



Smart Plant Rentals CC

An Environmental Management Plan (EMP) in Support of an Application for an Environmental Clearance Certificate (ECC) for Gravel Extraction on Farm Triangle No. 47, Situated within the Municipality Townlands of the City of Windhoek, Khomas Region

APP- 00150



PROJECT NAME	
<p>An Environmental Management Plan for the Aggregate Extraction on Farm Triangle No. 47, Windhoek Municipality Townlands, Windhoek Khomas Region, Namibia</p> <p>In Support of an Application for an Environmental Clearance Certificate</p>	
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ABBREVIATIONS AND ACRONYMS

TERM	EXPANSION
BAT	Best Available Technology
CIF	Construction Industries Federation of Namibia
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
IAPs	Interested and Affected Parties
KWR	Klein Windhoek River
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MHSS	Ministry of Health and Social Services
NamPol	Namibia Police
NamRa	Namibia Revenue Authority
NHC	National Heritage Council
NSI	Namibia Standards Institute
PPE	Personal Protective Equipment
SHE	Safety, Health & Environment
SME	Small and Medium Enterprises
SPR	Smart Plant Rentals
SSC	Social Security Commission
WCF	Workmen Compensation Fund
WGBCL	Windhoek Belt Conservation Landscape

DEFINITIONS

TERM AND EXPANSION
<p>Assessment: The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making</p>
<p>Builder's waste: Means any waste generated during the building, construction, repair, alteration, renovation, excavation or demolition of any road, surface, structure, building or premises, and includes builders rubble, earth, vegetation and rock displaced during such building, construction, repair, alteration, renovation, excavation or demolition</p>
<p>Business waste: Means any waste generated on any premises used for non-residential purposes, but excluding agricultural properties and small holdings, and does not include general waste, household hazardous waste, garden waste, bulky waste, builder's waste, industrial waste, hazardous waste and health care risk waste.</p>
<p>Council site: Means any waste management, collection, processing, satellite or disposal site operated and/or owned by the Council.</p>
<p>Cumulative Impacts: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.</p>
<p>Disposal: Means the discharge, depositing, dumping, spilling, leaking, placing of waste on or at any premises or place set aside by the Council for such purposes, and "dispose" shall have a similar meaning.</p>

<p>Dump:</p> <p>Means to dispose of waste in any manner other than a manner permitted by law and includes, without derogating from the generality of the foregoing, to deposit, discharge, spill or release waste, whether or not the waste is in a container or receptacle, in or at any place whatsoever, whether publicly or privately owned, including but not limited to vacant land, rivers, waterways, catchments and sewage and stormwater systems. The act of "littering", which retains its ordinary meaning, is excluded from the definition of "dump".</p>
<p>Environment:</p> <p>As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".</p>
<p>Environmental Clearance Certificate:</p> <p>A certificate and associated conditions issued in terms of the Environmental Management Act, authorizing a listed activity to be undertaken.</p>
<p>Environmental Impact:</p> <p>A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.</p>
<p>Environmental Management Plan (EMP):</p> <p>A working document which contains site project specific plan developed to ensure that environmental management practices to eliminate and control environmental impacts are followed during the developmental phases of that site, project and or facility and would normally consist of construction phase, operational phase and decommissioning phases. Commissioning and Operation phases.</p>
<p>General Waste:</p> <p>Means any waste generated on or at any premises used –</p> <p>(a) for residential purposes, and includes agricultural properties and small holdings; or</p> <p>(b) as public and/or private facilities and institutions but does not include garden waste (unless specifically determined or authorised by the 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;</p>
<p>Hazardous Waste:</p> <p>Means -</p> <p>(a) any waste containing, or contaminated by, poison;</p> <p>(b) any corrosive agent;</p> <p>(c) any flammable substance having an open flash-point of less than 90 degrees Celsius;</p> <p>(d) an explosive or radioactive material and substance;</p> <p>(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;</p> <p>(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;</p> <p>(g) the carcass of a dead animal; and</p> <p>(h) any other waste which may be declared as such by Council or in terms of any other applicable law</p>
<p>Household Hazardous Waste:</p> <p>Means any waste, excluding garden or bulky waste, generated as a result of housekeeping, maintenance or repair activities on or at any premises, or accumulated, stored or deposited on such premises, used –</p> <p>(a) for residential purposes, and includes agricultural properties and small holdings; or</p> <p>(b) as public and/or private facilities and institutions, which by reason of its nature, composition, toxicity, type, quality, quantity or volume causes or may cause a nuisance, public health risk or pollution.</p>
<p>Industrial Waste:</p> <p>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.</p>
<p>Minerals</p>

