

UPDATED ENVIRONMENTAL MANAGEMENT PLAN (EMP)
FOR THE CONSTRUCTION OF DR3650: EPINGA TO
ONAKALUNGA & DR4113: ENDOLA TO EEMBO,
OHANGWENA REGION

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DOCUMENT CONTROL

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1 INTRODUCTION

1.1 Introduction to the Proposed Project

Roads Authority (hereinafter referred to as RA), intends on obtaining an extension to their Environmental Clearance Certificate (ECC) for the construction of DR3650: Epinga to Onakalunga and DR4113: Endola to Eembo, located in Ohangwena Region. As part of the requirements by the Ministry of Environment, Forestry and Tourism, RA is expected to submit an updated EMP to reflect the extension.

RA was issued the Environmental Clearance Certificate (ECC) for the above-mentioned project on 27 April 2015, for a validity period until 27 April 2018. However, the construction activities for the project only commenced in June 2021, due to various delays in the tender process to appoint a contractor for construction. The contracts and agreements have therefore, been finalized; hence, the commencement of the construction activities and request for the ECC renewal/extension.

In addition, there has not been any construction activities conducted between April 2015 to June 2021.

The above-mentioned activities are covered in a Draft Environmental Baseline Report and Draft Environmental Management Plan conducted by Bicon/Aurecon Joint Venture in 2015.

I.N.K Enviro Consultants cc (I.N.K), an independent firm of consultants, was subcontracted by Bicon to compile an updated EMP for this project as a requirement for the ECC extension.

1.2 Objective of the Proposed Project

The objective of the project includes the construction of mostly existing bush tracks to gravel roads standards by labour-based and labour-intensive methods. Most parts of the existing route alignment has been bushed cleared and must be used as far as possible except where adjustments are inevitable to comply with Design Standards as prescribed by the Roads Authority (RA) and also to avoid major 'water ponding areas' (oshanas), homesteads and cultivated fields. The implementation will be carried out by established plant contractors subcontracting to and assisting Small and Medium Enterprise (SME) contractors.

The construction of these gravel roads has been identified by RA to improve the access to rural areas and will contribute to poverty alleviation, develop agriculture as well as positively impact on the rural population through improved access to health, education and markets. The topography of the region is characterised by numerous interconnected channels pans of oshana systems, which are cut into the underlying plain Kalahari sands forming raised, vegetated areas

in between. The landscape consists of gently undulating, broad sandveld of low relief (0.2%). These water pans are therefore prone to regularly be flooded during the rainy season. All localities that are not yet provided with all-weather roads could become isolated and access to schools, clinics and markets could become particularly difficult, even when walking.

The use of labour-based and labour-intensive construction methods leaves substantial revenues within the community and contributes towards alleviating the problem of un- and under-employment. Rural access road projects do not only provide a general improvement of the living standards of the population but have also proven to be economically viable due to the huge increase of traffic volumes and the savings in road user costs. The reduction of the numerous tracks presently criss-crossing the area to one road also represents a benefit to the environment and a significant saving of useful land. It will further also enhance livestock farming in the area.

1.3 Environmental and Social Management Programmed (ESMP)

The Environmental and Social Management Program (ESMP) will be implemented during construction. The ESMP is intended to bridge the gap between the Environmental Impact Assessment (EIA) and the implementation of the project, particularly with regard to implementing the mitigation measures recommended in the Environmental Impact Assessment (EIA). Monitoring, auditing and taking corrective action during implementation are crucial interventions to successfully implant the ESMP.

The ESMP detail actions to ensure compliance with regulatory bodies and that environmental performance is verified through information on impacts as they occur.

ESMP implementation is a cyclical process that converts mitigation measures into actions and through cyclical monitoring, auditing, review and corrective action, ensure conformance with stated ESMP aims and objectives. Through monitoring and auditing feedback for continual improvement in environmental performance must be provided and corrective action taken to ensure that the ESMP remains effective.

