

UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE RENEWAL OF AN ENVIRONMENTAL CLEARANCE CERTIFICATE FOR SAND MINING OPERATIONS ALONG THE UISEB RIVER, IN GROOT AUB, KHOMAS REGION

Impala Environmental

Unit 89 Auas Hill Village, Auas Blick, Windhoek
061258910 / 0856630598
eia@impalac.com
www.impalac.com



Pronent contact:

Ruben Khoeseb

Tel: +264 81 208 1533

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1. Project Background

1.1 Introduction

The proponent, Mr. R //Khoeseb, in partnership with potential equity partners, has been awarded special permission from the Ministry of Agriculture, Water and Forestry to conduct sand mining activities along the Uiseb river for construction and industrial purposes. Impala Environmental Consulting cc was appointed by the proponent to undertake the renewal process of the environmental clearance certificate which was issued in an Environmental Assessment (EA) and Environmental Management Plan (EMP) for the tenement. An outline of the area is shown in the image below.

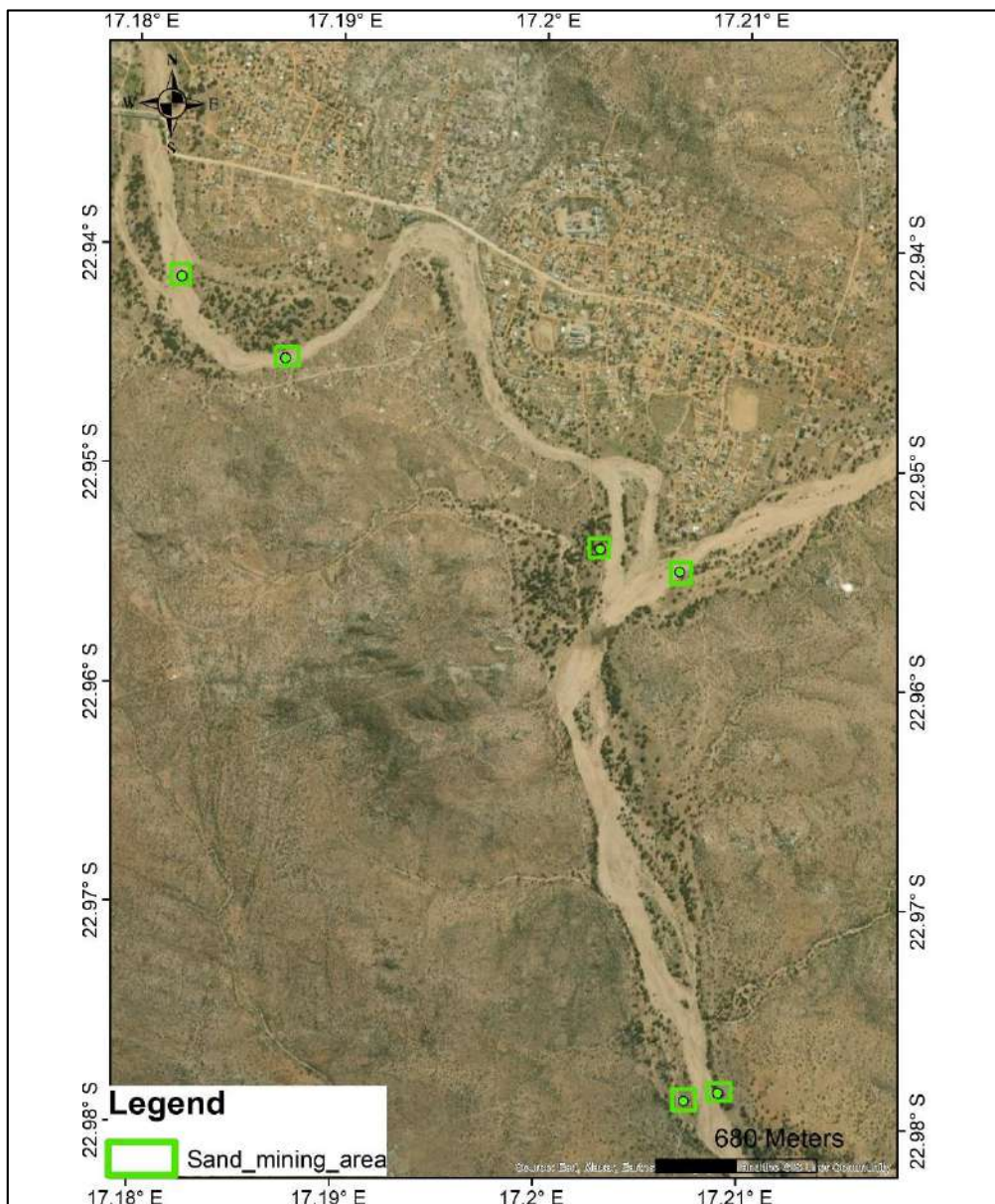


Figure 1 A satellite imagery showing the orientation of the sand mining sites.

