • the South African National Standards (SANS) and • *SABS 0131-1: 1977* – The storage and handling of liquid fuel Part 1 – Small consumer installations. *SABS 0131-2 : 1979* – Storage and handling of liquid fuel Part 2 – Large consumer installations; *SABS 0131-3 : 1982* – The storage and handling of liquid fuel Part 3 – Bulk low-flash point fuel storage and allied facilities at large consumer installations, and *SABS 0108* – Classification of hazardous locations and selection of apparatus for use in such locations.	
The Local Authority Act (No. 23 of 1992)	• Provides for the establishment of local authority councils to manage and handle the affairs of local government and defines the powers of the local councilors, duties and functions; • Outlines the structure of local authority councils, including membership, elections, and management, and • Addresses issues such as infrastructure, service provision, taxation, and financial management of local authorities.	The project site is within the jurisdiction of the Windhoek Municipality and all local authority bylaws have to be complied with.
Labour Act (Act 11 of 2007 as amended)	• The Act contains extensive and detailed provisions relating to the basic employment conditions, rules regarding termination of employment, dismissals and disciplinary action; • It also provides for the prevention of trade disputes, unfair labour practices, regulates and controls collective job action, employment agencies and all matters incidental thereto, and • The Act also provides the right to the employees to speak about work conditions, the right to say no to unsafe work, the right to be consulted about safety in the workplace and the right to workers compensation.	People will be employed to work on gravel extraction site
Public and Environmental Health Act (Act No. 1 of 2015)	• The Act provides for a legal framework for a structured more uniform public and environmental health system and for matters incidental thereto; • It deals and provides guidelines on noise generation and control thereof within an urban environment; • Also deals with waste management, handling or collection, waste disposal, waste recycling, sanitation, etc.;	Waste will be generated which has to be carefully handled, stored and disposed of.
Social Security Act Act 34 of 1994 **Employees' Compensation Act** (as amended)	• Compels employers and employees to make equal contributions to the Social Security Fund. Contribution is based on 0.9% of an employee's basic earnings with a minimum of N$2.70 and a maximum of N$81.00 • Requires employers to contribute to an insurance fund which covers injuries and accidents on duties.	Employees must be registered with the SSC and Workmen's Compensation
Hazardous Substances Ordinance (No. 14 of 1974)	• Provides for the control of hazardous substances with potential to cause harm, injuries and even death. • Also provides for the manufacture, handling, storage, sale, use, disposal, etc. of hazardous substances.	The project will be making use of fuel products – oil, petrol, diesel, grease, etc. which are considered hazardous substances/products.
Atmospheric Pollution Prevention Ordinance (No. 11 of 1976)	• Provides control of noxious or offensive gases and matters incidental thereto. • Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process.	Gaseous emissions and dust will be generated during the operational phase of the project.

Water Resource Management Act (2004)	The following permits are required in terms of the Water Act: • Water abstraction permits; • Domestic effluent discharge permits (site offices, construction camp); industrial effluent discharge permits; • Water use for dust suppression; and water reticulation permits (pipelines), and • Will be superseded by Water Resources Management Act 2013 once the regulations are implemented in the future.	The project will need for human use and cleaning purposes. Water must be obtained in a lawful manner.
National Heritage Act No. 27 of 2004	• No archaeological/heritage site or cultural remains may be removed, damaged, altered or excavated. • Section 48 sets out the procedure for application and granting of permits, such as the permit required in the event of damage to a protected site occurring as an inevitable result of development. Section 51 (3) sets out the requirements for impact assessment. • Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council	Provides steps to be followed when items of cultural and heritage resources are uncovered.

6 IMPACT ASSESSMENT METHODOLOGY

The objective for the assessment is to identify and assess all significant impacts that may arise from the gravel extraction activities. At the same time, the findings are presented to the OEC to allow the EC to make an informed decision when reviewing the ECC application for the operation.

In this regard impacts are defined as the changes in an environmental parameter that results from undertaking an activity. These changes are the difference between the effects on an environmental parameter where the activity is undertaken compared to where the activity is not undertaken, and occur over a specific period and within a defined area (EMA 2007).

6.1 Types of Impacts

In general, different types of impacts may occur from undertaking of an activity, which may be:

- positive or negative impact
- direct impact or primary
- indirect impact or secondary, and/or
- cumulative impacts

Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (for example, dust generated as a result of sand being loaded into a tipper truck). These impacts are usually associated with the operation and maintenance of a development or activity and are therefore conspicuous evident and quantifiable.

On the other hand, indirect impacts are induced changes that may occur as a result of the activity or development. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

6.2 Identification of Impacts

The identification of potential impacts associated with an activity on the environment should include impacts that may occur during the three phase of the development:

- construction phase
- operational phase, and
- decommissioning phase

The process of identification and assessment of impacts includes inter alia, the following:

- determination of current environmental conditions in sufficient detail so that there is a baseline against which impacts are identified and measured
- determination of future changes to the environment that will occur if the proposed activity does take place
- understanding of the activity in great details so as to understand its consequences
- identification of significant impacts that are likely to occur if the activity is undertaken

6.3 Mitigation of Impacts

Once impacts have been identified and predicted for a particular activity, appropriate mitigation measures have to be established. Mitigation measures are the modification of certain activities in such a way as to reduce the impacts on the environment. The objectives of mitigation are to:

- find more environmentally sound ways of doing things
- enhance the environmental benefits of a proposed activity
- avoid, minimize or remedy negative impacts
- ensure that residual negative impacts are within acceptable levels

When mitigation is considered for certain impacts, it should be organized in a hierarchy of actions, namely:

- avoid negative impacts as far as possible through the use of preventative measures
- minimize or reduce negative impacts to 'as low as practicable' level, and
- remedy or compensate for negative residual impacts that are unavoidable and cannot be reduced further

6.4 Methodology

The concepts of Environmental Impact Assessments in this report will relate:

- to risk assessment - the process whereby certain impacts to the environment are identified
- to risk valuation - using a stipulated assessment criteria whereby impacts are given a rating or weighting and obtaining an overall rating or significance of an impact, and
- to risk management - relating directly to applicable mitigation measures to be implemented to manage a risk of an impact in the 'best interest' of a society. (Shogren, 1990)

Such assessments are also the requirements of the Environmental Regulations (MET 2009) and guideline criteria set out in Section 27 (k) of the EA regulations.

6.4.1 IMPACT STANDARD RATINGS

The identified impacts are assessed in terms of the standard rating scales to determine their **Significance Rating** based on this five criteria:

Table 4: Impact Standard Ratings

Term	Expansion
Nature of Impacts	refers to the effect that the proposed activity would have on the receiving environment
Nature of Impacts :	Neutral – impact has no effect, Positive or Negative
Extent or Scale of Impact	Determines the extent of the impact on a scale of 1 to 5 where: 1 = site specific and 5 = international beyond the borders Namibia
Duration	Indicates the time scale or longevity of the impact
Intensity or Magnitude of Impacts	Quantifies the impact in terms of the magnitude of effect on the environment (Receptor) and is derived on consideration of Nature (N), Extent (E) and Duration (D) of Impact
Probability or Impact	Describes the likelihood of the impact actually occurring on a scale as shown

6.4.2 ASSESSMENT METHODOLOGY

The potential impacts associated with the proposed gravel extraction have been evaluated using the parameters presented in Table below.

Table 5: Assessment Methodology

RATING	IMPACT DESCRIPTION	QUANTITATIV E RATING
	NATURE OR STATUS OF IMPACT	
Positive	A benefit to the receiving environment (positive impact)	**+ve (positive)**
Neutral	No cost or benefit to the receiving environment	**0 (Zero)**
Negative	A cost to the receiving environment (negative impact)	**-ve (negative)**
	EXTENT OR SCALE OF IMPACT	
Very Low	*Site Specific* : Impacts confined within the project site boundary within a radius of 1 km	**1**
Low	*Proximal* : Impacts confined within a radius of 3 km of the project site boundary	**2**
Medium	*Local* : Impacts extend beyond to within a radius of 5 km of the project site boundary	**3**
High	*Regional* : Impacts extend beyond the project site boundary and have a widespread effect i.e. beyond 5 km	**4**
Very High	*International* : Impacts extends beyond the project site boundary and have a national and international effect	**5**

	DURATION OF IMPACT	
Very Low	*Project Duration* : Impacts expected only for the duration the project - not exceeding 1 year	**1**
Low	*Short Term* : Impacts expected on a duration timescale of 1 to 2 years	**2**
Medium	*Medium Term* : Impacts expected on a duration timescale of 2 to 5 years	**3**
High	*Long Term* : Impacts expected on a duration timescale of 5 to 15 years	**4**
Very High	*Permanent* : Impacts expected on a duration timescale exceeding 15 years	**5**
	INTENSITY OR MAGNITUDE OF IMPACT	
Very Low	*Negligible (Zero) and/or Very Low Impact*. The impact does not affect the environment	**1**
Low	*Site Specific & Short Term Impacts,* i.e. The impacts affect the environment but the natural, cultural and social functions and processes are not affected	**2**
Medium	*Local Scale and/or Short Term Impacts*, i.e. The environment is altered but natural, cultural and social functions and processes continue, albeit in a modified way	**3**
High	*Regional and/or Long Term Impacts*, i.e. The natural, cultural or social functions or processes are altered to the extent that it will temporarily cease	**4**
Very High	*International and /or Permanent Impact***,** i.e. The natural, cultural or social functions or processes are alerted to the extent that it will permanently cease	**5**
	PROBABILITY OF IMPACT	
Improbable	The possibility of the impact to materialize is very low because of either design, historical experience or implementation of adequate corrective actions	**2**
Probable	There is a distinct possibility that the impacts as identified in the Scoping Assessment will actually occur	**4**
Highly Probable	It is most likely that the impacts as identified will occur regardless of any prevention or corrective action taken	**6**
Definite	The impacts as identified will definitely occur regardless of any prevention or correction action taken	**8**

6.4.3 SIGNIFICANCE RATING

After the assessment of an impact in accordance to the preceding five criteria, the significance of an impact is determined through a synthesis of the aspects produced in terms of their:

- Nature (N),
- Extent (E)
- Duration (D)
- Intensity (I), and
- Probability (P).

These ratings are now used to calculate a Significance (S) rating, using the formula shown below: An impact can be given a rating of Low, Medium and High as shown in Table.

Significance Rating (S) = (Sum of Extent + Duration + Intensity) x Probability

Table 6: Determination of Impact Significance Rating

Rating	Description	Significance Rating
Low Impact	**Low Significance** – This implies that the impact will not have a direct influence on the decision	**<25**
Medium Impact	**Medium Significance** –	**25-50**

	This implies that the impact could influence the decision unless effectively mitigated	
High Impact	**High Significance** – This implies that the impact must have an influence on the decision	**>50**

6.4.4 ADDITIONAL EVALUATION CRITERIA

Apart from the assessment criteria presented in the sections above, impacts are also evaluated and assessed based on:

- Cumulative impacts
- Reversibility
- Potential for irreplaceable loss of resources, and
- Level of confidence.