1.4 Details of the persons who compiled this EMP

I.N.K Enviro Consultants cc (subcontracted by Bicon) is the independent firm of consultants that has been appointed to compile an updated EMP as part of the ECC Renewal Process.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a Barts (Honours) Degree in Geography, Environmental Studies and Sociology and has over six 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 ESMP ADMINISTRATION

Copies of the ESMP shall be kept at the site office and will be distributed to all senior contract personnel. All senior personnel shall be required to familiarize themselves with the contents of this document.

3 ROLES AND RESPONSIBILITIES

The implementation of the ESMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase.

3.1 Engineer's Representative (ER)

The Engineer will delegate powers to the engineer's Representative (ER) on site who would act as the employer's responsibilities are executed in compliance with relevant legislation and the ESMP. The Engineer also has the responsibility to approve the appointment of the Environment Control Officer (ECO).

Any on-site decision regarding environmental management is ultimately the responsibility of the ER. The ER will have the following responsibilities in terms of the implementation of this

- Ensuring that the necessary environmental authorization and permits have been obtained.
- Assisting the contractor in finding environmentally responsible solutions to problems with input from the ECO (Environmental Control Officer) where necessary.
- Taking appropriate action if the specifications are not followed.
- Ordering the removal of person(s) and/or equipment not complying with the EMP specifications.
- Recommending and issuing fines for transgressions of site rules and penalties for contravention of the EMP.
- Advising on the removal of person(s) and/or equipment not complying with the specifications (via the ER).
- Auditing the implementation of the ESMP and compliance with the authorization on a monthly basis.
- Undertaking a continual review of the ESMP and recommending addition and/or changes to the document after completion of the contract.

3.2 Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) will be a competent person appointed by the contractor to implement the on-site environmental management of this ESMP by the contractor. The ECO shall be on site daily and the ECO's duties will include the following:

- Assisting the ER in ensuring that the necessary environmental authorizations and permits have been obtained.
- Maintaining open and direct lines of communication between the ER, Employer, Contractor and interested and affected parties (I&APs) with regard with regard to environmental matters.
- Convening and facilitating public meetings.
- Regular site inspections of all constructions, areas with regard to compliance with the ESMP.
- Monitoring and verifying adherence to the ESMP monitoring and verifying that environmental impacts are kept to a minimum.
- Assisting the Contractor in finding environmentally responsible solutions to problems.
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personal coming onto site.

4 ENVIRONMENTAL AWARENESS TRAINING

Before any work commences on the site the Contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the ESPM. The Contractor shall liaise with the Engineer prior to the Commencement Date to fix a date and venue for the training and to agree on the training content.

The Contractor shall provide a suitable venue and ensure that the specified employees attend the course. The Contractor shall ensure that all attendees sign an attendance register and shall provide the ER with a copy of the attendance register. The presentation shall be conducted, as far as is possible in the employee' language of choice.

As a minimum, training should include:

- Explanation of the importance of complying with the ESMP.
- Discussion of the potential environmental impacts of construction activities.

- The benefits of improved personal performance.
- Employees' roles and responsibilities including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the specifics of this ESMP and its specification (no-go areas, etc.)
- Explanation of the management structure of individuals responsible for matters pertaining to the ESMP.
- The Contractor shall keep records of all environmental training sessions, including names, dates and the information presented.

5 PUBLIC PARTICIPATION

An ongoing process of public participation shall be maintained during construction to ensure the continued involvement of interested and affected parties (I&APs) in a meaningful way. Public meetings to discuss progress and any construction issues that may arise shall be held at least every two months and more regularly if deemed necessary by the ER. These meetings shall be arranged by the ECO but shall be facilitated by the ER. The Contractor shall present a progress report at each public meeting. All I&APs that participated in or were informed during the EIA shall be invited to each of the public meetings.

6 LEGAL FRAMEWORK

The Republic of Namibia has five tiers of law and several policies relevant to environmental assessment and protection, which includes:

- The Constitution
- Statutory law
- Common law
- Customary law
- International law

Key policies currently in force include:

- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic 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 mitigate against adverse environmental impacts.