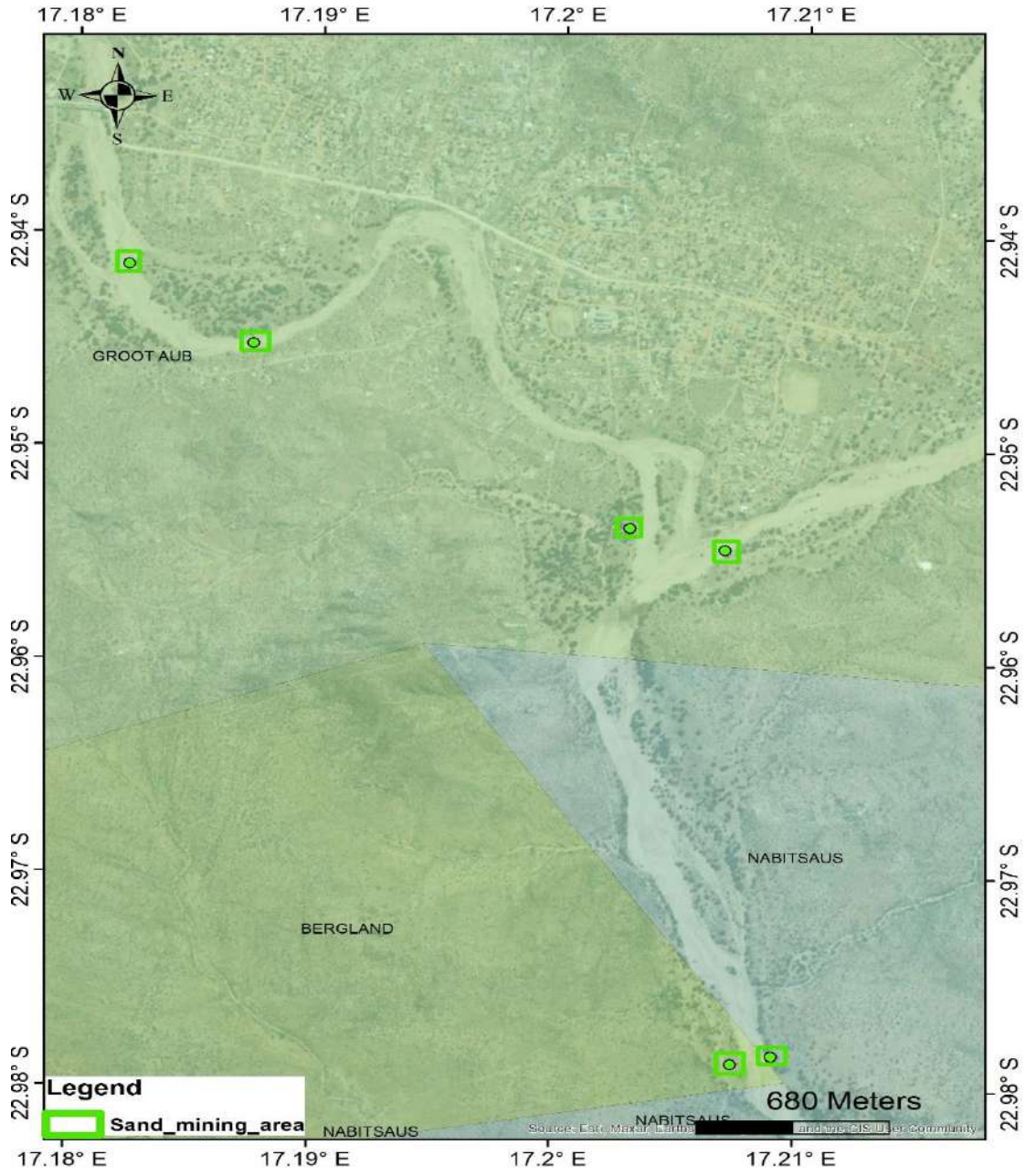


Figure 2 Map showing the farms surrounding the sand mining sites

1.2 Project Location

The area of interest lies 45 km Southeast of Windhoek and 43 km northwest of Rehoboth within the Windhoek district of the Khomas Region. The sand excavation sites are located on farm Groot Aub, which is registered as a government-owned farm. The closest settlement is the Groot Aub settlement, which is situated 15 km from the sand excavation sites.

