

Sourcing and Hauling of Cobblestones for the Upgrading and Rehabilitation of the Railway Line between Kranzberg and Arandis

**Environmental Management Plan
(EMP)**



For :
**Twapewa Omaano Trading
Enterprises CC**

July 2021

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ABBREVIATIONS AND ACRONYMS

amsl	above mean sea level
BAT	Best Available Technology
BID	Background Information Document
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COVID-19	'CO' - Corona, 'VI'- Virus & 'D' - Disease of 2019
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ERC	Erongo Regional Council
GPS	Global Positioning System
GRN	Government of the Republic of Namibia
ha	Hectare
HPP	The Harambee Prosperity Plan
IAPs	Interested and Affected Parties
km/hr	Kilometer per hour
m ²	Square meters
m ³	Cubic meters
MEFT	Ministry of Environment, Forestry and Tourism
MHSS	Ministry of Health and Social Services
NAAQS	National Ambient Air Quality Standards
NHC	National Heritage Council
NO ₂	Nitrogen Dioxide
NSI	Namibia Standards Institute
PM	Particulate Matter
PPE	Personal Protective Equipment
SABS	South African Bureau of Standards
SHE	Safety, Health & Environment
SME	Small and Medium Enterprises

List of Road Numbers

B2	B2 is the route number for the national highway which starts from B1 in Okahandja to Walvis Bay via the towns of Karibib, Usakos and Swakopmund.
D1918	Is the district road number for the gravel road which starts from Henties Bay up to B2 about 24 km outside Usakos.
D1930	Is the district road number for the gravel road which branches off from D1918 to the town of Uis.

Glossary of Terms and Definitions

Aggregate:

Aggregate is defined as granular raw materials consisting of gravels, crushed stones, recycled concrete stones, building and plaster sand. Primarily, aggregates are used in the manufacturing of construction products which in turn are used widely in the built environments and road transport infrastructures.

When using a square sieve with an aperture of 4.75 mm, 90% of sand will pass through a square sieve whilst at least 90% of coarse stone will be retained by such a sieve. The coarse stones retained on the sieve will constitute aggregates.

Anthropogenic Impact:

Human impacts on the environment which include changes to the biophysical environments, ecosystems, biodiversity and natural resources caused directly or indirectly by human activities including global warming, environmental degradation, etc.

Biodiversity:

The variability among living organisms from all sources including terrestrial marine and other aquatic ecosystem and ecological complexes which they are part of

Cobblestones: Cobblestones derive their name from the word cob, meaning a rounded lump. Cobblestones are a clast of rock defined as having a particle size of 64-256 mm, larger than a pebble and smaller than a boulder. Cobblestones are building materials. In this Report, the terms aggregates, aggregate materials and or surface stones are used interchangeably and simply refer to cobblestones.

Cumulative Impact

In the context of mining, means the impacts of mining activities which in themselves may not be significant but may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertaking in the area.

Decommissioning:

The process which begins after termination or cessation of mining activities or mineral processing and ends with closure. It involves, amongst others, the removal of unwanted infrastructures, making safe of the dangerous excavations and surface restoration so as to minimise the adverse environmental impacts of mining activities remaining after cessation of operation.

Environment:

All physical, chemical and biological factors and conditions which influence an object and or organism. It is also defined as the surroundings within which human beings exist and is made up of the land, water, atmosphere, plants and animal life (micro and macro) including interrelationships between the factors and the physical or chemical conditions that influence human health and well-being

Environmental Impact:

Environmental impact is any change to the environment whether adverse or beneficial, wholly or partially, resulting from an organization activities, products or services

Environmental Management Plan (EMP):

A working document on environmental and socioeconomic mitigation measures which must be implemented by several responsible parties during all phases of a proposed development.

Reserve:

A reserve is that amount of the resource which has been quantitatively proven through drilling and other sampling methods for which the level of confidence is high.

Resource:

The extent of extractable volume is estimated with a low level of confidence, i.e. the resource is only inferred (estimated) from geological evidence and assumptions but has not been verified via drilling and other applicable sampling methods.

Mining:

In the context of aggregate is the process of extracting gravel from the in-situ resource by using mechanical means, i.e. excavators, bulldozers, wheeled loaders, etc.