6.1 Applicable Laws and Policies

In the context of the proposed irrigation project, there are several laws and policies currently applicable. They are reflected in Table 1 below.

Table 1: Relevant Legislation and Policies

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous)	Emissions to water (industrial & domestic)	Noise	Visual	Impact on Land use	Impact on biodiversity	Impact on Archaeology	Socio-economic	Safety & Health
1990	The Constitution of the Republic of Namibia of 1990	X	X	X	X	X	X	X	X	X	X	X
2007	Environmental Management, Act 7 of 2007	X	X	X	X	X	X	X	X	X	X	X
2012	Regulations promulgated in terms of the Environmental Management, Act 7 of 2007	X	X	X	X	X	X	X	X	X	X	X
1976	Atmospheric Pollution Prevention Ordinance 11		X	X					X		X	X

	of 1976											
1995	Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	X	X	X	X	X	X	X	X	X		X

7 ENVIRONMENTAL ACTION PLANS

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

7.1 Action plans to achieve objectives and goals

Table 1: Action Plan – MANAGEMENT AND MONITORING

Objective:

To ensure that the provisions of the ESMP are implemented during construction.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none">The environmental and social consultant shall ensure that all aspects of ESMP are implemented during construction.The environmental and social consultants shall attend regular site inspection and meetings and minutes shall make provision for reporting on every aspect of the ESMP.	Throughout the operations	Environmental and social Consulting together with the ECO.

Table 2: Action Plan – Communication and Stakeholder Consultation

Objective:

To ensure that all stakeholders are adequately informed throughout construction and that there is effective communication with and feedback to the consultant and client.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> The Contractor shall appoint an ECO from the construction team to take responsibility for the implementation for all provisions of this ESMP and to liaise between the contractor, community, client and consultants. The ECO must be appointed at 14 days after site-handover. The Contractor shall at every site meeting report on the status of the implementation of all previous of the ESMP. The Contractor shall liaise with the social and environmental consultants regarding all issues related to community consultation and negotiation as soon as possible after construction commences. Ensure regular consultations with the local authorities and communities regarding the management of construction. Initiate an efficient Grievance Mechanism to allow potentially affected individuals to voice their concerns on the project. 	Throughout the operations	Contractor/ Environmental and social Consultation to monitor.

Table 3: Action Plan - Labor Rights

Objective:

To ensure labour standards are complied with.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> • Ensure that workers have access to and are aware about the Grievance Mechanism. • Ensure minimum legal labor standards as per ILO regulations (child/forced labor, no discrimination, working hours, minimum wages) are met. • The contractor should comply with relevant labor. • Laws as stipulated by the labor act. • Ensure the workforce has access to primary healthcare on site. • Provide housing conditions (if applicable) in accordance with all applicable health and safety regulations and norms by ensuring the provision of adequate space, supply of water adequate sewage and garbage disposal system, appropriate protection 	Throughout the operations	Contractor/environmental and social Consultant to monitor.

Management and mitigation measures	Action plan	
<ul style="list-style-type: none">• against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.• Ensure all contractors implement code of conduct concerning employment and workforce behavior (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general.)• In case of security personnel at the site, ensure proper training and in the use of force and appropriate conduct toward workers and affected communities.		

Table 4: Action Plan – Health and Safety

Objective:

To ensure health and safety of workers and the public at all times during construction

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> • Ensure employees are wearing masks at all times as a precautionary Covid-19 precautionary measure. • The Contractor shall submit a strategy to ensure the least possible disruption to traffic and potential safety hazards during construction. This strategy must be approved by the social's consultant before commencement of contraction. • The strategy should include a schedule of work including when and how road crossings (construction at existing intersections) will be made. The schedule should be updated and distributed to all stakeholders. • The Contractor shall also liaise with the Traffic Authorities for their approval in this regard. • Proper traffic and safety warning signs must be placed at the construction site to the 	Throughout the operations	Contractor/environmental and social Consultant to monitor.

