UPDATED ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR ACTIVITIES ASSOCIATED WITH GROBLER TRANSPORT SERVICES' PROPOSED SAND MINING PROJECT, LOCATED ON THE OKAHANDJA RIVER, OTJOZONDJUPA REGION, NAMIBIA.

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Prepared for:

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EXPERTISE AND DECLARATION OF INDEPENDENCE

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Grobler Transport Services to compile an updated environmental management plan report.

Immanuel N. Katali, the EIA Lead Practitioner holds a B.Arts (Honors) in Geography, Environmental Studies and Sociology and has over 5 years of experience in conducting EIAs in Namibia.

The consultant herewith declare that this report represents an independent, objective assessment of the environmental impacts and its mitigation measures associated with the activities and potential impacts of the sand mining activities.

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LIST OF ACRONYMS, ABBREVIATIONS AND UNITS

DEA	Department of Environmental Affairs
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
I.N.K	I.N.K Enviro Consultants cc
MET	Ministry of Environment and Tourism

1 INTRODUCTION

1.1 Introduction to the Proposed Project

Grobler Transport Services (hereinafter referred to as Grobler Transport), intends on obtaining an extension to their Environmental Clearance Certificate (ECC) for their proposed sand mining activities, located along the Okahandja river, Otjozondjupa Region. As part of the requirements by MEFT, Grobler Transport is expected to submit an updated EMP to reflect the extension.

Grobler Transport Services (Grobler) was issued an ECC in January 2016 for a validity period of three years. However, during the validity period of the ECC, Grobler Transport have been preparing and finalizing contracts and agreements in order to commence with the proposed sand mining activities on the Okahandja River. These contracts and agreements have therefore been recently finalized; thus, they wish to commence with sand mining immediately.

The proposal by Grobler Transport is to extract approximately 130 000 m3 of sand in the first year. Grobler proposes to excavate to a depth of 2 meters below the existing river bed.

The above-mentioned activities are covered in an Environmental Scoping Study & Associated Environmental Management Plan conducted by Colin Christian & Associates in 2015 and an ECC was issued in 2016 with a validity period until 2019.

Prior to commencement of the operation activities, an Environmental Clearance Certificate (ECC) is required on the basis of an approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). It is with this background that, I.N.K Enviro Consultants cc (I.N.K) an independent firm of consultants, was appointed to compile an updated EMP for this project.

1.2 Details of the persons who compiled this EMP

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Grobler Transport Services to compile an updated EMP.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a B.Arts (Honours) Degree in Geography, Environmental Studies and Sociology and has over five years of relevant experience in conducting/managing EIAs, compiling EMPs and Socio-Economic Studies. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

2 ENVIRONMENTAL ACTION PLANS

The purpose of this Environmental Management Plan (EMP) is to present the recommendations from the Scoping Report in the form of Environmental Specifications that can be practically implemented and enforced on site.

The management measures proposed to mitigate the potential impacts are detailed in the action plans below.

2.1 Action plans to achieve objectives and goals

Action plans to achieve relevant objectives/goals are listed in tabular format together with timeframes for each action. The action plans include the timeframes and frequency for implementing the mitigation measures as well as identifying the responsible party.

The Environmental Specifications also deal with the need for monitoring. This includes monitoring of the Project Proponent's Compliance with these Specifications (by the Environmental Scientist), and the need for monitoring of various environmental impacts (by the Authorities). The Environmental Specifications are set out for convenience under headings according to the project activity.

2.1.1 Access to site and excavation sequence

Access to the sand mining site by excavator and haul trucks shall be limited to:

- The open sandy riverbed, avoiding all vegetation (i.e. access shall be within the area to be excavated),
- Bruno Templin Street east of the river, and
- The shortest route from Bruno Templin St. to the B1 tar road.

The following shall not be used for access:

- Floodplains,
- Any areas with indigenous vegetation,
- Any areas with Cactus plants (these are alien invasive and can be spread by driving over them), Dinter St. shall not be used by excavators or haul trucks,
- The gravel road running along the river on the east side shall not be used.

The sequence of excavation shall be as follows. It shall begin at the Dinter St end (Pit 1) and proceed southwards to Bruno Templin St. It shall then re-start at the southern end (of Pit 5) and work northwards to Bruno Templin St. To suppress dust, the gravel section of Bruno Templin St. west of the river crossing shall be sprayed with water regularly on each day of operation. Sufficient water shall be used at

sufficiently frequent intervals to prevent dust from being a nuisance to residents and road users. However, spraying with water should not be excessive enough to create surface runoff.

2.1.2 Restriction on Hours of Operation

Hours of operation for both excavator and haul trucks shall be limited to Mondays to Fridays from 08:00 to 17:00. No operation shall be permitted on Saturdays, Sundays and Public Holidays.