<p>Means any substance, whether solid, liquid or gaseous form occurring naturally in, on or under any land and having been formed by or subjected to, a geological process.</p>
<p>Non-compliance:</p> <p>Issues that are in direct non-compliance with the requirements, commitments and/or management measures as approved in the EMP.</p>
<p>Pollution:</p> <p>Means any change in the environment caused by –</p> <p>(a) any waste, substance or matter; or</p> <p>(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 or on the composition, resilience and productivity of a natural or managed ecosystem (both short term and long term), or on material useful to people, or will have such an adverse effect in the future</p>
<p>Recovery:</p> <p>Means the process or act of reclaiming or diverting from waste any materials, products or by-products for the purposes of being reused, or collected, processed and used as a raw or other material in the manufacture of a new, recycled or any other product, but excluding the use for purposes of energy generation.</p>
<p>Recyclable Waste:</p> <p>Means waste which has been separated from the waste stream, and set aside for purposes of recovery, reuse or recycling.</p>
<p>Recycling:</p> <p>Means the process or act of subjecting used or recovered waste materials, products or by-products to a process or treatment of making them suitable for beneficial use and for other purposes, and includes any process or treatment by which waste materials are transformed into new products or base materials in such a manner that the original waste materials, products or by-products may lose their identity, and which may be used as raw materials for the production of other goods or materials, but excluding the use for purposes of energy generation, and “recycle” shall have a similar meaning.</p>
<p>Recycling Facility:</p> <p>Means a facility which receives any waste, materials, products or by-products for the purposes of recovery, reuse or recycling, and includes a buy-back centre.</p>
<p>Reduction:</p> <p>Means the process or act of reducing the nature, type, quality, quantity, volume or toxicity of any waste generated, and “reduce” shall have a similar meaning.</p>
<p>Refuse Container:</p> <p>Means any receptacle or other container, including a skip, stipulated or approved by the Council from time to time, whether supplied by the Council or not, for the storage, depositing and disposal of waste.</p>
<p>Re-use:</p> <p>Means the process or act of sorting and separating, at the point of origin, different materials found in any waste in order to promote and facilitate recovery, reuse and recycling of materials and resources, and “separate” shall have a similar meaning.</p>
<p>Separation:</p> <p>Means the process or act of sorting and separating, at the point of origin, different materials found in any waste in order to promote and facilitate recovery, reuse and recycling of materials and resources, and “separate” shall have a similar meaning.</p>
<p>Storage:</p> <p>means the temporary storage or containment of any waste for a period of less than 90 days after its generation and prior to its collection for recovery, reuse, recycling, treatment or disposal;</p>
<p>Waste:</p> <p>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 –</p> <p>(a) any undesirable, rejected, abandoned or superfluous matter, material, residue of any process or activity, product, by-product;</p> <p>(b) any matter which is deemed useless and unwanted;</p> <p>(c) any matter which has been discarded, abandoned, accumulated or stored for the purposes of discarding, abandoning,</p>

processing, recovery, reuse, recycling or extracting a usable product from such matter; or
(d) products that may contain or generate a gaseous component

Waste Disposal Site:

Means any facility or site which receives waste for treatment or disposal, and which is authorised to accept such waste, or if such a facility is an incinerator, subject to the provisions of regulation 20, and any possible registration or other permission as may be required by any other applicable law; (CoW Definition).

Waste generator:

Means any person whose activities produce any waste and, if that person is not known the person who is in possession and/or control of that waste.

Waste Management Plan:

Means a structured document that sets out to record/eliminate/reduce/reuse/recycle the amounts and the types of all waste that is generated in an area or facility.

1. ENVIRONMENTAL MANAGEMENT PLAN

1.1 Introduction

This Environmental Management Plan (EMP) is compiled in terms of the Environmental Management Act (Act No. 7 of 2007) for the gravel extraction project proposed to take place on Farm Triangle #47. The farm is situated in the Windhoek district on the periphery of the municipality townlands. The project promoter is Smart Plant Rentals (SPR) an SME company based in Windhoek. The EMP should be read in conjunction with the Environmental Impact Assessment (EIA) scoping report conducted into the envisaged activity.

The EMP is intended to serve as a standalone tool to manage and safeguard the environmental impacts associated with the gravel extraction activity and is prepared to support an application for an Environmental Clearance Certificate (ECC) to be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) by the promoter, SPR.

The underlying objective is to ensure that the environmental impacts emanating from the envisaged activity which entails the establishment of a campsite on the farm, mining of gravel, crushing, screening and transport of the final products to end users, are managed, mitigated and kept to a minimum. In this regard, guidelines have been provided according to which compliance monitoring can be performed during the lifespan of operation.

1.2 Purpose

It is the purpose of this EMP to provide clearly defined actions that should be implemented by SPR during the planning, construction, operational and decommissioning phases of its gravel extraction operation. The EMP is a dynamic document, flexible and responsive to new and changing circumstances i.e. it should therefore be updated as and when required. Any substantive changes to the current scope of gravel extraction, i.e. increasing the maximum extraction volume of 10 000 m³ per year or value addition activities to the extracted such as brick making, or the installation of permanent structures on the campsite, will require the amendment of the EMP. Copies of this document should be kept at the site office for ease of reference.

1.3 EMP Acceptance

The acceptance of this EMP by the Environmental Commissioner will confer a legal obligation to the promoter, SPR to comply with the recommendations of EMP. Should the ECC holder fail to comply with such requirements, it is deemed a contravention of the Environmental Management Act (Act No. 2 of 2007) and as such is criminally prosecutable.