Sensitive Area

A sensitive area or environment is described as an area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists or where there is high potential for ecotourism

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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 sourcing and hauling of cobblestones or construction materials required for the upgrading and rehabilitation of the railway line between Kranzberg and Arandis. The construction materials are sourced from a resource located on the communal land under the jurisdiction of the !Oe-#Gân Traditional Authority in the vicinity of the area commonly known as Kettlebank and transported on D1930 and B2 to construction sites along the railway line. The EMP should be read in conjunction with the Environmental Impact Assessment (EIA) scoping report conducted into the envisaged activity.

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

The underlying aim is to ensure that the environmental impacts emanating from the sourcing and hauling of such construction materials 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 36 months lifespan of the project.

1.2 Purpose

It is the purpose of this EMP to provide clearly defined actions that should be complied with by the proponent. The EMP is a dynamic document, flexible and responsive to new and changing circumstances i.e. it should be updated as and when required. Any substantive changes to the current scope of sourcing and supply of cobblestones i.e. moving to another cobblestone resource, will require the amendment of the EMP. Copies of this document should be distributed to these parties:

- ✚ the principal contractor,
- ✚ the consultants overseeing the execution of the railway line rehabilitation project,
- ✚ the !Oe-#Gân Traditional Authority,
- ✚ third parties subcontracted to haul the construction materials,
- ✚ the supervisor overseeing the sourcing, loading and hauling of cobblestones

A copy of this EMP should also be kept at the site office and be made available to interested and affected parties upon inquiry.

1.3 Acceptance of the EMP

The acceptance of this EMP by the Environmental Commissioner (EC) will confer a legal obligation to Twapewa Omaano Trading Enterprises CC (Twapewa) to comply with the recommendations contained in the EMP. Should Twapewa 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.

2. 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 conformance with the overall aims and objectives. These objectives are:

- ✚ To ensure compliance with the conditions of the ECC once Twapewa has been granted an ECC by MEFT for the sourcing and hauling of construction materials.
- ✚ To implement practical measures to prevent, minimize, mitigate or rehabilitate areas impacted by the extraction activities.
- ✚ 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 extraction site of Twapewa and during the delivery of cobblestones to the railway line construction sites.
- ✚ To develop workable methods which ensure that the extraction and hauling is carried out in manner which is technically sound, socially acceptable and environmentally sustainable

3. ROLES AND RESPONSIBILITIES

MEFT through the officer of the EC is expected to fulfill various roles and responsibilities (**Table 1**) to ensure effective implementation of the EMP during the lifespan of the sourcing and supply of cobblestones to the railway line upgrading and rehabilitation project:

TABLE 1: ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL COMMISSIONER

The Environmental Management Act (EMA) is the Act regulating all environmental related matters in the Republic of Namibia. The line ministry is MEFT and the implementing agency is the Office of the Environmental Commissioner, a statutory office established in terms of EMA. The roles and responsibilities of Environmental Commissioner regarding this operation are:

- ✚ 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 any annual audit reports.
- ✚ Reviewing serious onsite incidents and accidents reports.
- ✚ Enforcing legal mechanisms for contraventions of the EMP and ECC.

Twapewa, who is subcontracted to source and to deliver cobblestones to the railway line construction site is also expected (**Table 2**) to comply with the recommendations and guidelines provided in the EMP and to ensure that all the activities of the project are carried out in a manner which is technically sound, commercial feasible and environmentally sustainable.

TABLE 2: ROLES AND RESPONSIBILITIES OF TWAPEWA

Amongst the roles of Twapewa, the promoter, are the following:

- ✚ Comply with the provisions as outlined in this EMP.
- ✚ Comply with the conditions of the ECC, once granted.
- ✚ Ensure that hired employees are properly trained and inducted on the provisions of this EMP.
- ✚ Report any environmental incidents or accidents and emergencies to the relevant authorities.
- ✚ Ensure that any third party subcontracted by Twapewa to carry out any activities of the project is inducted on the provisions of the EMP.
- ✚ Perform internal audits of the EMP implementation annually.
- ✚ Rehabilitate all areas impacted by the operation, i.e. the extraction site, camp site, etc.