Cumulative impacts can arise from one or more activities and can be defined as being, either additive impacts, that is where it adds to the impact caused by other similar impacts or an interactive impact, that is when cumulative impact is caused by different impacts that combine to form a new impact.

Naturally, the level of confidence implies the level of certainty which the specialists have in the accuracy of their predictions in terms of the assessment conducted and its related determined significance. This is based on any factors that could bring into doubt the accuracy of the relevant predictions hence compromising the level of confidence in the assessment of a specific impact.

7 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

7.1 Impacts Related to the Construction of an Access Road to the Project Site

The existing single-track road has to be widened to allow access by heavy machinery and equipment (excavators, lowbed to carry a mobile crushing & screening plant, etc.) to the project site. Construction of the access road will inevitably involve some vegetation clearance and soil disturbances.

The environmental impact associated with this activity has a MEDIUM significance rating without mitigation and LOW with mitigation as per the assessment presented in Table 7 below.

Table 7: Assessment of Impacts Associated with Constructing the Access Road to the Gravel Extraction Site

Possible Impacts		**Mitigation Measures**	
• Clearing of vegetation (flora) • Loss habitat (fauna) • Land surface disturbances during road construction • Possible soil erosion		• When establishing a new access road, select the route which allows the minimum removal of vegetation and mature trees. • The route should be clearly demarcated and where possible the single-track road should be followed. • Avoid watercourses and steep gradients as far as is practicable • Only one route should be constructed to the gravel extraction sites.	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Low
Duration	Low	Duration	Very Low
Intensity	Medium	Intensity	Low
Probability	Highly Probable	Probability	Probable
Significance Rating	**Medium**	Significance Rating	**Low**

7.2 Impacts on Soil Profile

The bulk of the soil around the project site is essentially sandy mixed with quartzite gravels and boulders. The ratio of sand to gravel is approximately 2½:1 along the river banks and approximately 3:2 in raised areas. From a soil fertility perspective, the soil along the river banks is more fertile than the soil in the raised areas. This is evident from the amount of vegetation, bushes and trees on the banks of the dry rivers compared to the vegetation on the soil located in raised areas.

The environmental impact with respect to disturbance on the soil profile has a MEDIUM Significance Rating without mitigation and LOW with mitigation. The assessment is presented in Table 8 below

Table 8: Assessment of Impacts Resulting from Soil Disturbances

Possible Impacts	**Mitigation Measures**
• Loss of plants & vegetation • Loss of riparian habitat • Land surface disturbances • Potential for soil loss	• Remove topsoil and stockpile aside for future rehabilitation of the extraction site. • Topsoil stockpiles may not exceed 2 m in height • Vegetation should be allowed to grow on topsoil stockpiles. • Confine gravel extraction within demarcated areas.

		• Confine truck movements to internal routes.	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Low	Duration	Low
Intensity	Low	Intensity	Low
Probability	Highly Probable	Probability	Probable
Significance Rating	**Medium**	Significance Rating	**Low**

7.3 Impacts Associated with Establishing of Project Support Facilities

A suitable site has to be chosen where to establish a campsite to serve as a storage or laydown area for plant, machinery, equipment and necessary tool. Servicing and maintenance of plants, machinery, vehicles and equipment will also be performed at this site. In the event that some employees will be accommodated on site, this premise should also be used for that purpose. Amongst the factors to be considered when selecting this site are:

- Security
- Site drainage
- Wind directions
- Proximity to water & electricity sources

The environmental impact with respect to the installation of project support facilities has a LOW significance rating without mitigation and VERY LOW with mitigation. The assessment is presented in Table 9 below

Table 9: Impacts of Establishing the Aggregate Production Facility and Support Services

Possible Impacts		**Mitigation Measures**	
• Loss of plant & vegetation • Loss of habitat • Land surface disturbances • Potential for soil erosion		• The selected site should be clearly demarcated and properly fenced in with a single access/entry point • Site the aggregate production plant, campsite and site offices outside the flood plains, above the 1 in 50 flood level mark • The area chosen should be the minimum reasonably required that involves the least removal of vegetation and bushes • Any topsoil removed should be handled as described above	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Low	Duration	Very Low
Intensity	Low	Intensity	Low
Probability	Highly Probable	Probability	Probable
Significance Rating	LOW	Significance Rating	VERY LOW

7.4 Impacts Associated with Gravel Excavation (Mining)

Gravel will be excavated from in-stream zones and off-channel zones as described elsewhere in the document. Such mining will involve activities that are likely to have long term negative effects on the river stream stability, disruption of riparian habitat and loss of grazing.
Such negative impacts can be managed by developing a pro-active mining plan which ensures that sand mining is carried out in a sustainable manner. This will require setting a limit of the amount of gravel to be mined for each specific time period.

The environmental impact has a HIGH Significance Rating without mitigation and a MEDIUM rating when mitigation measures are implemented.

Table 10: Impacts of Gravel Extraction

<table>
<tr><th colspan="2">Possible Impacts</th><th colspan="2">Mitigation Measures</th></tr>
<tr><td colspan="2">• Loss of riparian habitat for in-stream mining
• Loss of grazing for off-channel mining
• Degradation of the river bed channel
• Disruptions to natural water infiltration into the ground</td><td colspan="2">• Clearly demarcate all areas to be mined or where gravel is to be excavated.
• Instruct machine operators to mine within the demarcated area zones
<u>In-Stream Zones</u>
• Measure and determine the active river stream channel width.
• Mine sediments in the active channel leaving a buffer sediment of 0.5 m thick on the bedrock
• Mine sediments in the river bends that are 20 m away from the active stream channel down to the bedrock.
• Try to mine in the upstream direction.
• Limit in-stream mining of sediments to the dry periods of the year.
• Develop a long term monitoring plan
Off-Channel Zones
• Remove topsoil and stockpile as described in this document.
• Leave a sediment buffer on the bedrock of 0.5 m thick
• Side slopes for Off-Channel mining should at least be 3:1.
• Develop an effective long monitoring plan
• Rehabilitate mined out area to pre-mining conditions using topsoil</td></tr>
<tr><td colspan="2">Impact Assessment Before Mitigation</td><td colspan="2">Impact Assessment Post Mitigation</td></tr>
<tr><td>Ranking Criteria</td><td>Assessment</td><td>Ranking Criteria</td><td>Assessment</td></tr>
<tr><td>Nature</td><td>Negative</td><td>Nature</td><td>Negative</td></tr>
<tr><td>Extent</td><td>Low</td><td>Extent</td><td>Very Low</td></tr>
<tr><td>Duration</td><td>Low</td><td>Duration</td><td>Very Low</td></tr>
<tr><td>Intensity</td><td>Medium</td><td>Intensity</td><td>Low</td></tr>
<tr><td>Probability</td><td>Definite</td><td>Probability</td><td>Probable</td></tr>
<tr><td>Significance Rating</td><td>HIGH</td><td>Significance Rating</td><td>MEDIUM</td></tr>
</table>

7.5 Impacts on Water Resources (Surface & Ground Water)

There are no sources of open water or boreholes sunk on the land allocated for gravel extraction. However, the dry rivers came alive during the rainy periods carrying rainwater collected from wide areas downstream. The gravel extraction site has the potential to become a source of surface water pollution during the rainy season resulting from poor waste management, poor handling of hydrocarbons used in the operation and neglect by personnel.

The environmental impact to the water sources has a LOW significant rating without mitigation and Very Low with mitigation. The assessment is presented in Table

Table 11: Potential Impacts on Water Sources - Surface and Groundwater

Possible Impacts		**Mitigation Measures**	
• Windblown litter – visual nuisance • Fuel leaks from machinery to underground water • Soil and sediment transport		• No waste should be dumped in the river channel • Oil and fuel handling should be done on impermeable surfaces • Areas likely to suffer soil erosion should be examined and repaired before the rain season • Comply with the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Low	Duration	Very Low
Intensity	Low	Intensity	Low
Probability	Improbable	Probability	Improbable
Significance Rating	LOW	Significance Rating	VERY LOW

7.6 Impacts on Ambient Air Quality

Gaseous emissions will be expected from earthmoving machinery and plants used in the gravel extraction. as However, the gravel operation is close to the two busy highways (A1 to the east and C28 to the north) such that the ambient air quality in the project surroundings is already impacted by various activities including the ever increasing traffic. The operation is also conducted in an open air environment (not a confined space like underground) which allows gaseous emissions to escape into the atmosphere.

During peak production periods, a fleet of up to three tipper-end trucks will be used in the operation with each truck possibly collecting a maximum of five loads per day.

The environmental impact has a Low Significance Rating without mitigation Very Low with mitigation. The assessment is presented in Table

Table 12: Assessment of Impact on the Ambient Air Quality

Possible Impacts		**Mitigation Measures**	
• Noxious emissions from earthmoving machines • Dust emissions from excavations, screening & loading • Dust emissions from the gravel road		• Ensure that all the machines used in the operation are regularly serviced and well maintained. • Limit speed on the access gravel road to 30km/hr • Comply with the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**

Nature	Negative	Nature	Negative
Extent	Site specific	Extent	Site specific
Duration	Short	Duration	Short
Intensity	Low	Intensity	Low
Probability	Unlikely	Probability	Unlikely
Significance Rating	LOW	Significance Rating	VERY LOW

7.7 Impacts from Noise Pollution

Sources of noise pollution are likely to originate from machinery and plant used in the operations and from activities such as trucks idling, revving, and possibly hooting. Such noise is not expected to impact on the ambient noise levels in the area given the close proximity of two adjacent highways – A1 to the east and C28 to the north.

The environmental impact as a result of noise generated by operation has **LOW** Significance Rating with and without mitigation. The assessment is presented in Table 13.

Table 13: Assessment of Impacts from Noise Pollution

Possible Impacts		**Mitigation Measures**	
• Idling • Revving • Hooting • Running of machine engines		• Ensure that all the machines used in the operation are regularly serviced and well maintained. • Avoid unnecessary idling, hooting & revving • Limit work to normal day light hours • Comply with the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Site specific	Extent	Site specific
Duration	Short term	Duration	Short term
Intensity	Low	Intensity	Low
Probability	Probable	Probability	Unlikely
Significance Rating	LOW	Significance Rating	VERY LOW

7.8 Impacts of Dust Disturbances

Dust is generated when gravel is mechanically excavated, loaded into tipper trucks and processed through the mobile screening-crusher plant. Transport of aggregates to end-users on the gravel road will also involve some form of dust generation.

Sediments from the in-stream zones are expected to be relatively damp due to the moisture content as a result low water table. As such not much dust will be generated when handling such gravel.

The environmental impact as a result of dust generated by gravel mining, processing and transport has a **LOW** Significance Rating with and without mitigation.

Table 14: Assessment of Impacts from Dust

Possible Impacts	**Mitigation Measures**
• Health hazard • Amenity nuisance • Eyes and nose irritations	• Limit speed on access route to 30 km/hour • Avoid overloading of tipper trucks • Provide employees exposed to dust with PPE • Comply with the EMP

Impact Assessment Before Mitigation		Impact Assessment Post Mitigation	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Low	Duration	Very Low
Intensity	Low	Intensity	Very Low
Probability	Probable	Probability	Improbable
Significance Rating	LOW	Significance Rating	LOW

7.9 Impacts of Waste

Waste, especially solid waste is a general problem in Namibia which poses a significant threat to human and the environmental health. Widespread littering of cans, bottles and plastics has become a visual nuisance along major roads in the country which propelled Government to launch a nationwide cleanup campaign in 2017.