2.1.3 Limits to Excavation – Site Plan & Depth

Table 1: Limits to Excavation Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Limits to Excavation – Site Plan and Depth	The area from which sand is excavated shall be limited as follows: • Sand shall be removed only from the open river bed where there is no vegetation • No excavation shall be carried out on any floodplain; • No excavation shall be done within 10 meters of any indigenous tree whether a large tree or small sapling; • No excavation shall be done within 10 meters of any erf boundary. Grobler's Transport shall ensure that they determine the locations of erf boundaries on site before setting out excavations; • No excavation shall be done within 20 meters of any road crossing the river (Dinter street and Bruno Templin street); • No excavation shall be made within 20 meters of any structure or services including but not limited to the borehole / concrete tower on Bruno Templin Street. (Note that the co-ordinates of new Municipal boreholes reported to be in the river area have not been disclosed to us by the Municipality.)	Throughout the operations	Supervisor

	• Excavation shall not be permitted to result in any diversion of the river course or erosion of any flood plain. Each pit should be internally continuous so that any water in the pit should drain to the southern end of the pit. • The maximum depth of excavation shall be limited to 1.5 meters – or less if necessary, to avoid intersecting the dry-season water table in the river bed. • The sides of the pits shall be trimmed to a 45º slope. This trimming shall be done continuously as part of the excavation process – i.e. on the same day as the excavation so that no vertical slopes are left overnight. The total volume of sand to be extracted shall be limited to 35,000m^3. • Grobler's Transport shall submit monthly statements to the Okahandja Municipality and MAWF (Directorate of Water Resources Management) of the volume of sand removed in that month (measured in cubic meters). • It is recommended that no other sand mining should be permitted within the same site by any other operator for reasons of non-sustainability of supply and the difficulty of control / enforcement of the EMP that may arise as a result of split responsibility.		

2.1.4 Alien Invasive Plants: Prevent Spread & Eradicate any Regrowth

Table 2: Alien Invasive Plants Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Alien Invasive Plants	To prevent spreading of alien invasive plants, mainly Prosopis trees, Cactus (all types), Nicotiana (wild tobacco trees) and Datura bushes: - • Ensure that site staff are able to identify these species. • Alien species must not be confused with indigenous trees. • Never drive on any floodplains. Avoid driving on any visible alien plants. • Remove the Prosopis trees only that are in the river bed just south of Dinter street (see red dots in Figure 3a) subject to public approval. • Eradicate any Cactus or Datura that may exist or come up on site. These can be sprayed with a suitable herbicide.	Throughout the operations	Supervisor

2.1.5 Rehabilitation

- *Faidherbia albida* (Ana) trees should be planted along the banks of the river where there are currently none / or sparse. Note that this species is recommended because it is particularly well adapted to the sandy river-bed / bank conditions.
- The Directorate of Forestry Nursery at Okahandja or the Botanical Research Institute in Windhoek should be consulted regarding the best way to grow these trees.

Questions to be asked should include: -

- Seed: What is the optimum time to pick seed? How long is seed viable? What is the optimum time of the year to plant seed? How close should they be planted? Should any fertiliser or manure be applied?

- Small saplings: instructions for planting? Recommended size for planting out (small saplings often do better than old ones that are root bound in the bags.

2.1.6 Protection of Mammals, Reptiles, and Birds

Table 3: Protection of Mammals, Reptiles and Birds Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Protection of Mammals, Reptiles and Birds	• Avoid all disturbance of, and prevent removal of, indigenous vegetation. • No animals or birds shall be hunted, killed, persecuted, or harmed in any way - including snakes. • All personnel must be made aware that certain mammals, reptiles and birds are protected under the Nature Conservation Ordinance and individuals may face prosecution for any infringements.	Throughout the operations	Supervisor

2.1.7 Limits of Sand Mining in Time

- The sand resource must be considered essentially non-renewable on time scales of human lifespans. Therefore, extraction must be limited to a one-off operation over approximately one year and limited to 35,000m^3.
- Any future sands mining from the same section of the river (after replenishment of sand by river flow) shall require further assessment of the resource and the environmental impacts of mining it.