Management and mitigation measures	Action plan	
<p>satisfaction of the Engineer and the Roads Authority.</p> <ul style="list-style-type: none"> • The Contractor must adhere to there regulations pertaining to Healthy and Safety, including the provision of protective clothing, failing which the Contract may be ended with immediate effect. • Dust protection masks shall be provided to task workers. • Potable water must be available to workers to avoid dehydration. This water should be of acceptable standards to avoid any illness. At least 5 liters of drinking water per person per day should be made available during construction. • the contractor must enforce relevant Health and safety Regulations for these specific activities. • Ensure site premises are provided with appropriate fencing (where applicable) and lighting. • Ensure speed limits on site and on transporting routes. • Use equipment and vehicles in appropriate technical conditions. • Ensure vehicles and equipment are switched off when not in use. • Use protective hearing equipment for workers conducting noisy activities. • Maintain high standard in housekeeping on site. • Ensure provision of H health and safety (H&S) facilities at the project site, including shaded welfare areas. 		

Management and mitigation measures	Action plan	
<ul style="list-style-type: none"> • Provide necessary fire prevention equipment on site in line with applicable regulations. • Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas or close to residential houses (typically between 10 pm and 7 am). Avoid vehicle movements at night. • Report any occurrence of any communicable diseases amongst the workforce (STD, HIV/AIDS, TB, malaria and Hepatitis B and C) and set up disease prevention programmed if needed. • Implement incident report access to incidents occurring on the construction site or caused by the construction activities shall be reported by the Contractor/subcontractor to the Project Implementing Agency (PIA) as soon as possible and not later than 24 hours after the incident occurred (including short-and long-term response measures). A major incident is a e.g., fatality, injury, major oil spill, social unrest, outbreak of violence, labour strikes etc. 		

Table 5: Action Plan – Conservation of the Natural and Historical Environment

Objective:

To minimise damage to soil, vegetation and historical resources during the construction phase.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<p>The “chance finds” procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.</p> <p>Action by person identifying archaeological or heritage material:</p> <ul style="list-style-type: none"> • If operating machinery or equipment - stop work; • Identify the site with flag tape; • Determine GPS position if possible; and • Report findings to foreman. <p>Action by foreman:</p> <ul style="list-style-type: none"> • Report findings, site location and actions taken to superintendent; and 	Throughout the operations	Contractor/Environmental and Social Consultant to monitor.

Management and mitigation measures	Action plan	
<ul style="list-style-type: none"> • Cease any works in immediate vicinity. <p>Action by superintendent:</p> <ul style="list-style-type: none"> • Visit site and determine whether work can proceed without damage to findings; • Determine and mark exclusion boundary; and • Site location and details to be added to project GIS for field confirmation by archaeologist. <p>Action by archaeologist:</p> <ul style="list-style-type: none"> • Inspect site and confirm addition to project GIS; • Advise NHC and request written permission to remove findings from work area; and • Recovery, packaging and labelling of findings for transfer to National Museum. • In the event of discovering human remains: • Actions as above; • Field inspection by archaeologist to confirm that remains are human; and • Advise and liaise with NHC and Police. <p>Construction Management</p> <ul style="list-style-type: none"> • At the outset of construction (or during construction as may be applicable), the ECO and contractor shall visit all proposed borrow-pits, haul roads, access roads, camp sites, and other 		

Management and mitigation measures	Action plan	
<p>areas to be disturbed. Areas to be disturbed shall be clearly demarcated, and no land outside these areas shall be disturbed or used for construction activities. Detailed instructions and final arrangements for protection of sensitive areas, keeping of topsoil and rehabilitation of disturbed areas shall be made, in line with the guidelines in this document. The ECO shall be consulted before any new areas are disturbed which have not yet been visited.</p> <ul style="list-style-type: none"> • No off-road driving shall be allowed, except on the agreed upon haul and access roads. • Vegetation shall only be cleared within the road reserve, while trees with a trunk diameter exceeding 100 mm (1 meter above ground) shall be left intact. The reserves on either side of this corridor may not be cleared of vegetation unless • abolish. • The removal of material at borrow-pit site shall be focused where permission is given to do so for detours or access roads. • A prescribed penalty will be deducted from the contractor's payment certificate if it is shown that trees and/or branches have been collected illegally, by any of the staff or sub-contractors. • Trees that need to be trimmed should be so with the right equipment and aesthetical acceptable manner. 		