This project will generate some waste, albeit in small quantities, which has to be dealt with. The waste generated will be in one of the following forms:

- **Hazardous or industrial waste**: - waste oil, used lubricants, old batteries, oil filters, scrap metals, scrapped machines, old tyres, paints, conveyor rubber belts, hose pipes, etc.
- **Household or domestic waste**: these are items such as empty bottles, broken glasses, plastics, carry bags, old overalls, old safety shoes and redundant PPEs. Used water and human excretes will also be included under this waste type.
- **Office waste**: the waste in this category will be empty cartons, newspapers, magazines, papers, ink cartridges, obsolete office machines, old files, maps, pens, etc.

The aggregate operation will have to develop a waste management plan to deal with the waste generated at the site. Such a plan should, ideally include the four principles of waste management:

- reduce
- re-use
- recycle
- recover

The Significance Rating on impacts of waste generated by the aggregate operation is MEDIUM without mitigation and LOW with mitigation.

Table 15: Assessment of Waste Impacts

Possible Impacts	Mitigation Measures
• Visual and odour nuisance • Health hazard • Amenity nuisance	• Develop an in-house waste handling policy and enforce compliance thereof • Separate wastes generated and store in separate containers • Remove recyclable waste materials & offer to recycling companies • Store hazardous waste in sealed containers and dispose to a suitable waste landfill • Train employees on waste identification and waste handling. • Maintain a high standard of housekeeping • Comply with the EMP.

Impact Assessment Before Mitigation		Impact Assessment Post Mitigation	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Medium	Duration	Low
Intensity	Medium	Intensity	Low
Probability	Probable	Probability	Improbable
Significance Rating	MEDIUM	**Significance Rating**	LOW

7.10 Impacts on Floral Diversity

The river banks are the natural habitat for the Acacia erioloba, a protected species which occurs within the project site. The trees have a wide distribution throughout the Khomas Hochland and not restricted to the project site. Other species with protected status is the Aloe plant which also occurs in the area.

Mitigation measures have been proposed in the EMP which should be implemented to ensure that, when and where such protected trees and or plant species are encountered, they are not damaged but protected by maintaining a broader sediment base around the tree.

The environmental impact Significance rating for this activity is HIGH without mitigation and MEDIUM with mitigation.

Table 16: Assessment of Impacts on the Floral Diversity

Possible Impacts	**Mitigation Measures**
• Loss of vegetation • Disturbance to natural the ecosystem • Chopping down trees for firewood • Loss of habitats (birds, etc.	• Clearly demarcate Mining Areas to be excavated • Limit mining within demarcated area • Big trees should be preserved • Chopping down trees for firewood is not allowed • Comply with the EMP

Impact Assessment Before Mitigation		Impact Assessment Post Mitigation	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	High	Duration	Medium
Intensity	Low	Intensity	Very Low
Probability	Probable	Probability	Improbable
Significance Rating	MEDIUM	Significance Rating	LOW

7.11 Impacts on Faunal Diversity

Most farms making up the WGBCL have game and livestock as their core farming activities. Within the land allocated for gravel extraction which measures about 8 ha, some goats were observed grazing as well as monkeys on the foot of the mountains. Amongst the common reptiles likely to be encountered are: snakes, scorpions, lizards, and chameleons, mice and rats. Most wild animals have developed the ability to adapt to live around human activities while others will naturally free and migrate to safer areas.

A few bird nests were spotted on trees along the banks of the river. Naturally, birds will live choose to live in areas with natural surface water sources such as springs, or dams.

Without mitigation, the environmental impact will have a MEDIUM Significance Rating and LOW with mitigation.

Table 17: Assessment of Impacts on Faunal Diversity

Possible Impacts		Mitigation Measures	
• Loss of grazing • Loss of habitat • Illegal hunting & poaching		• Clearly demarcate Mining Areas to be excavated • Limit mining to the Sand Deposit • No littering of plastics and papers • Comply with the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Low	Extent	Very Low
Duration	Low	Duration	Very Low
Intensity	Medium	Intensity	Low
Probability	Probable	Probability	Improbable (Unlikely)
Significance Rating	MEDIUM	Significance Rating	LOW

7.12 Impacts on Visual Aspects

To a large extent, impacts of visual intrusions are dependent on the characteristics of the existing landscape, topography and the proximity of sensitivity receptors. For this gravel extraction sensitive receptors would be the travelling public using the adjacent highways – A1 to the east and C28 to the north. However, the gravel extraction site is located with a natural depression or valley which makes it invisible to the public using roads.

Other than the earthmoving fleet and the mobile-screening-crushing plants stationed at the site, the project will not involve the erection of permanent tall structures.

7.13 Impacts on Archaeological, Heritage and Cultural Remains

In 1964, a rare discovery of human fossils 'carbon dated' as being 3 000 years old were discovered during normal farm maintenance on the Farm, Otjiseru No. 42 which is within the Windhoek district. It is therefore evident that remains of archaeological and cultural heritage could be present in the area.

The environmental Impact Significance Rating for this activity is **VERY LOW** with and without mitigation

Table 18: Assessment of Impacts Associated with Cultural and Heritage Resources

Possible Impacts		Mitigation Measures	
• Potential damage to cultural and heritage resources • Potential damage to equipment striking concrete structures from the colonial-era		• Train employees on what to do when items of archaeological or cultural heritage are discovered. • Follow the steps recommended in the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Negative
Extent	Very Low	Extent	Very Low
Duration	Not applicable	Duration	Not Applicable
Intensity	Low	Intensity	Very Low
Probability	Probable	Probability	Improbable
Significance Rating	VERY LOW	Significance Rating	VERY LOW

7.14 ASSESSMENT OF THE HUMAN ENVIRONMENT (SOCIO-ECONOMIC IMPACTS)

With regard to the human social-economic environmental aspects, the development is expected to deliver positive impacts in at least four areas:

- Creation of employment
- Boast to the local economy
- Labour and working conditions
- Health and safety aspects

7.14.1 IMPACTS ON EMPLOYMENT CREATION

Unemployment is a serious problem in Namibia particularly amongst the youth who make up the bulk of the population. The gravel extraction promoted by STC will create and provide employment opportunities to about fifteen (15) people who will be drawn from surroundings suburbs of Rocky Crest and Otjomuise. By taking a multiplier factor of one employee supporting seven other individuals, the benefits accruing from the implementation of this project will have a positive impact on the lives of at least hundred and five (105) people.

Table 19: Assessment of Impact on Job Creation

Possible Impacts		**Mitigation Measures**	
• Earning of an income /salary • Support to family/relatives • Improved standard of living • Living a dignified life		• Hire employees from the local communities without discrimination on the basis of gender, race, background, religious or political affiliations • People from marginalized communities should also be considered and offered employment • People with disabilities should likewise be considered for suitable employment opportunities. • Provide and offer on-the-job training opportunities for employees to improve their skills levels	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Positive	Nature	Positive
Extent	Medium	Extent	High
Duration	Medium	Duration	High
Intensity	Low	Intensity	Low
Probability	Probable	Probability	Definite
Significance Rating	Medium	Significance Rating	Medium

7.14.2 IMPACTS ON THE LOCAL ECONOMY

The promoter of the gravel extraction is expected to fork out millions of Namibia Dollars in capital expenditure to procure the machinery, plant and equipment required for the operation. Payments have to be made for the earthmoving machinery (excavators, grader, wheeled loader, etc.), mobile screening and crushing plants and tipper trucks which will deliver the finished products to construction sites. Such capital will be spent to local suppliers of goods and services hence boasting the local economy.

Additionally, the employees who will be hired to work at the gravel production facility will receive salaries and wages from which taxes and social security contributions are deducted for payment to the State coffers and to Social Security Commission respectively. Furthermore, employees will spend their disposal incomes in the local economy through payments for rates and taxes, (water, electricity, refuse removal, etc. to the local municipality), education for their children, medical costs and procurement of groceries and other basic human needs. The assessment of the impacts with respect to the local economy is positive and is presented in Table 21 below.

Table 20: Assessment of Impacts on the Local Economy

Possible Impacts		Mitigation Measures	
• Increased local spending • Good completion amongst local aggregate suppliers • Community support through corporate social responsibilities		• Procure and source goods and services from local businesses (spare parts, water, fuel, oil, lubricants, PPEs, stationeries, etc.) • Hire and employee people from within the local communities • Pay VAT, PAYE and income taxes due to the State • Comply with all applicable rules and regulations • Join local organizations and lobby groupings such as Namibia Chamber of Commerce and Industries (NCCI) • Offer and provide training to employees to improve their skills level and knowledge base	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Positive	Nature	Positive
Extent	Medium	Extent	High
Duration	Low	Duration	Low
Intensity	Medium	Intensity	Medium
Probability	Probable	Probability	Definite
Significance Rating	Medium	Significance Rating	Medium

7.14.3 LABOUR AND WORKING CONDITIONS IMPACTS

Employees should be provided with training opportunities to improve and enhance their skills and knowledge. Given Namibia's past poor labour relationship history, it is important to allow employees to join a labour union of their choice and to have the right to be represented by a representative of their choice at any disciplinary hearings.

If employees are allowed to stay on the work premises proper sanitation should be provided. LOW without mitigation HIGH with mitigation

Table 21: Assessment of Impacts Related to working Conditions

Possible Impacts		Mitigation Measures	
• Poor labour relations • Industrial actions (strikes) • Undefined roles & responsibilities • Unsafe working practices • Poor standard of hygiene & cleanliness		• Develop working standards and conditions for the aggregate production facility in line with industry practices • Train all employees on safety & environmental management • Allow employees to exercise their rights to join and belong to a trade union of their choice • Allow each employee charged with a misconduct the right to be represented during a disciplinary hearing • Enforce traffic road safety regulations on and off the quarry • Provide a safe and clean working environment	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Positive
Extent	Medium	Extent	Medium
Duration	Medium	Duration	High
Intensity	Medium	Intensity	Medium

Probability	Probable	Probability	Probable
Significance Rating	Medium	Significance Rating	Medium

7.14.4 IMPACTS ON HEALTH AND SAFETY ASPECTS

The gravel extraction operation should strive to create a good and safe working environment which is free of accidents, free of health hazards and associated impediments.

Safety is of paramount importance in the execution of the gravel production facility and applicable industry safety standards should therefore be implemented and complied by the promoter as neglect to do so could lead to incidents and accidents which are undesirable and often associated with costly consequences.

Depending on the type of work being performed and exposure risk, it is incumbent upon the employer to provide a safe and accident free working environment. Employees should be provided with suitable PPEs and wearing of such devices strictly enforced.