4.0 THE LEGAL FRAMEWORK

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

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

Relevant policies to the study are:

- ✚ The EIA Policy (1995)
- ✚ Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994)
- ✚ The National Climate Change Policy of Namibia (September 2010)
- ✚ The Minerals Policy of Namibia (2004)
- ✚ Policy for the Conservation of Biotic Diversity and Habitat Protection (1994)
- ✚ The National Development Plans (NDP5)
- ✚ The National Resettlement Programme
- ✚ The Affirmative Action Loan Scheme Policy
- ✚ The National Land Policy
- ✚ The National Land-Use Policy
- ✚ Land Tax Regulations
- ✚ Resettlement Land Act
- ✚ The Harambee Prosperity Plan 2 of 2021

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

TABLE 3: APPLICABLE LAWS, POLICIES & REGULATIONS											
Laws & Policies	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
Minerals (Prospecting & Mining) Act, Act 33 of 1992	x									x	
Environmental Management Act , Act 7 of 2007	x	x	x	x	x	x	x	x	x	x	x
Regulations of the Environmental Management Act, Act 7 of 2007	x	x	x	x	x	x	x	x	x	x	x
Water Resource Management Act, Act 11 of 2013	x							x			
Nature Conservation Ordinance No. 14 of 1975								x			
Atmospheric Pollution Prevention Ordinance No. 11 of 1976		x	x					x			x
Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	x	x	x	x	x	x	x	x	x	x	x
Pollution Control and Waste Management Bill (Draft of Sept 2003)		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
Public and Environmental Health Act No. 86 of 2015		x	x	x	x	x	x	x	x	x	x
Agricultural (Commercial) Land Reform Act, Act 6 of 1995	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		

5. ARRANGEMENT OF THE EMP

The EMP has been arranged to cover the environmental aspects under these headings:

- ✚ Maintenance of the Camp Site and Access Road to the Cobblestone Resource
- ✚ Extraction and Stockpiling of Cobblestones Prior to Loading
- ✚ Hauling of Cobblestones to the Railway Line Construction Sites
- ✚ Decommissioning of Camp Site and Rehabilitation
- ✚ Socio-economic Environmental Aspects
- ✚ Aspects Related to Monitoring and Reporting

5.1 Maintenance of the Access Road, Camp Site and Related Infrastructures

Twapewa has constructed a short access road of approximately 4 km from D1930 to the resource. The access is a single-track road. The company has also established a camp site at the cobblestone resource where its employees stay during the week when working. The following mitigation measures are proposed for the maintenance and upkeep of the access road and camping site.

TABLE 4. EMP - MAINTENANCE OF ACCESS ROAD, CAMP SITE AND RELATED INFRASTRUCTURES

MAINTENANCE OF THE ACCESS ROAD

- Keep the access road well maintained at all times in order to:
 - to reduce dust;
 - to eliminate incidents and accidents;
 - to avoid vehicle breakdowns and costly repairs;
 - install a stop sign where the access road intersects D1930.
- Keep the access road spill free.
- Offload driving must be discouraged.
- Speed limit on the access road must be 30 km/hr.
- No additional roads may be constructed to the cobblestones resource.
- Drivers to comply with access road regulations

MAINTENANCE OF THE CAMP SITE

- Select and demarcate the minimum reasonably required piece of land which accommodates the current and future needs of the operation.
- The site selected should involve the least removal of vegetation, bush and plants.
- Take the predominant wind (Berg Wind) direction into account.
- Avoid sensitive areas such as watercourses, raised areas, etc.
- Avoid cutting down mature trees.
- The site selected should be fenced in, with access controlled via a single entrance.

SANITATION

- Provide adequate sanitation on the premises with clean drinking water and toilet facilities for use by the employees and the clients visiting the operation.
- Provide suitable washing facilities for employees.
- Maintain a high standard of hygiene & housekeeping
- 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.

SUPPORT INFRASTRUCTURES

- Locate support infrastructures such as:
 - workshop,
 - site office,
 - equipment storage area
 - parking for machinery & vehiclesOn the same premises but separate from the sleeping & cooking areas.
- The storage area for tools and equipment must be secured and access limited.
- Repair and servicing of machinery & equipment should take place in such an area.
- Drip pans 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.

FUEL AND REFUELLING

- Fuel (diesel) may be kept on the premises in suitable containers but 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, such as a jerry can container or from a fuel bowser.

HANDLING OF HAZARDOUS PRODUCTS

- Hazardous products must be stored in a secured area and preferably in leak-proof containers.

TABLE 4. EMP - MAINTENANCE OF ACCESS ROAD, CAMP SITE AND RELATED INFRASTRUCTURES

- Suitable covered receptacles must be available for the temporary safekeeping of hazardous wastes (oil filters, old batteries, etc.)
- Stored hazardous products must be disposed of at a suitable land fill site, i.e. Usakos municipality.
- Any oil spills should be picked up by scooping out the entire oil soaked soil that must be stored in a suitable container and disposed of at an appropriate landfill site.
- Under no circumstances should hazardous wastes be disposed of on the premises.