1.4 Environmental Management Objectives

The implementation of this EMP will be a recurring process that converts mitigation measures into actions and through monitoring, review and corrective actions, ensures conforms with the overall objectives of the activity. The ultimate environmental objectives are therefore:

- To ensure compliance with the conditions of the ECC once an ECC has been granted for the activity.
- To implement practical measures to prevent, minimize, mitigate or rehabilitate areas impacted by the operation.
- To conserve significant aspects of the biophysical and social environments.
- To protect human health and ensure safety of the employees and individual members of the general public when visiting the premises and during the delivery of gravels on public roads to end-users.
- To develop workable methods which ensure that the gravel operation is carried out in a manner which is financially feasible, technically sound, socially acceptable and environmentally sustainable

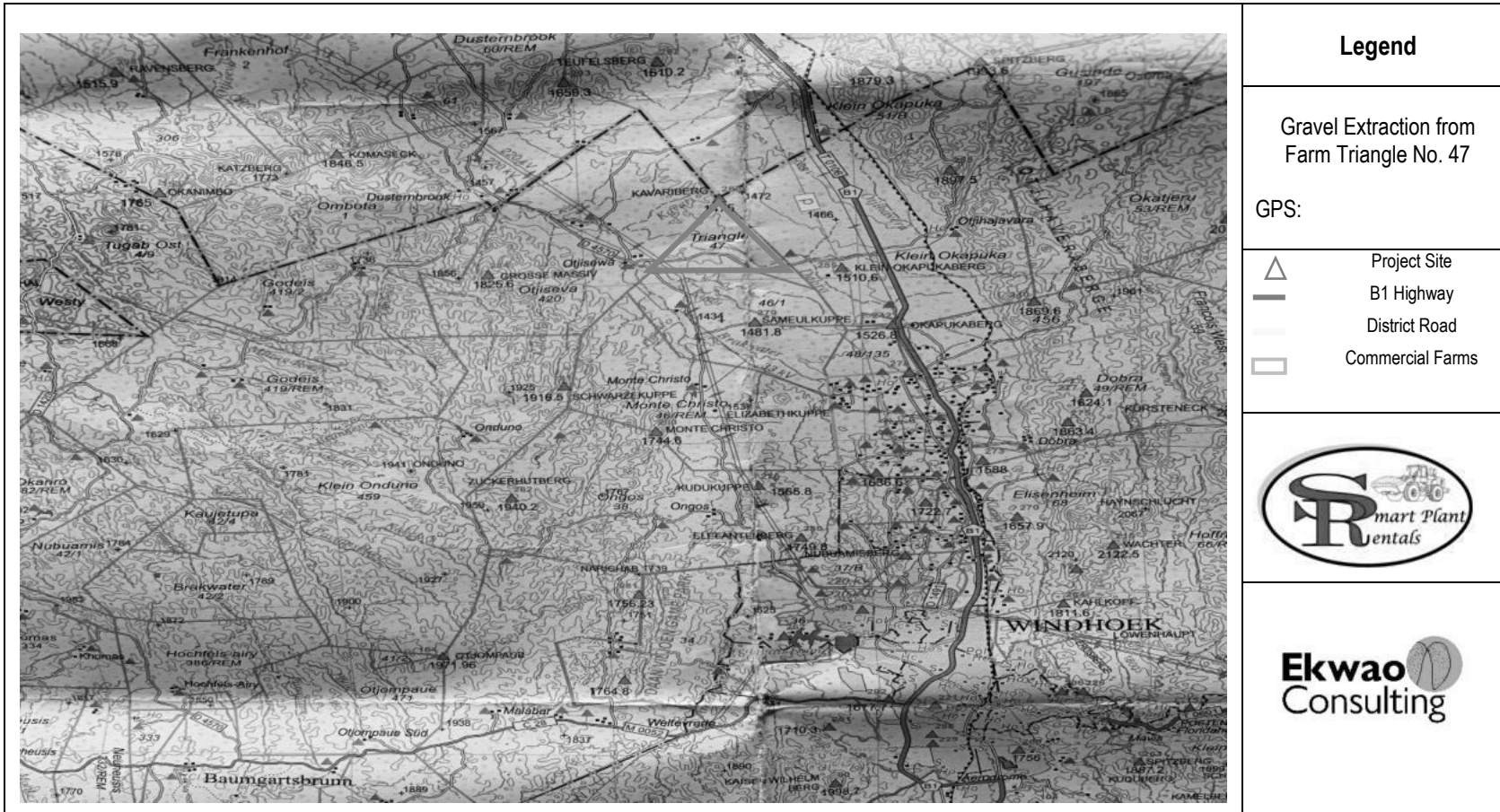


Figure 1: Project Site Location

2. ROLES AND RESPONSIBILITIES

All environmental related matters in Namibia are administered by the Environmental Commissioner (EC) a statutory appointment in terms of the provisions of EMA . The line ministry is MEFT. The parties listed in the **Table 1**, below are expected to fulfill various functions, roles and responsibilities to ensure the effective implementation of this EMP during the lifespan of the gravel extraction operation:

Table 1: Functions and Responsibilities

The Environmental Commissioner (EC)	The Promotor / SPR
<p>Amongst the roles of the EC as it pertains to this project are:</p> <ul style="list-style-type: none"> • Granting of the ECC • Enforcing compliance with the terms of the ECC & EMP • Reviewing this EMP and any future revisions thereof. • Undertaking site audits and inspections at their discretion. • Reviewing annual audit reports. • Reviewing serious onsite incidents and accidents reports. • Enforcing legal mechanisms for contraventions to the EMP and ECC. 	<p>Amongst the roles of SPR as the promotor, are the following:</p> <ul style="list-style-type: none"> • Comply with the provisions as outlined in this EMP. • Comply with the conditions of the ECC, once the same has been granted. • Ensure that all prospective employees are trained and inducted on the provisions of this EMP. • Report any significant environmental incidents or accidents and emergencies to the relevant authorities. • Hire an Environmental Officer to assist with the implementation of the EMP including conducting of monitoring and audit reports annually. • Rehabilitate all mined out areas pre-mining conditions.