Table 22: Assessment of Impacts Related to Health and Safety Aspects

Possible Impacts		**Mitigation Measures**	
• Unwanted Incidents and possibly accidents • Injuries • Loss of life • Loss of assets/properties • Unhygienic conditions		• Develop a Health and Safety Plan for the gravel extraction operation and train employees on such a safety plan. • Develop an Emergency Response Plan for the gravel extraction operation and train employees accordingly. • Develop an Accident Procedure Framework for the gravel operation and train employees on such plan. • Ensure employees are provided with suitable PPE and wearing thereof is enforced • Limit speed to 30 km/hour on all internal routes. • Enforce good housekeeping and ensure proper handling of all waste products. • Comply with the EMP	
Impact Assessment Before Mitigation		**Impact Assessment Post Mitigation**	
Ranking Criteria	**Assessment**	**Ranking Criteria**	**Assessment**
Nature	Negative	Nature	Positive
Extent	High	Extent	Medium
Duration	Medium	Duration	High
Intensity	Medium	Intensity	High
Probability	Probable	Probability	Probable
Significance Rating	Medium	Significance Rating	Medium

8 EVALUATIONS

8.1 Environmental Economics Criteria

A final qualitative assessment is considered in terms of the criteria used in the field of Environmental Economics. These criteria are explained by Stauth (1983), namely:

- Efficiency Criterion,
- Equity Criterion, and
- Intergenerational Equity Criterion

8.1.1 EFFICIENCY CRITERION:

A project is considered to be efficient if it brings about a net benefit to society. If some people are made better off without anyone else being made worse off, then a project is considered efficient in environmental economic terms. This project will bring economic benefits to the national capital, in terms of the supply of construction materials including employment benefits to the fifteen (15) plus people who will be working there.

The project will contribute to the national coffers through VAT and income tax payments. Tax payment to Central Government will benefit the country as a whole. Furthermore, employees will spend their disposal incomes in the local economy through payments of municipal services (water, electricity, rates & taxes, etc.), education for their children, etc. hence supporting and boasting the local economy.

The efficiency of the project could be enhanced with value addition to excavated gravel by screening sand out hence adding some value, i.e. manufacturing of cement based products such as bricks, road kerbs, hollow blocks, etc. with which the locals can build their shelters instead of living in shacks. The construction of brick walls will have a positive impact.

8.1.2 EQUITY CRITERION

The equity criterion relates to the distribution of costs and benefits in the affected society. A project is equitable if it brings about a situation in which the distribution of social well-being is improved.

The gravel production (road building materials, building sand, concrete stones, etc.) will benefit local people without disadvantaging them in any way. They will not suffer any displacement or loss of land or be subject to adverse health conditions.

The distribution of benefits will be somewhat be limited. While direct benefits from the project will naturally accrue to its employees, indirect benefits would accrue to the broader society through creation of work opportunities in those sectors which will utilize the end products, namely the road building sector, the housing building sector and the cement making brick sector.

8.1.3 THE INTERGENERATIONAL EQUITY (OR SUSTAINABILITY) CRITERION

This criterion considers the economic impacts on future generations – i.e. it extends the considerations of equity to future generations. Thus a project should be able to make the present generation better off without making future generations worse off. It should be able to provide benefits to future generations without degrading the resource base that the society depends on for its wellbeing.

The gravel resource on the allocated land is relatively huge and can support the supply of gravel and sand to the sectors consuming such products for a number of years into the future. The operation does not need the application of water and electricity which are in short supply in the national capital.

Provided that the mitigation measures as presented in the EMP are complied with, the project does not pose any significant threats to the environment, the human health and the wildlife roaming around on the property.

9 CONCLUSIONS AND RECOMMENDATION

Overall the economic benefits of the gravel production facility proposed by STC on the land allocated by CoW by far outweigh the limited negative impacts on the natural environment.

The gravel resource is quite big and the closest resource to developments taking place in the suburbs of Rocky Crest, Otjomuise, Pioneniespark, Hochland Park, Dorado, Khomasdal and the CDB.

Supplying construction materials (sand and stones) to such surbubs from the proposed site will be the preferred option with the least environmental impacts than sourcing such products anywhere else around Windhoek.

It is recommended that an ECC be granted to STC for the purpose of extracting gravel materials from Erf 320 of Farm Windhoek Town and Townlands No. 31, and to deliver and distribute such products to end users in and around Windhoek.

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APP-007292

Appendix A

PUBLIC PARTICIPATION REPORT

PUBLIC PARTICIPATION PROCESS REPORT

APP007292

Gravel Extraction from a Natural Resource Situated on Erf 320 of Farm Windhoek Town and Townlands No. 31

Windhoek Municipality

Khomas Region

May 2026

Prepared for:	Prepared by:
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INFORMATION SHEET	
PROJECT NAME	**Gravel Extraction for a Natural Resource Situated on Erf 320 of Farm Windhoek Town and Townlands No. 31** **Windhoek District,** **Khomas Region**
TYPE OF PROJECT	**PUBLIC PARTICIPATION PROCESS**
ECC APPLICANT	**Shifengula Trading CC** **Box 4176** **ONGWEDIVA**
Name, Capacity of Organisation Representative & Contact Details	**Thomas Fillemon (Mr)** **Managing Member /Owner** **Cell: 081 263 0205** **Email: shifengulatradingcc@gmail.com**
PROJECT LOCATION	**Windhoek Municipality Townlands**
ECC APPLICATION NO.	**APP-007292**
REPORT DATE	**May 2026**
EIA CONSULTANT	**Ekwao Consulting** **Box 25021** **Windhoek** **Email: ekwao@iway.na** **Cell: 081 418 3125**

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ACRONYMS AND ABREVIATIONS

TERM	EXPANSION
amsl	Above Mean Sea Level
CoW	City of Windhoek
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (Act No. 7 of 2007)
EMP	Environmental Management Plan
EMS	Environmental Management System
ha	Hectares
IAPs	Interested and Affected Parties
km	Kilometer
KRC	Khomas Regional Council
m^2	Square meters
m^3	Cubic meter
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mines and Energy
MSDS	Material Safety Data Sheet
NamRa	Namibia Revenue Authority
NSI	Namibia Standards Institute
OEC	Office of the Environmental Commissioner
PPE	Personal Protective Equipment
PPM	Parts Per Million
PV	Photovoltaic
SANS	South African National Standards
SME	Small and Medium Enterprises
SSC	Social Security Commission
STC	Shifengula Trading CC (the Applicant)
VAT	Value Added Tax
WGBCL	Windhoek Green Belt Conservation Landscape
WHO	World Health Organisation

DEFINITIONS

Term	Expansion :
Aggregate	Aggregate is defined as granular raw materials consisting of gravels, crushed stones, recycled concrete stones, building and plaster sand. Primarily, aggregates are used in the manufacturing of construction products which in turn are used widely in the built environments and road transport infrastructures. When using a square sieve with an aperture of 4.75 mm, 90% of sand will pass through a square sieve whilst at least 90% of coarse stone will be retained by such a sieve. The coarse stones retained on the sieve will constitute aggregates.
Anthropogenic Impact:	Human impacts on the environment which include changes to the biophysical environments, ecosystems, biodiversity and natural resources caused directly or indirectly by human activities including global warming, environmental degradation, etc.
Biodiversity:	The variability among living organisms from all sources including terrestrial marine and other aquatic ecosystem and ecological complexes which they are part of.
Cumulative Impact	In the context of mining, means the impacts of mining activities which in themselves may not be significant but may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertaking in the area.
Decommissioning:	The process which begins after termination or cessation of mining activities or mineral processing and ends with closure. It involves, amongst others, the removal of unwanted infrastructures, making safe of the dangerous excavations and surface restoration so as to minimise the adverse environmental impacts of mining activities remaining after cessation of operation.
Environment:	All physical, chemical and biological factors and conditions which influence an object and or organism. It is also defined as the surroundings within which human beings exist and is made up of the land, water, atmosphere, plants and animal life (micro and macro) including interrelationships between the factors and the physical or chemical conditions that influence human health and well-being.
Environmental Impact:	Environmental impact is any change to the environment whether adverse or beneficial, wholly or partially, resulting from an organization activities, products or services.
Environmental Management Plan (EMP):	A working document on environmental and socioeconomic mitigation measures which must be implemented by several responsible parties during all phases of a proposed development.
General Waste	Means any waste generated on or at any premises used - (a) for residential purposes, and includes agricultural properties and small holdings; or (b) as public and/or private facilities and institutions, but does not include garden waste (unless specifically determined or authorised by Town Council subject to any conditions or limitations the Council may impose), bulky waste, business waste, builder's waste, industrial waste, hazardous waste and health care risk waste.
Gravel Reserve:	A reserve is that amount of the resource which has been quantitatively proven through drilling and other sampling methods for which the level of confidence is high.
Gravel Resource:	The extent of extractable volume is estimated with a low level of confidence, i.e. the resource is only inferred (estimated) from geological evidence and assumptions but has not been verified via drilling and other applicable sampling methods.
Hazardous waste	Means - (a) any waste containing, or contaminated by, poison; (b) any corrosive agent; (c) any flammable substance having an open flash-point of less than 90 degrees Celsius; (d) an explosive or radioactive material and substance; (e) any chemical or any other waste that has the potential even in low concentrations to have a significant adverse effect on public health or the environment because of its inherent toxicological, chemical, ignitable, corrosive, carcinogenic, injurious and physical characteristics; (f) any waste consisting of a liquid, sludge or solid substance, resulting from any manufacturing process, industrial treatment or the pre-treatment for disposal purposes of any industrial or mining liquid waste, which in terms of any law, order or directive relating to drainage and plumbing may not be discharged into any drain or sewer.
Industrial waste	Means any waste generated as a result of business, commerce, trade, wholesale, retail, professional, manufacturing, maintenance, repair, fabricating, processing or dismantling activities, but does not include general waste, garden or bulky waste, builder's waste, business waste, hazardous waste or health care risk waste.

Pollution	Means any change in the environment caused by – (a) any waste, substance or matter; or (b) noise, odour, dust or heat, emitted from or caused by any activity, including the storage or treatment of any waste, substance or matter, building and construction, and the provision of any service, whether engaged in by any person or an organ of state if that change has an adverse effect on public health or well-being of people.
Public Participation Process	The process of involving all affected parties in the design, planning and operation of a project. The process requires that the proponents give the parties to be consulted notice of the matter in sufficient form and detail to allow them to prepare their views on the matter. They are also given a reasonable amount of time to prepare their views and an opportunity to present their views to the proponents, who consider the views presented, fully and impartially.
Scoping Process	Scoping is that process of the EIA during which key environmental issues and impacts that have to be addressed are identified, and ultimately defining the scope and focus of the assessment.
Sensitive Area:	A sensitive area or environment is described as an area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists or where there is high potential for ecotourism.
Sustainable Development	"Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations" –World Commission on Environment and Development (1987). "Improving the quality of human life while living within the carrying capacity of supporting ecosystems" - Caring for the Earth: A Strategy for Sustainable Living, by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).
Waste	Means any substance or matter whether solid, liquid or any combination thereof, irrespective of whether it or any constituents thereof may have value or other use, and includes – (a) any undesirable, rejected, abandoned or superfluous matter, material, residue of any process or activity, product, by-product; (b) any matter which is deemed useless and unwanted; (c) any matter which has been discarded, abandoned, accumulated or stored for the purposes of discarding, abandoning, processing, recovery, reuse, recycling or extracting a usable product from such matter; or (d) products that may contain or generate a gaseous component

1. INTRODUCTION

1.1 Project Description

The Lüderitz Town Council (LTC) has resolved to lease a portion of the Remainder of Portion B of the Farm Lüderitz Town and Townlands No. 11, to Beginkuumba Port Services (Pty) Ltd ('the promotor). The land offered measures approximately 100 000 square meters and is unserviced, i.e. basic infrastructure such as water, electricity, sewerage, street roads, etc. are not installed yet. The terms of the lease agreement provide for the promotor to shoulder the costs related to the subdivision, rezoning and installation of bulk services.