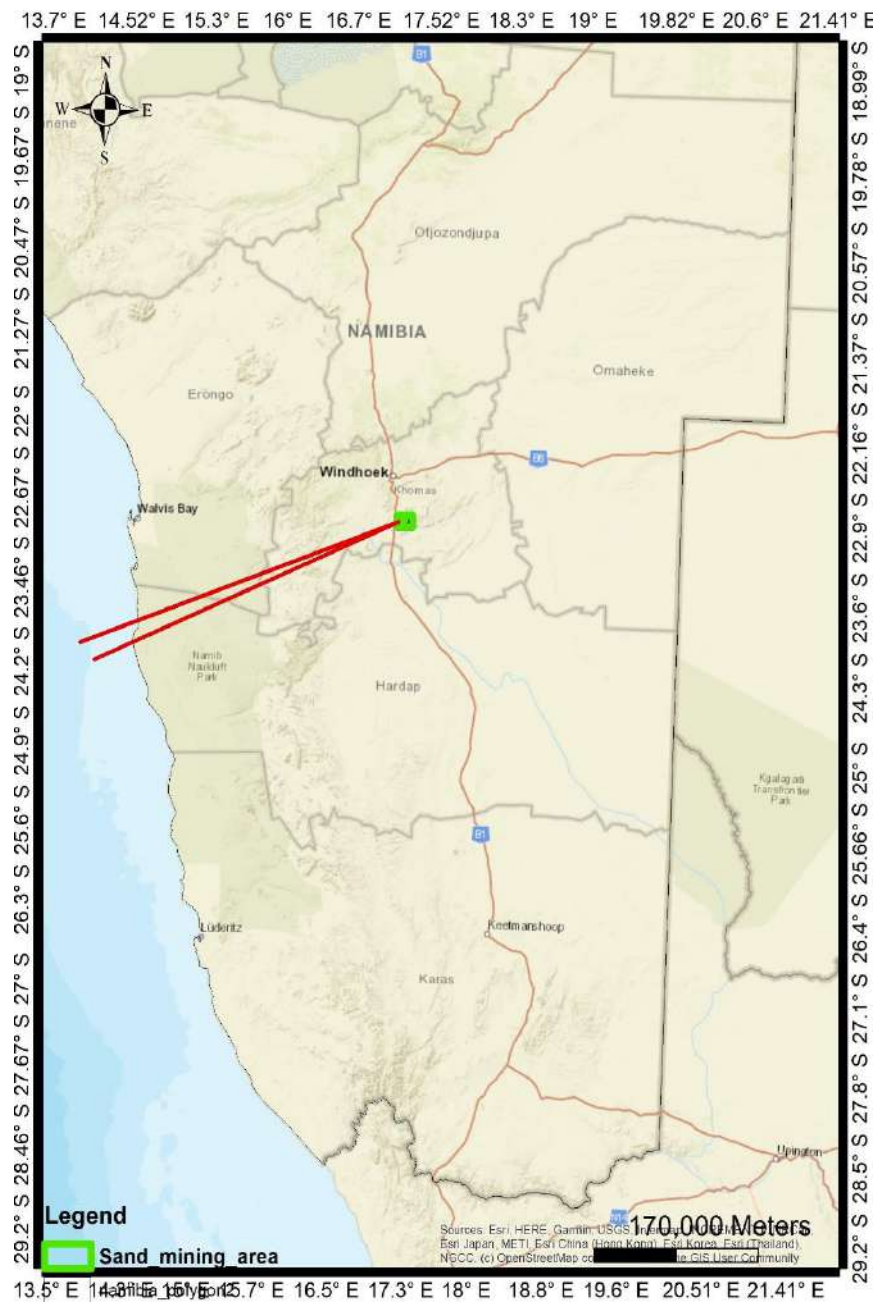


Figure 3 Locality map of the sand mining sites

1.3 Environmental Assessment Requirements

The Environmental Regulations procedure (GN 30 of 2012) stipulates that no mining and sand mining activities may be undertaken without an environmental clearance certificate. As such, an environmental clearance certificate must be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperative that the environmental proponent must conduct a public consultation process in accordance with regulation 21 of the 2012 environmental procedure, produce an environmental scoping report and submit an Environmental Management Plan for the proposed sand mining activities

1.4 Project Alternatives

An alternative to the proposed sand mining activity would be to allocate the land usage to other income generating activities such as livestock and game farming, charcoal production or tourism activities. Although the above mentioned activities may generate revenue for the government and provide employment to a few individuals, they may not have a significant impact on the Groot Aub community in comparison to the proposed sand mining site. The proposed mining site will strictly employ locals from nearby towns and settlements.

2. Summary of applicable legislation

All mineral rights, related to sand mining activities in Namibia, are regulated by the Ministry of Mines and Energy whereas the environmental regulations are regulated by the Ministry of Environment and Tourism. The acts that affect the implementation, operation and management of sand mining activities in Namibia are shown below.

2.1 Environmental Management Act of 2007

Line Ministry: Ministry of Environment and Tourism