Management and mitigation measures	Action plan	
<ul style="list-style-type: none"> Where topsoil is available, this must be stockpiled separately in 1,00 m high piles and this used to cover the damaged areas outside the road reserve such as access roads to borrow pits, and the camp site. Where compaction has taken place in disturbed areas, these areas must be ripped and covered with topsoil separately kept for this purpose. This includes the road reserve where grass should be encouraged to re-ester the least significant vegetation exists. If material is only available around Signiant mature trees, a radius of soil of at least 3m shall be kept around the base of the Tunk, and it shall be endeavored not to expose the roots of such trees. The Environmental Officer shall visit all proposed borrow-pit areas and indicate where and how material may be removed, before works commence. Poaching or collecting of wild animals is prohibited uncles a permit has been obtained. A prescribed penalty will be deducted from the contractor’s payment certificate if it is shown that any of his staff or sub-contractors are involved in trapping, hunting or any kind of collecting of wild animals in the vicinity of the work sites. Offenders will be handed to the authorities for prosecution. Reinstatement of construction working area to the best possible after construction activities are 		

Management and mitigation measures	Action plan	
<p>completed.</p> <p>Borrow Pit Management</p> <ul style="list-style-type: none"> The removal of material at borrow-pit sites shall be focused where the least significant vegetation exists. If material is only available around significant mature tree (more than 100 cm circumference-1meter above ground), clusters trees should be preserved while suitable material is excavated around them. A 3-meter buffer must be conserved around the closer of mature trees. The ER shall visit all proposed borrow-pi areas and indicate where and how material may be more trees in close proximity (within 20 m radius). The Engineers and surveyors must draft a plan for approval before commencement of a borrow pit. This plan must indicate the required resources and sensitive areas that may not be mined (indication of the mature trees). All borrow-pits must be rehabilitated. The contractor shall liaise with the applicable local headmen and residents regarding whether their borrow-pits shall be shaped as water reservoirs during rehabilitation. At those borrow-pits not to be shaped as reservoirs, topsoil (the top layer of organic material, even if the topsoil in non-existent, the top layer of organic material) at borrow pits shall be 		

Management and mitigation measures	Action plan	
<p>stockpiled separately and the stockpile maintained for use at the end of the contract to rehabilitate borrow pits.</p> <ul style="list-style-type: none"> • The borrow pits shall be rehabilitated by training the sides to a slope not steeper than 30 degree and evenly spreading the topsoil over the areas to allow for the growth of new vegetation. • All spoil material at the borrow pits shall be neatly shaped and no loose material will be left inside the borrow pits. • The borrow pit floor should be levelled as part of rehabilitation. • Final payment will not be issued unless the environmental consultant is satisfied with the obligations listed under this section (borrow pit management”). 		

Table 6: Action Plan – Waste Management and Water Resource Management

Objective:

To avoid contribution to potential surface and groundwater pollution.

To ensure that sound waste management practices are adhered to during construction.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> • Ensure suitable receptacles with lids for waste disposal is available on site at all times. • Ensure animals do not have access to waste bins. • If rubbish containers are used, ensure these can be sealed from animals or strong wind and during transportation. • Written evidence of safe disposal of waste will be kept. • Regular environmental awareness should include potential risks associated with hydrocarbons. • Soil contaminated with hydrocarbons shall be excavated and stored in plastic bags inside a designated wheelie bin and transported for disposal at the nearest disposal facilities in the towns. • Constriction rubble and other waste generated during construction must be disposed of on a 	Throughout the operations	Contractor and workforce/ Environmental and social consultant to monitor.