3. THE LEGAL FRAMEWORK

The pieces of legislations and policies applicable to the project are listed in **Table 2**, below:

Table 2: Applicable Legislations & Policies

Legislations & Policies	Applicable Legislation											
	A	B	C	D	E	F	G	H	I	J	K	
The Constitution of Namibia	x	x	x	x	x	x	x	x	x	x	x	
Agricultural (Commercial) Land Reform Act, Act 6 of 1995	x						x			x		
Atmospheric Pollution Prevention Ordinance No. 11 of 1976		x	x					x			x	
EA Policy for Sustainable Development and Environmental Conservation	x	x	x	x	x	x	x	x	x	x	x	
Environmental Management Act , Act 7 of 2007	x	x	x	x	x	x	x	x	x	x	x	
Hazardous Substance Ordinance No. 14 of 1974	x	x	x	x				x	x	x	x	
Labour Act No. 6 of 1992 - Health and Safety Regulations		x	x	x	x	x	x	x		x	x	
Minerals (Prospecting & Mining) Act, Act 33 of 1992	x									x		
National Heritage Act (Act No. 27 of 2004)								x				
Local Authorities Act (Act No. 23 of 1992)							x					
Nature Conservation Ordinance No. 14 of 1975								x				
Pollution Control and Waste Management Bill (Draft of Sept 2003)		x	x	x				x			x	
Public and Environmental Health Act No. 86 of 2015		x	x	x	x	x	x	x	x	x	x	
Soil Conservation Act (Act No. 76 of 1969)							x	x				
Regulations of the Environmental Management Act, Act 7 of 2007	x	x	x	x	x	x	x	x	x	x	x	
Forest Act (Act 12 of 2001)	x						x	x				
Road Traffic and Transport Act (Act No. 52 of 1999)		x	x	x							x	
Water Resource Management Act, Act 11 of 2013	x		x					x				
Legend												
A	Use of natural Resources	H	Biodiversity									
B	Emissions Impact (Air & Odour)	I	Archaeological, Cultural and Heritage Impacts									
C	Emissions (to land & hazard)	J	Social-economic Impacts									
D	Noisy Impacts	K	Health and Safety Impacts									
E	Visual Impacts											
F	Vibrations											
G	Land Use											

4. ARRANGEMENT OF THE EMP

The EMP has been arranged to cover the environmental impacts related to the construction, operational and decommissioning arranged under the following headings:

- EMP for the Provision of Infrastructure and Accessories
- EMP for Gravel Extraction or Mining
- EMP for Generic Environmental Aspects
- EMP for Socio-economic Environmental Aspects
- EMP for Decommissioning and Rehabilitation

4.1 EMP : Establishing of Infrastructure and Accessories

SPR will have to establish operational infrastructure and accessories as listed below. A short access road to link the gravel extraction site to the district road D1499 which runs through the Farm Triangle is required and has to be constructed.

Mitigation measures have been provided with respect to establish, to maintain and to rehabilitate such support infrastructures on cessation of gravel production.

- A campsite for its employees, machinery & equipment.
- Access roads to the campsite and gravel extraction sites.
- Establishing of support infrastructure (machine parking, maintenance/service yard, site office, onsite sanitation, tools & equipment storage, etc.)

Table 3: EMP : Establishing Infrastructure and Accessories

PROVISION FOR INFRASTRUCTURE AND ACCESSORIES
<p>ESTABLISHING OF ACCESS ROADS</p> <ul style="list-style-type: none"> • Select the route which allows for the minimum removal of bushes and trees. • The proposed road should be surveyed and properly demarcated before construction starts. • Existing old internal farm routes should be followed where those exist, as far as practically possible. • Sensitive areas such as watercourses and steep gradients should be avoided, as far as is possible. • No more than two routes should be constructed to the campsite and gravel extraction sites. <p>ESTABLISHING OF THE CAMPSITE</p> <ul style="list-style-type: none"> • Select an area where to establish a campsite and ensure that the area selected is big enough to accommodate the current and future needs of the operation. • The area selected must be clearly demarcated and preferably fenced in with access controlled via a single lockable entrance. • The site selected should involve the least removal of vegetation, bush and plants. • Take the predominant wind direction into account when selecting a campsite. • Avoid sensitive areas such as watercourses, raised areas, etc. • Avoid cutting down mature trees in the area so selected. • Locate the campsite in such a way that it is out of sight of the public using D1499 through the farm. <p>ESTABLISHING OF SUPPORT INFRASTRUCTURE AND ACCESSORIES</p> <ul style="list-style-type: none"> • Where feasible locate support infrastructure on the campsite. • The storage area for hazardous substances, i.e. fuel, oil, lubricants, oil filters, etc. must be secured. • Repair and servicing of machinery & equipment should take place in the workshop section area. • Drip pans or thin concrete slab or facility with PVC lining should be used to prevent oil leaking into the ground. • No vehicle may be repaired at any other location but in the maintenance yard. • Access to the maintenance yard must be controlled and if possible padlocked so as to avoid theft and vandalism. <p>REFUELLING</p> <ul style="list-style-type: none"> • Adequate fuel (diesel) may be kept on the premises with permission of the line ministry. • Refueling should be carried out on a hard impermeable surface or over drip pans to ensure spilled fuel is captured and cleaned up. • Defective hoses, valves and containment structures should be promptly repaired. • Refueling of machinery at working sites should be done from a suitable container, a mobile fuel bowser or with a jerry can where small quantities are involved. • Refuel and handling of any fuel must be done by a key personnel who is well trained and experienced. <p>HANDLING OF HAZARDOUS PRODUCTS</p> <ul style="list-style-type: none"> • Suitable covered receptacles must be available at the workshop section of the campsite for the temporary safekeeping of hazardous wastes (oil filters, old batteries, etc.) • All used oils, grease and hydraulic fluids must be placed in leak-proof containers and disposed of at a licensed facility. • Any oil spills should be collected and disposed of at the licensed facility of the City or sold to companies handling such products. • Under no circumstances should hazardous wastes be disposed of on the property.