1.2 Land Development Right

The promotor is operating in the local warehousing and logistics space and intends to extend such services to the development of Namibia's upstream oil and gas sector, envisioned to enter commercial production by 2030 using the Lüderitz port, as its base. The upstream sector is an emerging sector in the country requiring specialized logistics support and services due to the complexity nature of the offshore operations.

At this stage, the scope and nature of activities that will be conducted during the operational phase of the project are unknown. This EIA is therefore confined to assessing potential impacts exclusively associated with obtaining land development rights from the local authority, i.e. subdivision and rezoning of the land allocated to the promotor by LTC.

Potential impacts related to the construction of warehousing facilities and operational activities that will be conducted on such premises during the operational phase (the business phase) have not been considered in this EIA. Separate assessments will have to be made to cover such project phases at the time when information related to such activities is known, and the necessary supply agreements secured and concluded with the various role players involved in the development/operation of the offshore oilfields.

1.3 Location

The project site is presented in Google earth image below:

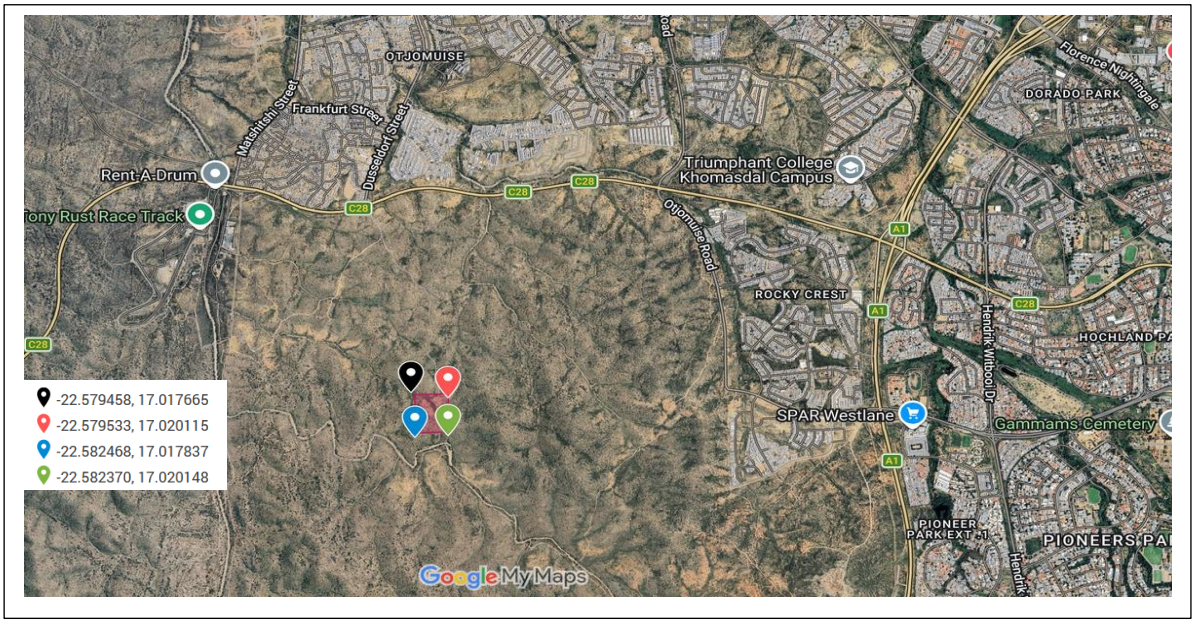


Figure 1: Project Site (Google Earth Map)

2. PUBLIC PARTICIPATION PROCESS

2.1 Introduction

Public Participation Process (PPP) is an integral part of the EIA process as outlined in Section of 27(1) (h) of the Environmental Management Act and Section 32 of Environmental Impact Assessment Regulations. One of the objectives of the Environmental Scoping Assessment is to identify possible stakeholders – those persons or institutions who may be impacted in one way or another or those persons who may have an interest in the proposed project so as to involve such persons in the EIA process.

Generally, PPP serves as a platform through which the stakeholders – both statutory and Interested or Affected Parties (IAPs) are provided an opportunity to participate in the EIA process. Through PPP, stakeholders are provided with information on the proposed project and invited to express their views, comments and or to voice any concerns which they might have with respect to the proposed development.

2.2 Objectives

Amongst the objectives of the conducted a PPP are:

- Identify and register stakeholders, both statutory and Interested and Affected Parties (IAPs) for the EIA being conducted.
- Share information on the project including potential impacts – perceived and real.
- Ensure that the concerns of stakeholders are documented and considered by the promotor and the competent authorities.
- Consider and incorporate inputs and or comments from stakeholders in the formulation of mitigation measures in EMP
- Help increase awareness and public confidence and in so doing to maximize the benefits and minimise risks.
- Secure the approval of the host communities which gives some form of assurance and a sense of partnership, hence avoiding unnecessary disputes and delays.
- Ensure transparence and accountability in decision-making hence less conflict, since decisions are deemed to have been made through consensus.
- Ensure compliance with national legislations and local council bylaws.

2.3 Legal Compliance

The PPP for this EIA was conducted in compliance with applicable sections of the EIA regulations viz. sections 21 to 24 which provide for, amongst others:

- Identification of the relevant stakeholders representing diverse sectors of the community/public who may be impacted by or intersected in the proposed project.

- Preparation of a concise Background Information Document (BID) on the project and circulating such BID through multiple channels (newspaper adverts, site notices at the project site & CoW office, social media, etc.).

- Direct consultation with statutory stakeholders including the OEC which screened the project and designated an application number of **APP007292.**

- Broadcasting or dissemination of project information through multiple channels, including the background information document (BID).

3. APPROACH TO THE PPP

An integrated approach was adopted to ensure broad stakeholder engagement and consultation.

3.1 Project Announcement

The EIA was announced in the following manner:

3.1.1 NEWSPAPER ADVERTS

The EIA was announced in the local newspapers on the dates as shown in the Table 1, below in line with the provisions of the EMA. Newspaper tear sheets are attached in **Appendix D.**

Table 1: Newspapers Adverts

Date	Publication	Distribution	Language	Publication Rate
27 March 2026	WHK Observer	Nationwide	English	Weekly, Fri-Thu
8 April 2026	WHK Observer	Nationwide	English	Weekly, Fri-Thu
27 March 2026	The Villager	Nationwide	English	Daily, Mon to Fri
8 April 2026	The Villager	Nationwide	English	Daily, Mon to Fri

3.1.2 SITE NOTICES

Site notices were placed at conspicuous areas around the project site and the notice boards at the Customer Service Hall of CoW. Proof of the site notices is attached in Figure 2.

3.1.3 SOCIAL MEDIA

The BID on the project as mentioned above, and attached in **Appendix B,** was prepared and circulated via social media platforms to statutory stakeholders and IAPs.

3.2 Notifications

It is a requirement of the EIA regulations that notification letters be given to the following:

3.2.1 LOCAL AUTHORITY

The City of Windhoek was formally notified of the EIA being conducted via a formal letter dated 20 April 2026. Correspondences with stakeholders are attached in **Appendix C**.

3.2.2 NOTIFICATION OF NEIGHBOURS /ADJACENT LAND OWNERS

It is the requirement of the EIA regulations that the listed activity to be undertaken is communicated to the neighbouring residents/businesses of adjacent land. The land allocated to STC for gravel extraction measures about 8 ha and does not border any other private property. The respective distances from the gravel extraction site to nearest residential suburbs of Rocky Crest and Otjomuise are 2 km and 1.8 km respectively. There are no properties or businesses within a radius of 2 km m of the proposed site hence there was no one to notify.

3.2.3 IDENTIFICATION AND NOTIFICATION OF OTHER STATUTORY STAKEHOLDERS

Listed in **Table 2** below, are the names of public officials representing Organs of State who have a direct bearing to the listed activity being assessed.

Table 2: Statutory Stakeholders

Names	Organisation	Role	Remarks
Hon Cllr Sakaira Uushona	Cow	Mayor, City of Windhoek	
Mr Moses Matyayi	CoW	Chief Executive Officer	BID
Mr Martin Shikongo	CoW	Environmental Officer Planning	BID
Mr Ben Ngairorue	CoW	Head of Legal	
Ms Vernouman Endjala	CoW	City Town Planning Manager	
Hon Sam Nujoma	KRC	Governor	
Mr Clement Mwafila	KRC	CRO, Khonas Regional Council	
Hon Stephanus Ndengu	KRC	Chairperson of Management Council	
Mr T Mufeti	MEFT	Environmental Commissioner	
Dr C !Garus-Oas	MEFT	Deputy Environmental Commissioner	
Ms S Angula	MEFT	Deputy Director	
Mr D Nchindo	MEFT	Chief Environmental Officer	BID
Mr H Mbura	MEFT	Chief Environmental Officer	
Hon J Sankwasa	MURD	Minister	
Hon E !Nawases-Taeyele	MURD	Deputy Minister	
Mr P S Sindimba	MURD	Executive Director	

BIDs were only made available to the official as indicated in Table 2 above either by email or through social media.

3.2.4 PUBLIC MEETINGS

The newspaper adverts and site notices placed at various conspicuous areas yielded no response from any member of the public, i.e. no single stakeholder or IAP asked to be registered for the EIA. Therefore no meeting was held.

3.3 Comments and Response

Throughout the entire EIA process, stakeholders were provided with ample opportunities to submit comments, raise issues, and to make recommendations. Such comments or raised would have been presented in the 'Comments and Response' section of the report. Up to date of this report, no comments have been received from anyone.

4. CONCLUSION

A comprehensive PPP was followed to inform and engage stakeholders during the entire duration of the EIA process. Information dissemination tools as outlined in the EIA regulations (newspaper adverts, site notices, social media communication platforms to distribute BIDs), were utilised to reach out to stakeholders. Despite such efforts, participation has been limited to CoW, without a single formal comment received from anyone. This is possibly due to the location of the project site, outside the formalised urban footprint.