OPERATION AND MAINTENANCE OF MACHINERY, VEHICLES & EQUIPMENT

- Any machine used in the operation must be properly maintained and regularly serviced.
- When not being used machines must be switched off and cleaned.
- Unnecessary hooting, idling & revving of machinery and vehicles should be avoided.
- All machine operators must be well trained and well acquainted with the provisions of this EMP.
- 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 regarding machinery must be immediately investigated and corrective action taken.

Responsible Party : Proponent or as delegated by proponent	Monitoring Frequency: Throughout Project Lifespan
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5.2 Extraction and Stockpiling of Cobblestones Prior to Loading

Cobblestones are extracted in a manner that less intrusive to the environment. The extraction involves the use of hand tools such as chisels and picks without making any excavations or leaving holes or trenches behind. The sizes of the cobbles tend to get smaller the further away from the slope of the hill. On average 48 pieces of cobbles are imbedded in one square meters.

To source and supply the 10 000 m³ required for the rehabilitation of the bridges and culverts on the railway line between Kranzberg and Arandis, about 60 hectare have to be cleared based on the assumption that 60% of cobblestones are recovered from one square meters with each stone weight an average of 1.5 kg. The stones left behind in a square meter is enough to maintain the soil integrity.

TABLE 5: EMP FOR EXTRACTION & STOCKPILING OF COBBLESTONES

DEMARCATATIONS

- Areas where cobblestones are collected from, must be identified and clearly demarcated by the Supervisor or Foreman.
- Areas which have a high concentration of shrubs, plant & trees likely to impede the extraction of cobblestones must be avoided.
- Extraction must be done within demarcated areas only.
- The areas where cobblestones are stockpiled prior to loading must be clearly demarcated and routed in a way that allows minimal destruction to shrubs, plants & trees.
- Any internal routes made to such stockpiles to allow access by the wheeled loader must be planned and made in a way that allows minimal destruction.
- The markings identifying extraction zones should be maintained throughout the period when cobblestones are extracted.
- The internal routes should be rehabilitated at the completion of the project.

TABLE 5: EMP FOR EXTRACTION & STOCKPILING OF COBBLESTONES

EXTRACTION OF COBBLESTONES

- Extract only 60% of the cobbles per square meter and leave enough materials to maintain the soil integrity.
- A buffer zone of 1.5 m should be left from the base of trees & plants where no extraction of cobbles is allowed.
- Extraction of cobblestones must only take place within the confines of identified and clearly demarcated zones.
- The footprint where cobblestones have been dislodged should be levelled off and covered with soil materials.
- Cobblestones where living creatures are breeding must be left intact.

HABITAT DISTRUCTION

- Rock cracks and areas under rocks are natural habitat grounds for quite a number of creatures such as scorpions, ants, spiders, etc.
- Locations with a high concentrations of creatures, i.e. scorpions, etc. must be avoided.
- Any birds nestling on trees or cliffs anywhere within the extraction site should not be disturbed.
- No killing of snakes, scorpions, spiders, etc. is allowed unless where such creatures pose a danger to human life.

SOIL CONTAMINATION

- Any oil spills occurring within the extraction zones must be removed by scooping out the oil soaked soil and placing such contaminated soil into a drum for disposal at a suitable facility at Usakos.

Responsible Party : Proponent or Appointed Representative

Monitoring Frequency: Weekly & Monthly

5.3 Haulage of Cobblestones on Public Roads to Construction Sites

There are at least three roads over which the cobblestones are hauled from the extraction to the construction site. These are the access road of approximately 4 km, D1930 (gravel road) and B2 (tarred road). The last two are national roads used by the general public. It is important to ensure that hauling of cobblestones over these national assets is done in a manner which does not cause harm, injuries or inconvenience to other road users.

TABLE 6: EMP FOR THE HAULAGE OF COBBLESTONES ON PUBLIC ROADS TO THE EXTRACTION SITE

LOADING

- Trucks should be correctly loaded with the products evenly distributed in the tipper bucket.
- Cobblestones should not be heaped such that the stones fall out from the edges of the tipper bucket spilling over becoming a safety hazard to other road users.

SPEEDING

- Speed limits on all roads must be complied with.
- These speed limits must apply:
 - 30 km/hr on access road
 - 60 km/hr on D1930, and
 - 80 km/hr on B2.
- Drivers found speeding should receive reprimands.
- All road traffic signs and regulations must be complied with at all times.
- Extreme caution must be exercised when driving on D1930 and the access road during the rainy period.