The regulations that accompany this act lists several activities that may not be undertaken without an environmental clearance certificate issued in terms of the Act. The act further states that any clearance certificate issued before the commencement of the act (6 February 2012) remains in force for one year. If a person wishes to continue with activities covered by the act, he or she must apply for a new certificate in terms of the Environmental Management Act.

2.2 The Minerals Prospecting and Mining Act of 1992

Line Ministry: Ministry of Mines and Energy

The Minerals Prospecting and Mining Act No.33 of 1992 approves and regulates mineral rights in relation to exploration, reconnaissance, prospecting, small scale mining, mineral exploration, large-scale mining and transfers of mineral licences.

2.3 Water Resources Management Act of 2004

Line Ministry: Ministry of Agriculture, Water and Forestry

The act provides for the management, protection, development, usage and conservation of water resources; to provide for the regulation and monitoring of water resources and to provide for incidental matters.

2.4 Nature conservation ordinance, ordinance No. 4 of 1975

Line Ministry: Ministry of Environment and Tourism

The Nature Ordinance 4 of 1975 covers game parks and nature reserves, the hunting and protection of wild animals (including reptiles and wild birds), problem animals, fish, and the protection of indigenous plants. It also establishes a nature conservation

board. The basic set of regulations under the ordinance is contained in GN 240/1976 (OG 3556). The topics covered in the regulations include tariffs (game parks), regulations relating to game parks, swimming baths, use of boats in game parks, inland fisheries, keeping game and other wild animals in capturing. In addition, the ordinance also regulates game dealers, game skins, protected plants, birds kept in cages, trophy hunting of hunt-able game, hunting at night, export of game and game meat, sea birds, private game parks, nature reserves, regulations of wildlife associations and registers for coyote getters.