PROVISION FOR INFRASTRUCTURE AND ACCESSORIES

- Any spill in excess of 200 litres is a reportable incident which must be reported to the line ministry.
- Ensure that there is adequate firefighting equipment that are functional.

OPERATION AND MAINTENANCE OF MACHINERY, VEHICLES & EQUIPMENT

- Ensure machineries and equipment used in the operation are properly maintained and regularly serviced (defective silencers should be replaced, etc.).
- Equipment should be operated at the minimal power ratings to undertake the required task.
- Machineries must be switched off when not in use.
- Unnecessary hooting, idling & revving should be avoided.
- Earthmoving machinery and tipper trucks should be operated by licensed operators.
- Tipper trucks used on public roads must be licensed, roadworthy and fitted with amber flashing lights.
- Under no circumstances may tipper trucks be overloaded.
- Truck operators should wear reflective protective vests, hard hats and safety boots.
- Any complaint received must be immediately investigated and corrective action taken.

MAINTENANCE OF ACCESS ROADS

- Constructed access roads should be adequately maintained so as to:
 - minimise dust;
 - eliminate incidents and accidents, and
 - avoid vehicle breakdowns and costly repairs.
- Off-road driving must be prohibited.
- Operators must comply with speed limits and other road regulations.

SANITATION

- Provide adequate sanitation on the campsite with clean drinking water and toilet facilities for use by the employees and the clients visiting the operation.
- If some employees will be staying on site, suitable washing facilities should be provided.
- A high standard of hygiene and housekeeping must be maintained at the campsite.
- Effluent water from washing facilities should be disposed of in a properly constructed drain.
- Under no circumstances should employees use bushes & plants as toilet facilities.

Monitoring Frequency	Responsible Party
Prior to the construction of campsite and throughout the operational phase	SPR Management

4.2 EMP : Gravel Extraction or Mining

Only secondary (oldest) gravel deposited at the higher elevation, away from the present day KWR channel is to be excavated. Extraction is to be confined to blocks that are well demarcated and not exceeding 0.8 ha in extent. No mining should be conducted within 100 m of the current river channel. Mitigation measures have been provided with respect to the following activities:

Table 4: EMP for Gravel Extraction/Mining

GRAVEL EXTRACTION OR MINING	
<p>DEMARCATION OF GRAVEL BLOCKS</p> <ul style="list-style-type: none"> Gravel blocks should be identified, demarcated and clearly marked with visible devices, i.e. painted poles. The markings identifying gravel blocks should be maintained throughout the period when such zones are being mined. Site gravel blocks away from water streams and any sensitive areas. The ideal area will be one which requires minimal destruction of vegetation, plants and trees. 	
<p>GRAVEL MINING</p> <ul style="list-style-type: none"> Before any gravel extraction starts, a mining layout plan should be developed for each block. The plan should indicate estimated volumes for topsoil and gravel available in each block. Areas where topsoil is to be stockpiled should also be identified at this stage. The plan should be communicated to the mining crew and a copy kept in the site office. Extraction or mining of gravel must only take place within the confines of identified gravel blocks. Where the bedrock is relatively shallow, a layer of gravel of not less than 0.2 m thick should remain on the bedrock to facilitate easier rehabilitation. 	
<p>HANDLING OF TOPSOIL</p> <ul style="list-style-type: none"> Topsoil from the natural ground level down to a depth of 0.3 m must be removed from all areas where physical disturbances of soil surface will occur. All topsoil removed, must be kept on stockpiles with heights not exceeding 1.5 m. Topsoil stockpiles should be made on the high ground side of the mining area within the demarcated gravel block. Topsoil should be preserved for future rehabilitation of the mined out areas and must not be used for the maintenance of access roads. Vegetation regrowth should be allowed on the stockpiles. Ensure that topsoil on stockpiles does not get contaminated by non-indigenous, alien vegetation and plants. 	
<p>REHABILITATION</p> <ul style="list-style-type: none"> Mined out gravel blocks should be rehabilitated by backfilling with any remaining oversized boulders. The topsoil stored elsewhere should be backfilled last over the mined out block and vegetation regrowth monitored over a time period. If reasonable assessment indicates that re-establishment of vegetation is relatively poor, the soil can be analysed and any deleterious effect on the soil arising from mining activities corrected. No waste should be dumped into mined out blocks to be covered during the rehabilitation. 	
Monitoring Frequency	Responsible Party :
Throughout the operational phase of gravel extraction.	SPR Management