2.1.8 Excavator and Vehicle Activities (Pollution, Noise, Dust, Wildlife)

Table 4: Excavator and Vehicles Activities Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties

Excavator and Vehicle Activities	• No oils, fuels, grease or hydraulic fluids shall be spilt anywhere in the riverbed or floodplains. • The Excavator and all Vehicles shall be maintained free of any leaks. • To avoid spills, no excavator or vehicle shall undergo repairs or maintenance in the river bed or floodplain area. • Any excavator or vehicle that breaks down or requires maintenance shall first be removed to an appropriate workshop. • In the event of any spill occurring, all contaminated sand must immediately be removed from site to a licensed landfill. • All engines and exhausts shall be well maintained - also to minimize noise and air pollution. Every load of sand on haul trucks shall be covered with a tarpaulin to prevent dust from blowing off it. • No loose items shall be left in trucks that could make a clanging noise. • Excavator and truck drivers shall be mindful of trees, and slow-moving animals (e.g. tortoises, pythons, frogs) and shall avoid harming them.	Throughout the operations	Supervisor

2.1.9 Maintenance of Pits to Prevent Water Quality Problems

Table 5: Maintenance of Pits Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Maintenance of Pits	• The existence of pits may attract illegal dumping of rubbish in the pits (not necessarily by the project	Throughout the operations	Supervisor

	proponent) or vegetation may fall in or be washed in by the river. • No rubbish or vegetation shall be buried in pits at any time. • Grobler's Transport shall be responsible to ensure that any rubbish or vegetative material is removed from the pits to a licensed landfill site. • All illegal dumping shall be reported to the Municipality for their action - including the Registration numbers of any vehicles involved so that the perpetrators can be prosecuted.		

2.1.10 Public Safety on Site in the River

- All excavator operators and truck drivers shall be trained to be aware of any risks posed to the public. They shall also be instructed to warn people of any dangers related to the sand mining, pits containing water, and traffic.
- Grobler's Transport shall take all reasonable measures to ensure public safety in relation to their activities and the safety of the site whether they are busy in operation or not.
- Drainage of the pits shall be optimized in order to minimize standing water that could pose a risk of drowning or breeding mosquitos.

Additional safety measures shall include: -

- Pumping water out of pits if practicable (taking return seepage into account);
- Erecting warning signs at access points to the river and at intervals along the river to warn people of standing water – these must be done in advance - not after the river flows;
- Warning children via schools, and via notices to school parents;
- Warning people over the radio when water flowing through the pits poses a risk;
- Operators and drivers must warn people that they see in the vicinity not to venture near pits that contain water;
- Posting guards shall be an additional security measure when the river is flowing strongly; and

- Any other measures that may be needed to respond to risks arising from project activities and to address any complaints related thereto.

Safety measures to prevent accidents involving the excavator or trucks in the river area:

- Excavator operators and truck drivers shall not allow anyone to stand nearby and shall warn onlookers of the risks of accident;
- Excavator operators and truck drivers shall be alert to the possibility of people near them at all times and particularly when reversing;
- A speed limit of 20 k.p.h. shall be imposed at all times in the river whether trucks are loaded or not.

2.1.11 Public Safety on Roads

Table 6: Public Safety on Roads Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Public Safety on Roads	• A speed limit of 20 k.p.h. shall be imposed when driving on town roads whether trucks are loaded or not. • Drivers shall ensure that they comply with all National Roads Ordinances. • Trucks shall not be overloaded at any time. • The telephone numbers of Emergency Services shall be at hand in every vehicle and excavator so that assistance can be called in the event of injury or accident.	Throughout the operations	Supervisor

2.1.12 Machinery, Generators and Equipment

Table 7: Machinery, Generators and Equipment Action Plans

Activities / facilities	Management and mitigation measures	Action plan	
		Frequency / target date	Responsible parties

Machinery, generators and equipment	• Establish and maintain impermeable bunded / drip trays around machinery, generators and equipment. • Machinery and equipment shall be kept in good working condition to ensure they do not leak oil/diesel. • In the event where machinery needs to be repaired/serviced on site, all care shall be taken to prevent spillage of oil/diesel by performing the work on impermeable surfaces or proper placement of drip trays. • All used parts machinery (which may include, but not limited to, oil filter, pipes, rags, cans) will be collected and removed from site and disposed of in an appropriate manner. • Regular inspection of hazardous storage tanks for leakages and wear is required. • Regular environmental awareness should include potential risks associated with hydrocarbons.	Throughout the operations	Supervisor
Storage of the Lead-Acid	• The reagents and chemicals shall only be stored in original containers being undamaged and sealed. • Damaged containers, bags, etc. of the Lead-Acid shall be sealed/repaired immediately with appropriate material. • Broken/damaged bags must be correctly handled & repaired to avoid contamination of the road and other third parties' facilities when transported to the Kupferberg Waste site. • After loading of lead-acid bags in trucks, bags must be inspected to ensure they are not damaged in transit to the disposal site and no reagents/chemicals have or will be released.	Throughout the operations	Supervisor

General (spills)	• Any spills will be contained and cleaned up immediately. • Spill kits will be readily available on site. Employees and/or contractors will be shown how to use the spill kits to enable containment and remediation of pollution incidents. • The contractor will establish environmental awareness to employees.	Throughout the operations	Supervisor

2.1.13 Activities of Site Staff

- Reasonable precautions shall be taken when employing staff to ensure that they do not have any criminal record.
- No personal shall enter any privately owned erf for any purpose.
- Defecating in the river or floodplains shall not be permitted.
- Grobler's Transport shall provide a suitable portable toilet that can be moved to the site of excavation.