2.5 National Heritage Act, 2004 (Act No. 27 of 2004)

Line Ministry/Body: National Heritage Council

The National Heritage Act provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.

2.6 Petroleum Products and Energy Act No. 13 of 1990

Line Ministry/Body: Ministry of Mines and Energy

The act regulates the importation and usage of petroleum products. The act reads as “To provide measures for the saving of petroleum products and an economy in the cost of the distribution thereof, and for the maintenance of a price thereof; for control of the furnishing of certain information regarding petroleum products; and for the rendering of services of a particular kind, or services of a particular standard; in connection with motor vehicles; for the establishment of the National Energy Fund and for the utilization thereof; for the establishment of the National Energy Council and the functions thereof; for the imposition of levies on fuel; and to provide for matters incidental thereof”.

2.7 Forest Act, No. 12 of 2001

Line Ministry/Body: Ministry of Agriculture, Water and Forestry

The act regulates the cutting down of trees and reads as follows “To provide for the establishment of a Forestry Council and the appointment of certain officials; to consolidate the laws relating to the management and use of forests and forest produce; to provide for the protection of the environment and control and management of forest trees; to repeal the preservation of Bees and Honey proclamation 1923, preservation of Trees and Forests Ordinance, 1952 and the Forest Act, 1968; and to deal with incidental matters”.

The constitution defines the function of the Ombudsman and commits the government to sustainable utilization of Namibia’s natural resources for the benefit of all Namibians and describes the duty to investigate complaints concerning the overutilization of living natural resources for the benefit of all Namibians and describes the duties to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and the destruction of ecosystem and failure to protect the beauty and character of Namibia. Article 95 states that *“the state shall actively promote and maintain the welfare of the people by adopting; inter-alia policies aimed at maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of natural resources on a sustainable basis for the benefit of all Namibians both present and future”*.

2.8 Atmospheric Pollution Prevention Ordinance (1976)

Line Ministry/Body: Ministry of Health and Social Services

This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, with the exception of East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.

2.9 Hazardous Substance Ordinance, No. 14 of 1974

Line Ministry/Body: Ministry of Safety and Security

The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage and handling.

2.10 Namibian Water Corporation (Act 12 of 1997)

Line Ministry/Body: Namibian Water Corporation

The act caters for water rehabilitation of prospecting and mineral exploration areas, environmental impact assessments and for minimising or preventing pollution.

3. Environmental Management Plan

3.1 Overview

This Environmental Management Plan is intended to give effect to the recommendations of the Environmental Impact Assessment. To achieve this goal, it is essential that all personnel involved on the sand mining site are fully aware of the environmental issues and the means to avoid or minimize the potential impacts of activities on site.

Legal and policy requirements are well known and understood by the proponent, its employees and contractors and will be strictly enforced by its management team.

Issues and concerns identified in the EIA will form a set of environmental specifications that will be implemented on site.

It is the intention that these environmental specifications should form the basis for an agreement between the proponent and the Ministry of Environment and Tourism. By virtue of that agreement, these specifications will become binding on the proponent.

Environmental management requires a joint effort on the part of all parties involved. The proponent is well established in Namibia and has assigned certain roles to ensure that all players fulfil their responsibilities in this regard.

3.2 Environmental Management Principles

The proponent will ensure that all parties involved in the project uphold the following broad aims:

1. All persons will be required to conduct all their activities in a manner that is environmentally and socially responsible. This includes all consultants, contractors, and sub-contractors, transport drivers, guests and anyone entering the mining areas in connection with the sand mining project.

2. Health, Safety and Social Well Being

- Safeguard the health and safety of project personnel and the public against potential impacts of the project. This includes issues of road safety, precautions against natural dangers on site, and radiation hazards; and,

- Promote good relationships with the local authorities and their staff.