4.3 EMP : Generic Environmental Mitigation Measures

The following environmental aspects have been treated as generic and mitigation measure accordingly recommended:

- Atmospheric Impacts - Dust & Gaseous Emissions
- Noise Pollution
- Waste Handling
- Open Fire and Fire Prevention
- Health and Safety
- Illegal Hunting & Poaching of Livestock and Game
- Environmental Awareness Training
- Visual intrusion
- Archaeological, Heritage and Cultural Remains
- Social-economic Impacts

Table 5: EMP for Generic Environmental Mitigation Measures

GENERIC ENVIRONMENTAL MITIGATION MEASURES	
ATMOSPHERIC IMPACTS - DUST & GASEOUS EMISSIONS	
<ul style="list-style-type: none"> • Machinery, tipper trucks and LDVs used in the operation must be well maintained, regularly serviced and idling times limited so as to minimize gaseous emissions into the atmosphere. Where possible, fuel with low sulphur content (diesel with 50 ppm) should be used. • Where possible material stockpiles should be located in sheltered areas where they are not exposed to erosive effects of the wind. Where erosion of stockpiles becomes a problem, erosion control measures must be implemented. This could include reducing the size of the stockpile or positioning the stockpiles in areas where they are not exposed to wind erosion. • A speed of not more than 30 km/hr must be maintained and enforced on all internal routes. Speed limit signage must be prominently displayed along such routes. • Employees working in areas where gaseous emissions are generated should be provided with suitable PPE. Wearing of such PPE should compulsory and enforced. • Any complaints or claims emanating from lack of dust control should immediately be investigated and corrective action taken. 	
Monitoring Frequency	Responsible Party
Monitor quarterly. In the event of a complaint related to dust or gaseous emissions, investigate complaint and take corrective action immediately.	SPR Management
NOISE POLLUTION:	
<ul style="list-style-type: none"> • Ensure that machinery and equipment are well maintained and routinely serviced with any defective silences replaced. • Machinery and equipment that are used intermittently should be shut down between work periods or throttled down to a minimum and not left running unnecessarily. This practice will reduce noise and at the same time conserve fuel. • Confine movements of trucks delivering gravel to end-users to working hours of 07h00 and 17h00. • Limit non-routine noisy generating activities such as maintenance of plants, machinery and equipment to day-time hours. 	
Monitoring Frequency	Responsible Party
With proposed fleet, monitoring should be done annually. In the event of a complaint received, an investigation should be launched immediately and corrective action taken.	SPR Management
WASTE HANDLING	
<ul style="list-style-type: none"> • Develop an in-house waste handling policy which includes keeping various types of waste separate. • Non-biodegradable and recyclable waste (plastics, cans, bottles, packaging materials, metal scraps, etc.) should be stored in containers and disposed of on a regular basis to the waste facility of CoW. • Organic waste (food items, potatoes skins, etc.) should be stored in bins with secure lids and not fed to wild animals. • Liaise with waste recycling companies in Windhoek to collect recyclable wastes (papers, plastics, etc). • Avoid wind dispersal of papers and plastics as it results in visual nuisance. Plastics can be fatal to animals when confused. • Maintain a high standard of housekeeping. • Hazardous wastes should be handled as described above. 	

GENERIC ENVIRONMENTAL MITIGATION MEASURES	
<ul style="list-style-type: none"> Scrap metals should be offered to scrap companies for sale. Under no circumstances should waste be buried on the property 	
Monitoring Frequency	Responsible Party
Depending on the volume involved, waste should be removed on a biweekly basis. The effectiveness of the waste management plan must be assessed annually.	SPR Management
<p>OPEN FIRE AND FIRE PREVENTION</p> <ul style="list-style-type: none"> Open fire may be made at designated areas only. Fire-fighting equipment should be readily accessible and kept in a good working order. No smoking should be allowed in areas where there is a fire hazard, i.e. near fuel storage area. Fire emergence procedures should be established for the campsite. In firewood is used for cooking purposes, a fire-break should be cleared around the camp site. No trees should be felled or wilfully damaged for purposes of obtaining firewood. <p>HEALTH AND SAFETY</p> <p>A health and safety plan must be developed for the operation which should as a minimum address the following aspects:</p> <p>(a) Road Safety:</p> <ul style="list-style-type: none"> Internal routes should be properly maintained. All vehicles should be operated on existing roads and no off-road driving should be allowed. Vehicles used on public roads must be licensed and roadworthy. No overloading is allowed. All truck drivers must have valid driver's license and comply with traffic rules & regulations. Speed limits should be respected and complied with to reduce dust. Drivers should be provided with suitable PPEs. <p>(b) Safety within Gravel Extraction Block</p> <ul style="list-style-type: none"> Open excavations should be demarcated with danger tapes. No use of alcohol should be tolerated and offenders should be reprimanded. No weapons (knives, guns, etc.) must be allowed in the work place <p>(c) Good Housekeeping Practice:</p> <ul style="list-style-type: none"> Maintain good housekeeping of the gravel mining area & camp site No littering is allowed. Apply good waste management with waste storage containers available at both sites Discourage use of 'bush' as toilet No use of drugs should be allowed. No guns or dangerous weapons are allowed on the campsite. Discourage foul language amongst the workers <p>(d) Onsite Fuel Storage and Handling</p> <ul style="list-style-type: none"> Fuel may be stored onsite in bulk on site provided all the necessary permits are obtained from the line ministry and fuel security measures provided. Refueling of earthmoving plants working in a gravel block away from the campsite, should be undertaken by using a mobile fuel bowser. Any fuel spill from refueling must be immediately cleaned up by scooping out the entire fuel soaked soil and placing such materials in a leak-proof container for disposal in a responsible manner and at a designated site. <p>ILLEGAL HUNTING OR POACHING OF LIVESTOCK AND GAME</p> <p>For the livestock (cattle) and wildlife on the farm and on the neighbouring farms, the following precautions are proposed:</p> <ul style="list-style-type: none"> Dogs and cats are prohibited on the campsite unless permitted by the landowner. No handguns are permitted on the camp site. No snares or trap wire devices may be used to catch wildlife. Employees must report their visitors to their Supervisor before such visitors arrive at the farm. Employees must report any suspicious movements observed on the farm to their Supervisor. Poaching is a criminal activity and, if caught, perpetrators can get long jail terms. <p>ENVIRONMENTAL AWARENESS TRAINING</p>	