2.1.14 Health and safety of site personnel

- Occupational health and safety is not normally dealt with in EIA and EMPs. However, Grobler should be aware of any provisions of the Labour Act and should ensure that any protective equipment is available and used on site as may be needed – e.g. dust masks, ear protection against noise etc.
- The telephone numbers of Emergency Services shall be at hand in every vehicle and excavator so that assistance can be called in the event of injury or accident.

2.1.15 Complaints If any member of the public has any complaints regarding environmental impacts or noncompliance with the EMP.

The complainant should first contact Mr James Grobler. Then if the problem is not rectified timeously, then the matter can be referred to the Environmental Commissioner, as well as other relevant authorities – depending on the nature of the issue.

2.1.16 Social Issues & Training

Table 8: Social Issues and Training Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Employees - social issues	• Have zero tolerance to alcohol in the workplace. • A First Aid Kit should be available at all times.	• Prior to operation activities • Throughout the operations	Supervisor
Training & Awareness	All individuals who work at the site are aware of the contents of the EMP.	• Prior to operation activities • Throughout the operations	Supervisor
Socio-Economic	Emissions from the operations could result in the air, noise of the closest sensitive receptors, thereby impacting them. The management and mitigation measures in the preceding sections of this report will be implemented in order to manage this risk.	• Throughout the operations	Supervisor

2.1.17 Economic, Job Creation and Skills Development

Table 9: Economic, Job Creation and Skills Development Action Plans

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Recruitment	• Have approachable person as she/he will be a key link between the community in the area and the sand mining activities.	• Prior to operation activities	Supervisor

	• Demonstrate its efforts to recruit employees from Okahandja and Otjozondjupa Region. • Be gender sensitive and select women for interview, training and recruitment.	• Throughout the operations	

3 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the different parts of the environmental management plan (EMP).

3.1 Recommendations for Compliance Monitoring by the Environmental Scientist.

- It is recommended that the Environmental Scientist should be appointed by Grobler's Transport to conduct Compliance Monitoring at least twice per year during operations and on completion.

3.2 Supervisor/Environmental Officer

The Supervisor has overall responsibility for environmental management and safety during the operation process of the sand mining activities and shall oversee the implementation of the EMP.

The Supervisor's responsibilities relating to compliance with this EMP:

- Regular inspections of compliance to this EMP and any other relevant legal requirements.
- Regular correspondence with the DEA on environmental issues and incidents.
- Conduct environmental awareness training during induction training and on an ad hoc basis thereafter to all workers.
- Ensure compliance to all rules
- Ensure that staff is controlled through the implementation of appropriate security measures.
- Carefully manage the handling of hydrocarbons and other hazardous materials.
- Monitor for excessive dust and noise levels and implement control measures if necessary.
- Report incidences to the DEA.
- Implement a waste management strategy.
- Monitoring and maintenance of equipment and machinery.
- Implement an environmental awareness plan.
- Implementation of first-aid procedures.

4 TRAINING AND AWARENESS

The purpose of the job specific environmental awareness training is to ensure that employees/all staff are equipped to implement the actions committed to in the EMP. The staff involved in operations will receive training regarding the requirements of this EMP.

Four main forms of training will be provided on the premises:

- Sand Mining Activities - induction
- Environmental management training – general and targeted

The training will generally be prepared by the Supervisor (or the Environmental Representative).

The following will be done to ensure all employees, contractors, suppliers and visitors receive the appropriate training/awareness:

4.1 Environmental Induction

All new members of staff receive a corporate Environmental Induction along with the obligatory Health & Safety induction. The induction gives a general overview of the environmental challenges faced by the project, how we are managing them, and general tips for reducing our impact in the workplace.

The main reason for environmental induction is to encourage new staff to be environmentally aware right from the beginning of their employment. This will ensure that environmental initiatives are successful by eliminating bad habits from the start.

Before working on site, all personnel and sub-contractors will undertake an induction incorporating environmental requirements. The induction will address a range of environmental awareness issues specific to the operation process of the project.

As a minimum, training shall include:

- Explanation on the importance of complying with the EMP and environmental implications should the EMP not be effectively implemented.
- Explanation of the rules.
- Discussion of the potential environmental impacts of activities, recognition of environmental risks and how to control these risks.
- The benefits of improved personal performance, understanding of what to do in case of an environmental event or exposure.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out operational activities.
- Explanation of the requirements of the EMP and its specification.
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.

4.2 Environmental Awareness training

Targeted environmental management training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact. This environmental training will aim to achieve a level of awareness and competence appropriate to their assigned activities. This training will take place at the beginning of operations.