3. Biophysical Environment

- Wise use and conservation of environmental resources, giving due consideration to the use of resources by present and future generations;
- Prevent or minimize environmental impacts;
- Prevent air, water, and soil pollution, Biodiversity conservation and Due respect for the purpose and sanctity of the area.

To achieve these aims, the following principles need to be upheld.

A. Commitment and Accountability:

The proponent's senior executives and line managers will be held responsible and accountable for:

Health and safety of site personnel while on duty, including while travelling to and from site in company vehicles and environmental impacts caused by sand mining activities or by personnel engaged in the sand mining activities, including any recreational activities carried out by personnel in the area

B. Competence

The proponent will ensure a competent work force through appropriate selection, training, and awareness in all safety, health and environmental matters.

C. Risk Assessment, Prevention and Control.

Identify, assess and prioritise potential environmental risks. Prevent or minimize priority risks through careful planning and design, allocation of financial resources, management and workplace procedures. Intervene promptly in the event of adverse impacts arising.

D. Performance and Evaluation

Set appropriate objectives and performance indicators. Comply with all laws, regulations, policies and the environmental specifications. Implement regular monitoring and reporting of compliance with these requirements.

E. Stakeholder Consultation

Create and maintain opportunities for constructive consultations with employees, authorities, other interested or affected parties. Seek to achieve open exchange of information and mutual understanding in matters of common concern.

F. Continual Improvement

Through continual evaluation, feedbacks, and innovation, seek to improve performance with regard to social health and well-being and environmental management throughout the lifespan of the sand mining project.

G. Financial Provisions for Sand Mining

In line with Namibia's environmental rehabilitation policy, the proponent will make the necessary financial provision for compliance with the EMP.

3.3 Impacts on the Bio-physical Environment

3.3.1 Impacts on Archaeological Sites

Although no archaeological sites have been identified yet in the mining site project area, appropriate measures will be undertaken upon discovering any new archaeological sites. All archaeological remains are protected under the National Heritage Act (2004) and will not be destroyed, disturbed or removed. The Act also requires that any archaeological finds be reported to the Heritage Council Windhoek. The proponent's management team will be responsible for implementing the mitigations as outlined below.

The **nature of impact** is outlined below:

- Potential damage to archaeological sites as a result of vehicle tracks, footprints and actions of contractors, employees and visitors of the sand mining site.
- As the mitigation measures below are fully enforced, any impact will be significantly reduced compared to with present situation.

Mitigation Measures to be enforced:

- Buffer zones will be created around the sites.
- Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of sand mining activities.

- All archaeological sites to be identified and protected before further exploration commences.
- Notices/information boards will be placed on sites.
- Training employees regarding the protection of these sites.

Methods for monitoring:

- An archaeologist will inspect the site before commencing with the sand mining activities.

3.3.2 Impacts on Fauna

Sand mining activities may have minor disturbances on the habitat of a few species but no significant impacts on the animals are expected. The proponent shall ensure that no animal shall be captured, killed or harmed by any of the employees in any way. Wildlife poaching will strongly be avoided as this is an offence and anyone caught infringing in this regard will face suspension from the project, and will be liable for prosecution.

The **nature of impact** is outlined below:

- Movement of people and camping around the sand mining site.
- Movement of vehicles in and out of the mining site.
- Noise produced by moving earth-moving equipment.

Mitigation Measures to be enforced:

- Some habitat areas such as trees of the riverbeds, tunnels and rocky outcropswill be avoided wherever possible.
- A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise.
- No animals shall be killed, captured or harmed in any way.
- No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.
- Care will be taken to ensure that no litter is lying around as these may end up being ingested by wild animals

- No animals shall be fed. This allows animals to lose their natural fear of humans, which may result in dangerous encounters.

Methods for monitoring:

- Regular monitoring of any unusual signs of animal habitat.

3.3.3 Impacts on Avifauna

Birds or Nest sites will not be disturbed by any employee, visitor or contractor. Should the employees observe any bird nesting sites for vultures, they will be reported to the Ministry of Environment and Tourism and the site will be avoided.