GENERIC ENVIRONMENTAL MITIGATION MEASURES	
<p>It is imperative that all potential employees hired on the gravel extraction are given an environmental induction training workshop which, as a minimum should include the following aspects.</p> <ul style="list-style-type: none"> • Basic understanding and appreciation of the fragile environment in which the gravel operation is located and the consequences of neglecting to protect the environment. • The role and responsibilities of the employees and management in complying with the EMP. • The significance of the mitigation measures proposed in this EMP. • The significance why reptiles including snakes may not be killed. • Explanation of the problems associated with poor waste management 	
Monitoring Frequency	Responsible Party
Compliance is required throughout the operation phase of the operation. When a complaint has been reported, the complaint must be recorded in writing and corrective measures taken.	SPR Management
<p>VISUAL INTRUSION</p> <p>The operation is not visible from B1 highway, but it can be seen by the public using the district road, D1499. Gravel extraction blocks should be sited in such a way that direct exposure to D1499 is avoided. Product stockpiles should be placed as recommended.</p>	
<p>ARCHAEOLOGICAL, CULTURAL AND HERITAGE REMAINS</p> <p>Remains of human species 'carbon dated' as being 3 000 years ago have been discovered during maintenance work on a neighbouring farm in 1964. In the event that any remains of cultural interests are uncovered during the gravel mining operation, the following guidelines should be followed:</p> <p>'Chance Find Procedure'</p> <ul style="list-style-type: none"> • If operating a machine stop work immediately. • Must operator must immediately inform the Supervisor. • The site must be demarcated with plastic warning tape. • All work in the immediate vicinity must cease. • Determine GPS position of the place if possible; • No item(s) must be removed from the site. • Supervisor or SPR Management must inform the office of National heritage Council (NHC) and request written permission to remove findings from work area. • Recover, pack and label findings for transfer to the National Museum as guided by NHC. <p>Human Remains:</p> <p>Should human remains be found, these guidelines should be followed:</p> <ul style="list-style-type: none"> • Apply the chance find procedure as described above; • Notify the nearest Namibia Police Charge Office • Schedule a field inspection with an archaeologist or qualified person to confirm that remains are human; • Advise and liaise with the NHC and the Namibian Police. • Remains to be retrieved by NamPol and transported by them either to the National Museum or the National Forensic Laboratory. • Work must only resume on the same site, once the remains have been successfully retrieved by the NamPol. 	
Monitoring & Frequency	Responsible Party
Applicable during the operational phase. Report only when encountered.	SPR Management

4.4 EMP : Socio-Economic Environmental Aspects

In this section, impacts have been considered for employment creation and social community impacts: on

Table 6: EMP for Socio-economic Impacts

THE SOCIO-ECONOMIC IMPACTS	
<p>EMPLOYMENT CREATION</p> <ul style="list-style-type: none"> • Adopt a 'local first policy' when hiring workers for non-skilled positions for the gravel extraction operation. • Hire employees from the local community without discrimination on the basis of gender, race, language, background, religion or political affiliations. • Ensure that the recruitment of employees is done in a transparent manner and should be gender and disability inclusive, i.e. qualified women should be given an equal opportunity where possible. The recruitment process must be formal and organized. <p>(a) Employees' Wellbeing:</p> <p>Develop a policy on social ills to deal with aspects related to drug and alcohol abuse by the employees. Initiatives should also be made with regard to raising awareness on the danger of unsafe sex practices which lead to HIV/AIDS and other sexual transmitted diseases.</p> <p>(b) Labour & Working Conditions</p> <ul style="list-style-type: none"> • The terms and conditions of each employee should be clearly spelled out in a written contract with a copy held on the file at the office and one copy given to the employee. The contract should amongst other things spell out job specifications, working hours and remuneration. • Proper records should be kept with respect to the number of people employed whether fulltime or part-time, contractors hired, payments made to contractors, salaries and wages paid to full-time and part-time employees, number of non-locals hired and the salaries paid to non-Namibians, etc. <p>SOCIAL AND COMMUNITY IMPACTS</p> <ul style="list-style-type: none"> • Source and procure goods and services required for the gravel mining operation from local suppliers (spare parts, fuel, PPEs, stationery, etc.) where applicable. • Contributions to the community should be reported on in the media so as to enhance the profile of the company to the general public. Membership of the Construction Industries Federation of Namibia is recommended. • A logbook should be kept at the gate of the operation where all vehicles visiting the operation are recorded, the time of entry, exit, the type of vehicle, and its destination. This will give an indication of the number of vehicles visiting the operation. 	
Monitoring	Responsible Party
Applicable at the commissioning of the project. No specific monitoring criteria required	SPR Management