TABLE 6: EMP FOR THE HAULAGE OF COBBLESTONES ON PUBLIC ROADS TO THE EXTRACTION SITE

LICENSING

- All trucks used in the operation must be:
 - roadworthy
 - fully licensed, and
 - operated by licensed drivers
- Tipper trucks used on public roads must be:
 - supplied with Mass Distance Logbooks,
 - driven by operators who are in possession of valid driver’s public permits,
 - driven with their headlights switched on
 - fitted with functional amber flashing lights

EMP TRAINING

- All truck operators should receive a training induction on the EMP. To ensure comprehension, it is advisable for the training to be presented in a language understood by the operators.
- It is further recommended that truck operators undergo a defensive driving training to enhance their driving skills, safety awareness and their responsibilities when driving on public roads.

OPERATING HOURS

- Haulage on D1930 and B2 should be limited to day light hours only.
- Any tipper trucks hauling cobblestones on B2 must be fitted with amber flashing lights and have such lights switched on when operated on B2 highway.
- Haulage trucks must be operated with their headlights switched on at all times to enhance visibility

GENERAL

- Drivers operating tipper trucks must be supplied with suitable PPE.
- Drivers must have supplied with reflective vests to enhance safety and visibility in the event of an emergency.

Responsible Party : Proponent or As delegated by Proponent	Daily throughout the project lifespan
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5.5 Generic Environmental Mitigation Measures

The following environmental aspects have been treated as generic. Mitigation measure have been proposed with respect to the following:

- Waste Handling
- Open Fire and Fire Prevention
- Archaeological, Heritage and Cultural Remains
- Health and Safety
- Illegal Hunting & Poaching of Livestock and Game
- Environmental Awareness Training
- Social-economic Impacts

TABLE 7: EMP WITH RESPECT TO GENERIC ENVIRONMENTAL MITIGATION MEASURES

WASTE HANDLING

- 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 Usakos Municipality.
- Organic waste (food items, potatoes skins, etc.) should be stored in bins with secure lids and not fed to wild animals.
- Avoid wind dispersal of papers and plastics as it results in visual nuisance.
- Maintain a high standard of housekeeping.
- Hazardous wastes should be handled as described in the section for Camp Site maintenance.
- Scrap metals should be offered to scrap companies for sale.
- Under no circumstances should waste be buried on the Camp Site premises.

OPEN FIRE AND FIRE PREVENTION

- Open fire may be made inside the Camp Site but at designated areas only.
- Fire-fighting equipment should be procured and 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 camp site
- No trees should be felled or wilfully damaged for purposes of obtaining firewood.
- Dead trees may be harvested for firewood but with the permission of the Supervisor. Such harvested firewood should be consumed on the premises only and must not be transported outside the camp site for sale to third parties.

ARCHAEOLOGICAL, CULTURAL AND HERITAGE REMAINS

In the event that any remains of cultural interests are uncovered during the extraction process, the following guidelines should be followed:

'Chance Find Procedure'

- If operating a machine stop work immediately;
- Inform the Supervisor or Foreman immediately;
- Demarcate the site with plastic warning tape;
- Cease any works in the immediate vicinity;
- Determine GPS position of the place if possible;
- No item(s) must be removed from the site;
- Supervisor or Manager must inform the office of National heritage Council (NHC) and request written permission to remove findings from work area; and
- Recover, pack and label findings for transfer to the National Museum as guided by NHC.

Human Remains:

Should human remains be found, follow these guidelines:

- Apply the chance find procedure as described above;
- Notify the nearest Namibia Police Charge Office;
- Schedule a field inspection with an archaeologist to confirm that remains are human;
- Advise and liaise with the NHC and the Namibian Police;
- Remains to be retrieved and transported by the Police either to the National Museum or the National Forensic Laboratory in Windhoek;
- Work must only resume on the same site, once the remains have been successfully retrieved by the Namibian Police.

HEALTH AND SAFETY

- A health and safety plan must be developed for the operation which should, as a minimum address the following aspects:

TABLE 7: EMP WITH RESPECT TO GENERIC ENVIRONMENTAL MITIGATION MEASURES

- **SAFETY AT THE CAMP SITE:**
 - Open fire should be monitored and put out before retiring into the tents to sleep.
 - No use of alcohol should be tolerated and offenders should be reprimanded.
 - No weapons (knives, guns, etc.) must be allowed in the work place.