3.3.4 Impact on Vegetation

The natural vegetation is seemingly undisturbed in the project area except for grasses, which have been grazed by livestock and wild animals. Some vegetation species in the area may be adversely impacted by the mining site project. The type of vegetation that might be affected by the mining site:

- Bushes
- Ephemeral grasses
- Small trees

Christian (2005) pointed out the presence of some sensitive vegetation types:

- Shallow drainage line vegetation
- Scrublands surrounding the sand mining area
- Vegetation in the sand mining area

Certain species regarded as particularly important for conservation may yet be identified and made known via an Addendum to this EMP. If particularly important species are found, they will be located by GPS and their locations communicated to the Ministry of Environment and Tourism. Such locations will then be demarcated and completely avoided.

The **nature of impact** is outlined below:

- Negative impacts on plants from trenching, compacting and removal of plants.
-

- Negative Impact from movement of vehicles and the movement of people around the site.
- Negative impacts from land-clearing and sand mining operations.

Mitigation Measures to be enforced:

- Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.
- Paths and roads will be aligned to avoid root zones. Permeable materials will be used wherever possible.
- The movement of vehicles in river beds, rocky outcrops and vegetation sensitive areas will be avoided.
- The movement of vehicles will be restricted to certain tracks only.
- Areas with species of concern will be avoided.
- Ministry of Environment and Tourism will be informed of any protected species which will be transplanted in consultation with MET.

3.3.5 Impacts of Alien invasive Plants

Disturbance to the natural environment often encourages the establishment of alien invasive weed species. Some of the plant species that could become invasive in the area are listed below:

- *Prosopis glandulosa*
- *Lantana camara*
- *Cyperus esculentus*
- *Opuntia imbricate*
- *Cereus jamacara*
- *Melia azedarach*
- *Harissia martini*

There are numerous ways in which invasive species can be introduced deliberately or unintentionally.

The **nature of impact** is outlined below:

- Plant or seed material may adhere to car tyres or animals
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- Seed or plant material may be imported to site in building materials if the source is contaminated.
- Seeds may blow from debris removed at sites.

Mitigation Measures to be enforced:

- The miner will ensure that debris is properly disposed off.
- Vehicle tyre inspections can be carried out although this may not be a practical mitigation measure.
- Eradicating alien plants by using an Area Management Plan

Methods for monitoring:

- Regular monitoring of any unusual signs of alien species.

3.3.6 Impacts on Socio-Economic

Although a few people might be negatively affected by dust and noise, the miner will ensure that these aspects are properly mitigated. With the potential employment of 30 people, this means that 30 families will benefit from the project. The mining site project has great potential to improve livelihoods and make a contribution to sustainable development within Groot Aub and the surrounding community.

The **nature of impact** is outlined below:

- Impact from loss of grazing for domestic livestock in “exclusive use zone”
- Impacts on cultural and spiritual values.
- Demographic factors: Attraction of additional population that cannot benefit from the Mining site.
- Perception of Health and Safety risks associated with sand mining.

Mitigation Measures to be enforced:

- The population change can be mitigated by employing people from the local community through the traditional authority and encouraging the contractors to employ local individuals.

- The perception of risks will be mitigated by putting up safety signs wherever possible and ensuring that all employees and visitors to Mining site undergo a safety induction course.

Methods for monitoring:

- Public meetings will be held by the minor wherever possible.

3.3.7 Visual Impacts

The proposed sand mining site is situated more than 1 km from any main road. As such, any visual impact that might be caused by the mining site is minimal. Although Groot Aub occurs 15km away from the site, the visual impacts that might be caused are minimal. The topography of the sand mining site will be slightly elevated and therefore special care will be given to any siting, height and colour scheme to ensure that the visual impact is kept at a minimal.

The **nature of impact** is outlined below:

- Tracks and damaged vegetation caused by the sand mining machinery.

Mitigation Measures to be enforced:

- Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.

Methods for monitoring:

- Employees will be trained on the importance of minimising visual impacts.