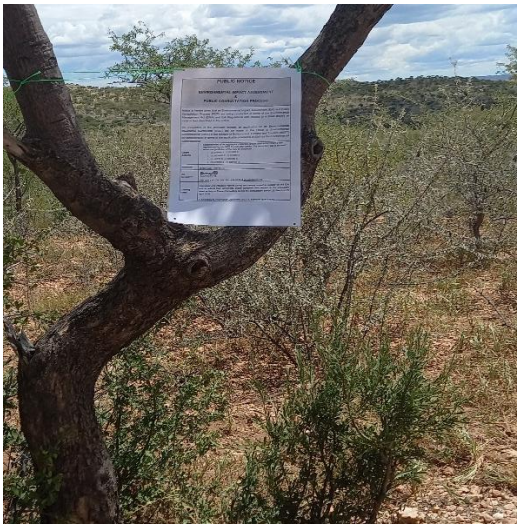


Figure 2: Site Notices

Ekwao Consulting

APP-007292

Appendix B

BACKGROUND INFORMATION DOCUMENT

BACKGROUND INFORMATION DOCUMENT (BID)

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED AGGREGATE ABSTRACTION FROM A LOCATION WITHIN THE JURISDICTION OF THE CITY OF WINDHOEK, KHOMAS REGION

INVITATION FOR COMMENTS

APRIL 2026

INTRODUCTION

Shifengua Trading CC (STC) has appointed Ekwao Consulting to handle its application for an Environmental Clearance Certificate (ECC) with the Office of the Environmental Commissioner (OEC). The ECC is required to allow STC to abstract gravel materials from a natural resource situated within the confines of the City of Windhoek. The plan of STC is to supply sand and aggregates demanded by the construction sector in the capital city. In terms of the Environmental Management Act and Environmental Impact Assessment (EIA) Regulations, aggregate mining is a listed activity which may not be undertaken without an EIA having been conducted and an ECC granted by OEC.

AGGREGATE EXTRACTION SITE

The location where STC intends to extract gravel materials is situated to the northwest of Kupferberg – the City's main solid waste disposal facility. It is about 3.20 km from the B1 highway as the crow flies. The proposed extraction is accessible by a single track road. Accessing the site requires a reliable road for moving heavy equipment for gravel extraction activities and to haul the gravel from the site to the end-users. Connecting the site via the C28 route is the most efficient option, as the 1.8 km distance provides the shortest route to the site and least destructive from an environmental perspective.

PROJECTACTIVITIES

It is understood that STC will confine its extraction activities to the off-channel zones, i.e. mining those gravel sediments deposited in the older floodplains of the river about 100 m away from the present day river channel. Such an approach will help to minimise the ecological impacts of gravel extraction on the active river channel. According to the promotor, annual gravel production will be project dependent, and is not expected to exceed 20 000 m^3. Judging from numerous exploration trenches excavated, the depth of the gravel is expected to vary between 1.2 m and 2.4 m.

PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to provide:

- an overview of the proposed aggregate production
- an overview of the Environmental Impact Assessment (EIA) process; and
- details on how you, as an Interested and Affected Party (IAP), can participate in the EIA process being conducted so that you raise issues or concerns or suggestions regarding the proposed aggregate production operation

Your comments are important will ensure that all relevant issues are considered and evaluated in the EIA process

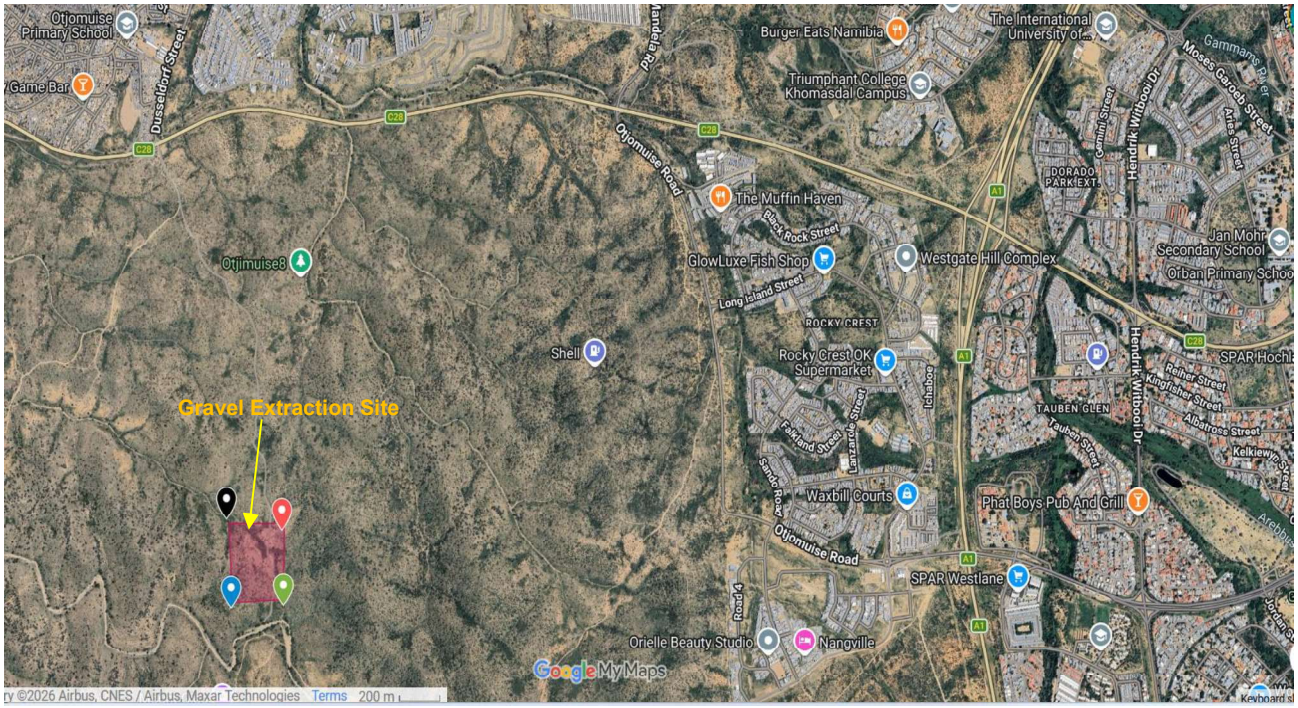


FIGURE 1: Project Site (Google Earth Image)

Environmental Impact Assessment (EIA):

The EIA is an effective planning and decision making tool which allows for the identification of possible environmental impacts likely to arise from the proposed gravel extraction. Where negative impacts are predicted, mitigation measures are recommended in the Environmental Management Plan (EMP) to reduce such impacts to acceptable levels. Where positive impacts (employment, etc.) are likely to result, measures are recommended to enhance such benefits from the operation. The EIA will follow the process as depicted on page 3.

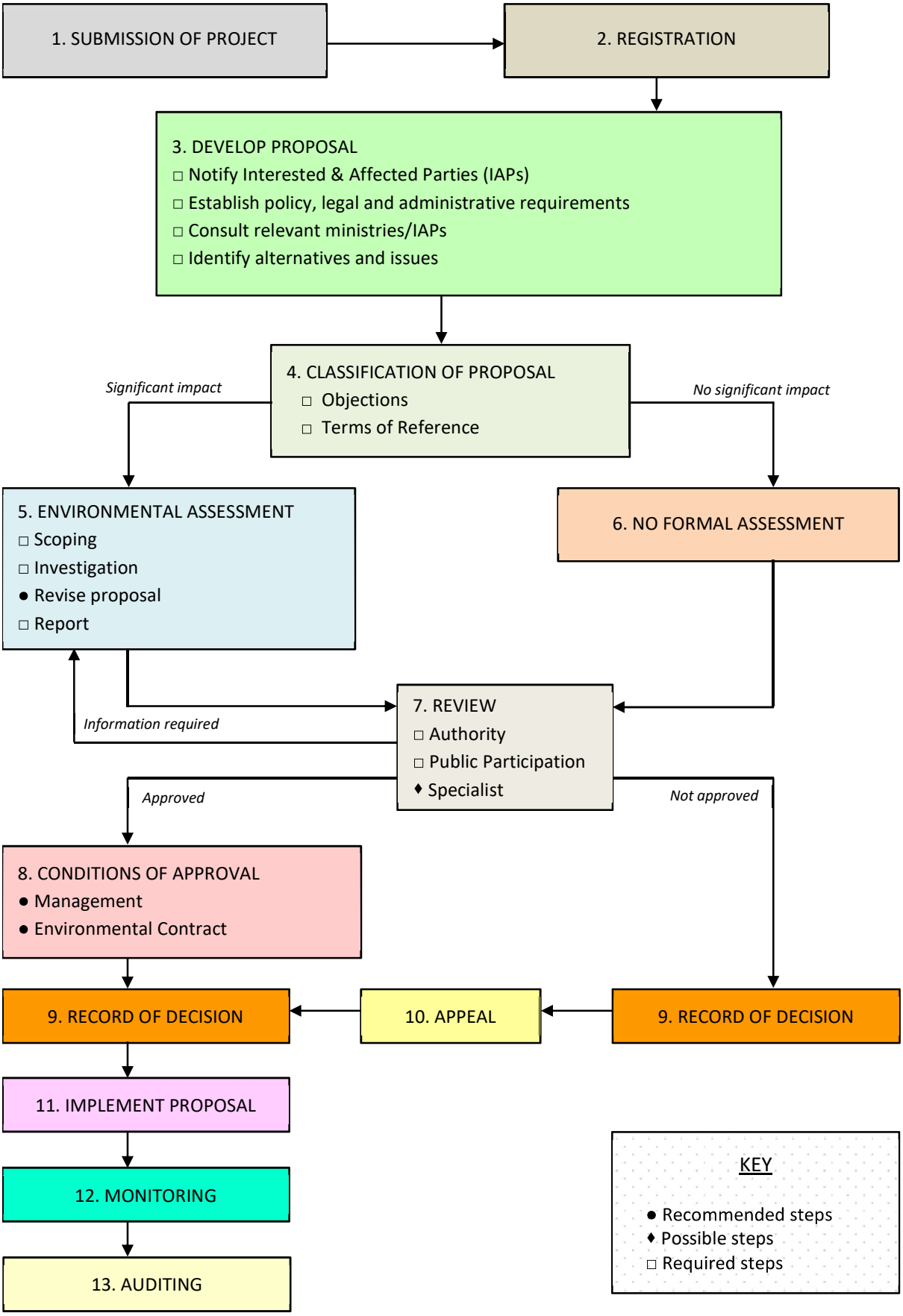
Public Participation Process

The Public Participation Process (PPP) is an important part of the EIA process, as it offers an opportunity to IAPs to actively participate in the EIA process. Through PPP, stakeholders are given a platform to identify issues of concern and to propose possible solutions to such issues. For this EIA, the PPP will involve the following:

- ***Notification of the Project and Opportunity to Comment***
  - This is done by means of newspaper adverts and on-site notices
- ***Draft Scoping Assessment and EMP Reports***
  - These reports will be made available to registered IAPs
  - IAPs will have 14 days to submit their comments
- ***Final Notification***
  - All registered IAPs will be notified of the decision of MEFT, i.e. whether an ECC has been granted or refused.
  -

Contact Details for the EIA Consultant	**Ekwao Consulting** Cell: 081 418 3125 Fax: 08864 5026 Email: ekwao@iway.na Closing Date for registration: 25 April 2026

THE EIA PROCESS



Ekwao Consulting

APP-007292

Appendix C

NOTIFICATION & CORRESPONDENCES

Ekwao Consulting

95 Papageienweg
Hochland Park
WINDHOEK
Namibia

Box 25021
WINDHOEK
Namibia

Tel: 081 418 3125
Mobile:081 127 3027
Fax2Mail:088 645 026
Email: ekwao@iway.na

20 April 2026

Mr Moses Matyayi
Chief Executive Officer
City of Windhoek
Box 59
WINDHOEK

Email: Angeline.Nanyemba@windhoekcc.org.na

Dear Mr Matyayi

NOTIFICATION IN TERMS OF SECTION 21 OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS

This letter serves to notify your good office as follows:

1. Ekwao Consulting CC ('**Ekwao**') has been appointed by Shifendula Trading CC ('**STC**') to handle its application for an Environmental Clearance Certificate (ECC) with the Office of the Environmental Commissioner (OEC) in the Ministry of Environment, Forestry and Tourism (MEFT).
2. STC has been provisionally granted permission by the City of Windhoek ('**CoW**') to abstract building construction materials in the form of gravels from a locality situated within the jurisdiction of CoW. The proposed abstraction site is depicted on the Google earth image presented in the Background Information Document (BID) attached hereto for ease of reference.
3. In terms of the Environmental Management Act (No. 7 of 2007), and EIA Regulations, STC is required to obtain an ECC from OEC, permitting its proposed gravel abstraction activities.
4. As directed by OEC, Ekwao is hereby formally notifying CoW on STC's ECC application.
5. The EIA study to be undertaken will follow the process presented in the BID. Furthermore, the following documents will be emailed to your office upon completion.
   - An Environmental Scoping Report;
   - A Public Consultation Report, and
   - An Environmental Management Plan (EMP).