4.5 EMP : Decommissioning and Rehabilitation

Periodic monitoring and inspections of the gravel operation has to be made by the promoter. Such monitoring and inspections reports are to be submitted to MEFT at least once annually. A final rehabilitation treatment is expected to be made at the end of the gravel mining operation. This also applies in the event of the operation having to cease as a result of unfavourable economic circumstances, i.e. complete collapse of the construction industry or when the operator is liquidated.

Table 7: EMP - Decommissioning & Rehabilitation

DECOMMISSIONING AND REHABILITATION
<p>Decommissioning Plan</p> <ul style="list-style-type: none"> • A decommissioning plan must be developed at the beginning of the gravel extraction operation and periodically reviewed and revised during the duration of the gravel extraction. • A budget for decommissioning must be developed and funds set aside for decommissioning and rehabilitation right from the beginning of the operation. • Prior to decommissioning all unused fuel, scrap metals, are to be removed from the site. <p>Rehabilitation of Gravel Extraction Blocks</p> <ul style="list-style-type: none"> • Potential backfilling of the gravel pits should be explored using stockpiled overburden. The surface should be covered with topsoil to allow for vegetation to grow. Any prospective berms diverting surface flow should remain to avoid any erosion of the soil cover. • If the gravel pit(s) is backfilled fully or partially completely, the infill materials must be contoured to blend well with the natural surrounds. Complete backfilling of gravel pits may not be undertaken if the material required for backfilling is unavailable or the procurement of such materials will cause undesirable environmental impacts. • The potential to use the gravel pit(s) as future earth dams to capture rainwater for use by the livestock on the farm should be explored and discussed with the farm owner and in consultation with the relevant officials in the Department of Water Affairs at the MAWLR. <p>Rehabilitation of the Campsite</p> <ul style="list-style-type: none"> • During the rehabilitation of gravel pits the campsite should remain active and preferably fenced in with access allowed via a locked gate. Fencing will prevent uncontrolled access by animals and humans. • Dismantle any fixed infrastructure (water tank, office, containers, workshop fixtures, etc.) from the campsite and offer for sale to scrap dealers and or to recycling companies. • All disturbed footprint areas must be graded and re-countered to match the surrounding landscape. The surface should be ripped and covered with topsoil in order to allow water infiltration and re-vegetation. <p>Rehabilitation of Access Routes</p> <ul style="list-style-type: none"> • Liaise with the landowner if the access roads constructed to provide access to the gravel extraction blocks/pits are to be rehabilitated or if the farmer would like to keep such roads for farming operations. • The surface of the access roads to be rehabilitated must be ripped deep to alleviate compaction and countered in order to restore natural drainage and to encourage re-growth of natural vegetation. Rehabilitation of access roads must be done with extreme caution such that no damage is caused to the vegetation, plants and trees along such access roads. <p>Rehabilitation of Sanitation Facilities:</p> <ul style="list-style-type: none"> • Dismantle and remove any sewage treatment facilities from the campsite, and offer for sale any scraps recovered to scrap dealers. • Contour the area to restore natural drainage and rip the surfaces to break any soil compaction so that vegetation can re-grow. <p>Perimeter Fencing:</p>

DECOMMISSIONING AND REHABILITATION

- Liaise with the landowner if he wants the fencing around the campsite removed or if it should be retained for future farming operations.
- Remove the fence around the campsite and any gates and fixtures and offer to scrap dealers for sale.

Post Closure-Rehabilitation Monitoring

It is recommended that monitoring post-closure-rehabilitation be focused on four key areas over a period of at least three years:

- Vegetation regrowth monitoring
- Erosion monitoring and management
- Surface run-off monitoring
- Management and monitoring of pollution control

5. CONCLUSIONS

Although every attempt has been made to address all possible potential mitigation measures in this document, the EMP should be considered as a day-to-day management tool, which sets out the minimum environmental and social standards that are required, to minimise the negative impacts and maximize the positive benefits of the envisaged gravel extraction operation promoted by Smart Plant Rental on Farm Triangle #47.

The EMP should be reviewed on an on-going basis and any changes or amendments made communicated to the EC at MEFT. Based on the observations made during several site inspections it is incumbent upon the proponent, once all operational infrastructure and accessories have been established, to make a careful assessment of whether any modifications to the mitigation measures, as proposed in this EMP may be required, in order to improve the overall efficiency and applicability of the EMP to the prevailing operational circumstances.