- **GOOD HOUSEKEEPING PRACTICE:**
 - Maintain good housekeeping in the Camp Site and extraction sites.
 - No littering should be 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.
 - Discourage foul language amongst the workers.

- **COVID-19 GENERAL GUIDELINES**
 The following guidelines are recommended and should be complied on and off work:
 - Wash your hands frequently with soap and clean water for at least 20 seconds.
 - Avoiding touching your eyes, nose and mouth with unwashed hands.
 - Practice social distancing by staying a distance of at least 2 meters from the next person when queuing in shops, banks, gathering.
 - Avoid close contact with people who are sick with Covid-19.
 - Wear face mask which covers the mouth and nose.
 - Comply with laws and regulations as announced by the authority from time to time.
 - Observe and comply with Covid-19 symbols and signage.

ILLEGAL HUNTING OR POACHING OF LIVESTOCK AND GAME

- Pets such as dogs and cats are prohibited on the premises.
- No handguns are permitted on the camp site.
- No snares or trap wire devices may be used to catch wildlife.
- Poaching is a criminal activity and, is strictly forbidden.

ENVIRONMENTAL AWARENESS TRAINING

It is imperative that all employees hired by Twapewa are given an environmental induction training workshop which, as a minimum should include the following aspects.

- 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 to complying with the EMP.
- The significance of the mitigation measures proposed in this EMP
- The significance why reptiles including snakes may not be killed
- Explain the problems associated with poor waste management

Responsible Party: Proponent or Appointed Representative	Monitoring Frequency: Annually or when deemed appropriate
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5.6 Socio-Economic Environmental Aspects

In this section, impacts have been considered on three aspects which the aggregate production operation will make on the socio-economic environments. These are:

- Employment Creation
- Labour & Working Conditions
- Social and Community Impacts

TABLE 8. EMP WITH RESPECT TO SOCIO-ECONOMIC ENVIRONMENTAL ASPECTS

EMPLOYMENT CREATION

- Hire employees from the local community without discrimination on the basis of gender, race, language, background, religion or political affiliations.
- People from marginalized communities (i.e. Sun people) should also be considered and offered employment.
- People with disabilities should likewise be considered for suitable employment opportunities.
- Ensure that the recruitment of employees is done in a transparent manner and should be gender and disability inclusive. Preference should be given to the residents of Usakos.

EMPLOYEES' WELLBEING:

- 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.

LABOUR & WORKING CONDITIONS

- **EMPLOYMENT CONTRACT:**

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.

- **TRADE UNIONS:**

Allow the employees to exercise their rights to join and belong to a trade union of their choice. Allow each employee charged with a misconduct the right to be represented during a disciplinary hearing.

- **RECORDS:**

Proper records should be kept with respect to the number of people employed whether fulltime or part-time, payments made to any 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.

SOCIAL AND COMMUNITY IMPACTS

- **GOODS & SERVICES**

Source and procure goods and services required for the aggregate operation from local suppliers (spare parts, fuel, PPEs, stationery, etc.) where applicable.

- **COMPLAINS:**

Engage with the community and provide information in a transparent and an open manner so as to manage their expectations. Any complain and or grievance received from the community should be addressed timeously.

- **CORPORATE SOCIAL RESPONSIBILITY:**

Contributions to the community should be reported on in the media so as to enhance the profile of the company to the general public.

Responsible Party: Proponent or Appointed Representative

Monitoring Frequency: Monthly or when deemed necessary

5.7 Monitoring and Reporting

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. collapse of the construction industry.

TABLE 9: EMP WITH RESPECT TO MONITORING AND REPORTING

MONITORING & INSPECTIONS

- Carry out regular monitoring of all the environmental management measures in order to ensure that the provisions of the EMP are complied with.
- Report annually on the progress regarding adherence to the implementation of the EMP.
- Visual inspections and assessments of the camp site areas prone to soil erosion should be done before the rainy season and soon after the rain period.
- Any repair work deemed necessary to minimise soil erosion should be done before the onset of the rain.
- An assessment of environmental impact that were not properly addressed or were unknown during the time when the EMP was compiled, should be carried out and added as correction action.

6. CONCLUSIONS

Although very 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 sourcing and transport of cobblestones required for the rehabilitation and upgrading of the railway line between Kranzberg and Arandis.

The EMP should be reviewed on an on-going basis and any changes or amendments made communicated to MEFT. Based on the observations made during site inspection it is incumbent upon the proponent, after having assimilated the provisions of this EMP, 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.