3.3.8 Use of Natural Resources

Water and electricity is very scarce in Namibia. During the development of the mining site, best international practices will be considered as a minimum standard for operation. The bulk of the power supply to the mining site will be sourced from the proponent's own generator of 120 KVA. The miner will maximise water recycling opportunities wherever possible.

3.3.9 Generation of Solid Waste

Correct management of solid waste will involve a commitment to the full waste life cycle by all the employees and contractors of the mining site. The Miner's goal is to avoid the generation of solid waste in the first place and if not possible, to minimise the volumes generated by looking at technologies that promote longevity and recycling of products. Ideally, the proponent should transport solid waste to a registered site for disposal. However, it is not certain if such facilities are available in the area or if they have the capacity to handle large increases in volume. Appropriate on site facilities will be designed to store large volumes of waste.

3.3.10 Noise

Noise disturbance from earth-moving machinery vehicles may hinder fauna that roam the area.

The **nature of impact** is outlined below:

- Movement of people, earth-moving machinery and vehicles.

Mitigation Measures to be enforced:

- Operations are quite far from the local community.
- Disturbance to fauna that roam the area will be minimized by training the employees on ways to minimise noise.

3.3.11 Air Pollution

Dust will be generated by the earth-moving vehicles and machinery operating at the mining site. Additional dust might be generated from increases in vehicular traffic on newly developed roads. Fall out dust settling on vegetation is likely to cause local disruptions in herbivorous and predatory complexes, and should be minimised as far as possible.

The **nature of impact** is outlined below:

- Movement of people, vehicles and earth-moving machinery.

Mitigation Measures to be enforced:

- All staff on Site should be equipped with dosimeters that measure exposure levels to radiation.
- All staff must be made aware of the health risk and obliged to wear dust masks.

3.4 Rehabilitation

The miner will devise a rehabilitation programme in consultation with MET.

4. Conclusion

The updated environmental management plan is prepared for the Environmental Impact Assessment of sand mining sites which are located on farm Groot Aub, 45 km southeast of Windhoek. Environmental scoping is a critical step in the preparation of an EIA for the proposed sand mining activities.

Basically, sand mining is relatively unsophisticated and rudimentary. A sand miner would require basic equipment: a dozer to clear vegetation and build access roads; an excavator or front-end loader to scoop up sand from the deposit; and trucks to cart the sand away. The barriers to entry are, therefore, low and a sand mining operation can be set up with relatively low cost. In fact, sand mining is ideally suited to small-scale miners and new entrants to the industry.

The proponent intends to employ more than 25 personnel, excluding management. The employees will be sourced from the local community including residence from Groot Aub and Windhoek. All employees will undergo a safety induction, first aid training course and wildlife awareness program. The Labour Act of 2007 will be adhered to at all times.

The bulk of the power supply to the mining site will be sourced from the proponent's own generator of 120 KVA. Water will be sourced from boreholes which will be located within the vicinity of the proposed mining sites. The water will mostly be used for general consumption and cleaning.

The potential negative impacts associated with the proposed sand mining project are expected to be low to medium in significance, apart from air quality, groundwater and some social impacts. Provided that the relevant mitigation measures are successfully implemented by the proponent, there are no environmental reasons why the proposed project should not be approved. The project will have significant positive economic impacts that would benefit the local, regional and national economy of Namibia.

The EMP contains a set of Environmental Specifications that will form part of all contracts between the proponent and contractors such as lubrication companies. The requirements of the EMP will be enforced on site by the Management team, and periodic environmental audits will be undertaken and submitted to MET.

This EIA has been subject to a few limitations, which are explained as follows: -

- The time available in which to secure an environmental contract with the authorities; and,
- The difficulty of locating suitable existing access tracks.

The limited botanical work done to date did not raise any concerns, but will be monitored on an on-going basis. If any “special” species of plants are found, these will be located by GPS. An addendum will then be added to the EMP to indicate localities that should be avoided, or to implement other appropriate measures with regard to any special plants.

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