Yours Sincerely

Joel Shafashike
Member - Ekwao Consulting

Ekwao Consulting

95 Papageienweg
Hochland Park
WINDHOEK
Namibia

Box 25021
WINDHOEK
Namibia

Tel: 081 418 3125
Mobile:081 127 3027
Fax2Mail:088 645 026
Email: ekwao@iway.na

20 April 2026

Mr Moses Matyayi
Chief Executive Officer
City of Windhoek
Box 59
WINDHOEK

Email: Angeline.Nanyemba@windhoekcc.org.na

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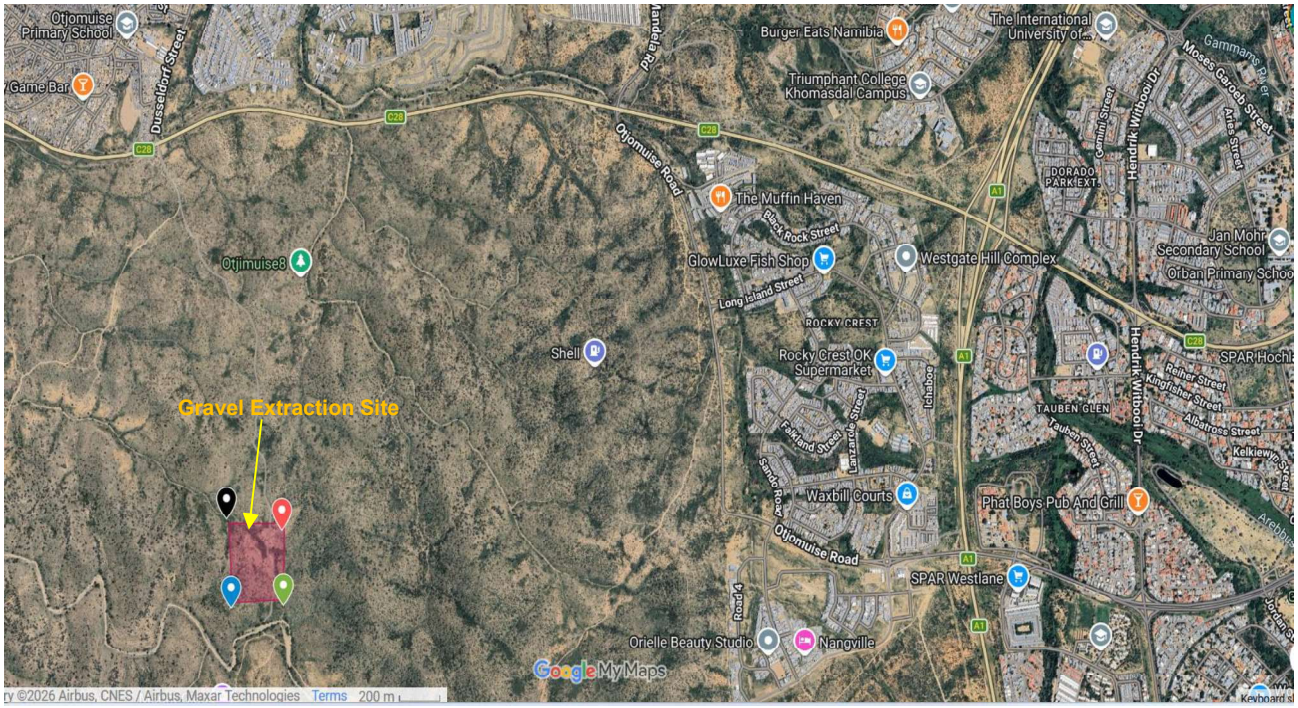

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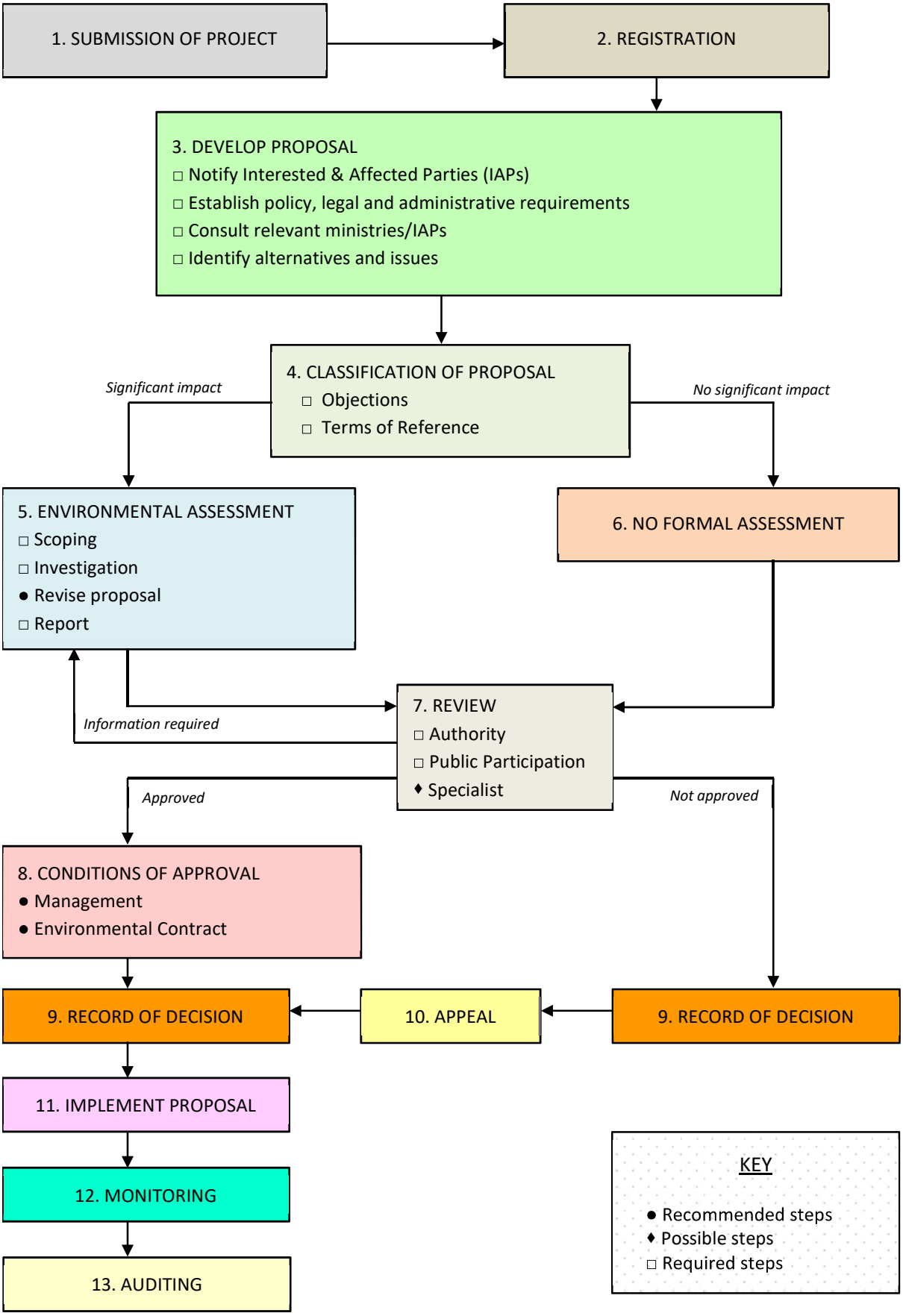

APP-007292

Appendix D

NEWSPAPER ADVERTISEMENTS

Nam Economy Expanded ...

Continued From Pg 1

From 2015 to 2025, the Namibia economy has only managed to expand by N$14.1 billion in terms of extra goods and services produced, according to real Gross Domestic Production (GDP) figures.

The national account figures also show that it took Namibia 8 years to reach the N$150 billion Real GDP mark.

Annual Real GDP is the value of goods and services produced in a particular year, adjusted for inflation, which shows real production changes keeping prices constant at a certain base year. Namibia's base year is 2025.

The Namibia Statistics Agency (NSA) released the 2025 annual production figures (GDP) yesterday, showing a growth of 1.7% from 2024.

In real numbers, the economy produced extra goods in 2025 to the value of N$2.7 billion, adding to the N$157.4 billion GDP of 2024. The annual increase in the country's production level is an indicator of various matters, as production requires capital and labour.

It is expected that when production is expanding, it also utilises more labour and machinery, creating income for those rendering such services. Low production, in turn, means the economy requires less labour or capital to produce, while keeping the same employment level.

Such a scenario explains the Namibian unemployment picture.

In the 10-year review period, the Namibian economy has never experienced an annual growth of N$8 billion. The largest annual growth recorded during this period was in 2022, at around N$7 billion, which was driven by diamonds and uranium.

However, mining has a low employment elasticity, as its expansion does not result in many jobs due to the sector tending to be capital-intensive.

Namibia's broad unemployment level is currently above 50%, with the youth the most affected. Some diagnostic studies indicate that the unemployment rate is mostly a result of the slow-growing economy or mismatch of skills.

Economic explanations have linked the slow growth to low demands for labour.

Though 2025 recorded an economic growth of only 1.7%, most sectors recorded positive expansions during the year. From the 18 sectors, three recorded declines in the real value added, while seven sectors' growth was above average.

The highest performance across the sectors was 20.2%, with the lowest being -9.4%.

Coming in at the highest, construction recorded said growth due to increased activities in civil engineering. Electricity and water also rose (+12.6%), as own generation improved. Sales and information, together with communications, grew by 10.7% through increased minutes and internet usage.

Mining and quarrying slumped (-9.4%) due to lower diamond and metal ore production. Agriculture, forestry and fishing remained weak, recording a -3.3% decline from the livestock subsector while manufacturing declined by -2.9% as meat processing and diamond cutting slowed.

erastus@thevillager.com.na

CLASSIFIEDS

BUSINESS SUCCESS CONSULTING
Environmental Sustainability

PUBLIC INVITATION

ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATION OF NILE VOCATIONAL TRAINING CENTER AT ONATHINGE SOUTH VILLAGE, OMULONDO DISTRICT IN THE OSHIKOTO REGION

Notice is hereby given to all Interested and Affected Parties (I & APs) that an application will be made to the Environmental Commissioner in terms of Environmental Management Act No. 7 of 2007 and its regulations (GN 30 of 6 February 2012) for the following intended activity.

Project Name: OPERATION OF NILE VOCATIONAL TRAINING CENTER AT ONATHINGE SOUTH VILLAGE, OMULONDO DISTRICT IN THE OSHIKOTO REGION

Project Location: ONATHINGE SOUTH VILLAGE IN THE OSHIKOTO REGION

Project Description: OPERATION OF NILE VOCATIONAL TRAINING CENTE

Representative: MR. S. STEPHEN

Environmental Consultant: BUSINESS SUCCESS CONSULTING

All Interested and Affected Parties (I & Aps) are encouraged to register and provide comments. If you want to register as an I & Aps and receive the Background Information Document, please contact our office:

Contact No: +264811404555 **Email:** bscongwediva@gmail.com
BSC OFFICE AT ERF, 5059 OMATANDO STR. ONGWEDIVA

PERIOD FOR SUBMITING COMMENTS: 05 MARCH - 7 APRIL 2026

PUBLIC NOTICE

Urban Vision Consultant has been appointed by the owner of **Erf 754, Oshakati Extension No. 2,** to apply to the Oshakati Town Council and the Urban and Regional Planning Board for the:

- **REZONING OF ERF 754, OSHAKATI EXTENSION NO. 2 FROM "SINGLE RESIDENTIAL" WITH A DENSITY OF 1:900m² TO "SINGLE RESIDENTIAL" WITH A DENSITY OF 1:700m²**
- **SUBSEQUENT SUBDIVISION OF ERF 754 OSHAKATI EXTENSION NO.2, INTO PORTION A AND THE REMAINDER**

Erf 754 is located east of Oshakati, within Extension No.2. The respective Erf which measures 1488m² in extent, is currently zoned as "Single Residential" as per the Oshakati Zoning Scheme and it lies on a flat terrain with an existing building on it.

In order to maximize the development potential of the property, the owner of the Erf intends to rezone Erf 754, Oshakati Extension No. 2 from "single residential" with a density of 1:900m² to "Single Residential" with a density of 1:700m² which will support densification in accordance by encouraging the effective use of urban land within the Oshakati North Extension No. 11 that is already serviced by also subsequently subdividing Erf 754 Oshakati, Extension No.2 into Portion A and the Remainder..

Please further take note that -

(a) For more enquiries regarding the rezoning application, visit the Oshakati Town Council's Town Planning Department, or the applicant at the address listed below.

(b) any person having objections to the rezoning or who wants to comment, may in writing lodge such objections and comments, together with the grounds, the Chief Executive Officer of the Oshakati Town Council and with the applicant within 14 days of the last publication of this notice, i.e., no later than **17 April 2026**

FOR MORE INFORMATION AND QUERIES, KINDLY CONTACT:

Applicant

Urban Vision Consultants cc
Unit 9, Aurora Court
Pavlov Street, Windhoek

Local Authority

Oshakati TOWN COUNCIL

The Chief Executive Office Oshakati Town Council
P/Bag 5530
906, Sam Nujoma Road
Oshakati AlinaAmwaama@oshtc.na

PUBLIC NOTICE

ENVIRONMENTAL IMPACT ASSESSMENT
&
PUBLIC CONSULTATION PROCESS

Notice is hereby given that an Environmental Impact Assessment (EIA) and Public Consultation Process (PCP) are being conducted in terms of the Environmental Management Act (EMA) and EIA Regulations with respect to a listed activity as more or less described in this notice.

On completion of the aforesaid studies, an application for an **Environmental Clearance Certificate** (ECC) will be made to the Office of Environmental Commissioner (OEC) in the Ministry of Environment, Forestry and Tourism (MEFT) for consideration in terms of the applicable provisions of EMA by the Environmental Commissioner.

Listed Activity	• Aggregate production from a new site situated within the Windhoek Municipality Townland Reserve as represented by the GPS Coordinates below. 1. -22.579458 S 17.017665 E 2. -22.5824685 S 17.017837 E 3. -22.58237 S 17.020148 E 4. -22.579533 S 17.020115 E
Promoter :	**Shifengula Trading CC**
EIA Consultant:	Ekwao Consulting Box 25021, Windhoek Cell: 081 418 3125 Email: ekwao@iway.na
Public Consultation Period:	Interested and Affected Parties (IAPs) are hereby invited to register for the EIA so as to receive information on the project, but also to be able to submit any comments and/or concerns with respect to the envisaged listed activity to the EIA Consultants (Ekwao Consulting). The public consultation period is between 25 March 2026 and 25 April 2026. A Background Information Document (BID) is available upon inquiry

t to Borrow N$3.2 Billion for A

…full financing strategy yet to be released

vali Hangala

rnment will kick off the new l year by turning to the mar- orrow N$3.2 billion for the ccording to the Borrowing y for April 2026.

, provided by the Bank of ehalf of the Ministry of Fi- vailed as guidance for in- eek.

The central bank indicated that "as we prepare for the FY2026/27, we remain committed to communicating a clear plan that provides straightforward guidance on our financing strategy for the year."

The Ministry of Finance and the Bank of Namibia are in the process of concluding both internal and external consultations that have an important bearing on the borrowing plan for the FY2 the April borrowing summa bank will utilise the usual t Bills (TBs), Fixed-Rate Bon tion-Linked Bonds.

Most of the money in April w through Fixed-Rate Bonds, showing an allocation of N$2 raised through 9 bonds, sta GC30 to GC50.

In terms of Treasury Bills, th will borrow N$504 million. ing will be raised through bonds.

The first auction was held la for treasury bills, while the fi tion for the financial year will

For the last financial year, in March 2026, domestic N$152.9 billion, increasing month-on-month, according bank updates.

The increase was reflected i Registered Stock (IRS) and creased by 1.5 percent and N$104.7 billion and N$48.2 tively.

CLASSIFIEDS

BUSINESS SUCCESS CONSULTING
Environmental Sustainability

PUBLIC INVITATION

ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATION OF NILE VOCATIONAL TRAINING CENTER AT ONATHINGE SOUTH VILLAGE, OMULONDO DISTRICT IN THE OSHIKOTO REGION

Notice is hereby given to all Interested and Affected Parties (I & APs) that an application will be made to the Environmental Commissioner in terms of Environmental Management Act No. 7 of 2007 and its regulations (GN 30 of 6 February 2012) for the following intended activity.

Project Name: OPERATION OF NILE VOCATIONAL TRAINING CENTER AT ONATHINGE SOUTH VILLAGE, OMULONDO DISTRICT IN THE OSHIKOTO REGION

Project Location: ONATHINGE SOUTH VILLAGE IN THE OSHIKOTO REGION

Project Description: OPERATION OF NILE VOCATIONAL TRAINING CENTE

Representative: MR. S. STEPHEN

Environmental Consultant: BUSINESS SUCCESS CONSULTING

All Interested and Affected Parties (I & Aps) are encouraged to register and provide comments. If you want to register as an I & Aps and receive the Background Information Document, please contact our office:

Contact No: +264811404555 **Email:** bscongwediva@gmail.com
BSC OFFICE AT ERF, 5059 OMATANDO STR. ONGWEDIVA

PERIOD FOR SUBMITING COMMENTS: 05 MARCH - 7 APRIL 2026

PUBLIC NOTICE

Urban Vision Consultant has been appointed by the owner of **Erf 754, Oshakati Extension No. 2,** to apply to the Oshakati Town Council and the Urban and Regional Planning Board for the:

- **REZONING OF ERF 754, OSHAKATI EXTENSION NO. 2 FROM "SINGLE RESIDENTIAL" WITH A DENSITY OF 1:900m² TO "SINGLE RESIDENTIAL" WITH A DENSITY OF 1:700m²**
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Please further take note that -

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(b) any person having objections to the rezoning or who wants to comment, may in writing lodge such objections and comments, together with the grounds, the Chief Executive Officer of the Oshakati Town Council and with the applicant within 14 days of the last publication of this notice, i.e., no later than **17 April 2026**

FOR MORE INFORMATION AND QUERIES, KINDLY CONTACT:

Applicant

Urban Vision Consultants cc
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Local Authority

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The Chief Executive Office Oshakati Town Council
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PUBLIC CONSULTATION PROCESS

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On completion of the aforesaid studies, an application for an **Environmental Clearance Certificate** (ECC) will be made to the Office of Environmental Commissioner (OEC) in the Ministry of Environment, Forestry and Tourism (MEFT) for consideration in terms of the applicable provisions of EMA by the Environmental Commissioner.

Listed Activity	• Aggregate production from a new site situated within the Windhoek Municipality Townland Reserve as represented by the GPS Coordinates below. 1. -22.579458 S 17.017665 E 2. -22.5824685 S 17.017837 E 3. -22.58237 S 17.020148 E 4. -22.579533 S 17.020115 E
Promoter :	**Shifengula Trading CC**
EIA Consultant:	Ekwao Consulting Box 25021, Windhoek Cell: 081 418 3125 Email: ekwao@iway.na
Public Consultation Period:	Interested and Affected Parties (IAPs) are hereby invited to register for the EIA so as to receive information on the project, but also to be able to submit any comments and/or concerns with respect to the envisaged listed activity to the EIA Consultants (Ekwao Consulting). The public consultation period is between 25 March 2026 and 25 April 2026. A Background Information Document (BID) is available upon inquiry

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CALL FOR PUBLIC PARTICIPATION/COMMENTS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED MINING ACTIVITY OF COPPER ON A MINING LICENCE APPLIED OVER EPLs NO. 7028 & 7029 LOCATED NEAR WETVLEI IN THE OMAHEKE REGION

The public is hereby notified that an application for an Environmental Clearance Certificate (ECC) will be submitted to the Environmental Commissioner as required under the Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations. The proposed project is a listed activity in the EIA Regulations that cannot be undertaken without an ECC, which is issued upon approval of an EIA Study.

Name of proponent: Aloe Investments Two Hundred and Thirty-Seven

Name of the Environmental consultant: Savannah Environmental Consultants Services CC

Project location and description: The proposed Mining Licence will overlie within EPL No. 7028 and within EPL No.7029. The environmental Assessment will identify the project impacts, that are likely to occur during the mining activities of Base and Rare Metal (Copper) on the Mining License.

All interested and affected parties are hereby invited to register in terms of the assessment process to give input, comments, and invited for the public consultation meeting at a later stage. Registration requests and comments should be forwarded to Savannah Environmental Consultants Services CC on or before the 2 May 2026; Email: info@savannah.com.na

SAVANNAH
ENVIRONMENTAL CONSULTANT SERVICES