Management and mitigation measures	Action plan	
<p>regular basis at an approved waste disposal site. A temporary aster site may be demarcated for temporary storage of waste, but this area must be identified and clearly marked in the waste management plan.</p> <ul style="list-style-type: none"> • Adequate separate containers for hazardous and domestic waste must be provided on site and at the construction camp. • The workforce must be sensitized to dispose of waste in a responsible manner and not to litter. • No waste my remain on site after completion of the project. • The Contractor shall submit a waste management plan, including how it is intended to dispose of hazardous waste, as described hereunder. This plan should be reviewed and approved by the Engineer, socials and environmental consultants before implementation. • Hygienic, adequate toilet facilities should be available in the following ratio:2 toilets for every 50 females and one toilet for every 50 males. The toilets should be such that it can be transported for various site selections and to be emptied at an approved sewage site. No person should have to work more than 1 km for the use of a toilet. • A demarcated vehicles service should be provided. This should have an impermeable floor, • oil trap and dedicated wash bay area. All used water must first run through the oil trap before the 		

Management and mitigation measures	Action plan	
<p>effluent is allowed to exit.</p> <ul style="list-style-type: none"> • Servicing of vehicles is only permitted in the demarcated vehicle service area, except for large immobile vehicles which may be serviced on site, on condition that oils and lubricants are prevented from spilling through the use of drip trays or other suitable containers. • Drip trays should be available for all vehicles that are intended to be used during construction. These trays should be placed underneath each vehicle while the vehicles are parked. The drip trays should be cleaned every morning and the spillage handled as hazardous waste. • Accidental spills must be cleaned immediately. The contaminated soil must be suitable for hazardous waste. • Oil, lubricants, and other hazardous materials must be store in separate containers (concrete liner, container, or metal or plastic drip tray) and stored for transport and disposal at an approved waste disposal site or for collection by an oil recycling company such as WESCO salvage (this company collects significant quantities of oil from central location throughout the country). • Fuel tanks on site must be properly banded. The volume of the banded must be sufficient to hold 1.5 times the capacity of the storage tanks. The floor of the banded area must be impermeable and the sides high enough to achieve the 1.5 times holding capacity. 		

Management and mitigation measures	Action plan	
<ul style="list-style-type: none"> • Foam fire extinguishers must be in close proximity to fuel kept on site. There should be trained personnel to handle this equipment. At least two extinguishers should be placed at every fuel storage area. • The contractor shall utilize water only as specified in the approved water abstraction plan for the project. • Reuse wastewater wherever feasible. • Priorities the use of rainwater/stormwater over surface water/groundwater abstraction by using harvesting equipment and systems on site. • Restrict excavation activities during periods of intense rainfall. Use temporary bunding to reduce the risk of sediment, oil or chemical spills to the receiving waters. • Carry out excavation works in cut off ditches to prevent water from entering excavations. 		

Table 7: Action Plan – Traffic Management

Objective:

The objective of the management measure is to appropriately manage traffic impacts

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> • Signage should be placed to clearly indicate the speed limit when entering the site. All drivers must adhere to the speed limit when entering the site. . • Ensure implementation of a detailed safety code of conduct for contractor; to be closely monitored with penalties enforced if necessary. • Ensure the trucks during construction keep their distance from one another, to allow other road users to pass safely. • Ensure that an Emergency Response Plan is in place, in event of an accident. • Ensure dust suppression methods such as sprinkling water on the gravel road is done at all times to limit the impact of dust on the neighbouring community. 	Throughout the operations	Contractor and workforce/ Environmental and social consultant to monitor.

Table 8: Action Plan – Social and Economic Management Plan

Objective:

The objective of the management measures is to enhance the positive impacts associated with job creation and investment.

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> Local people must be preferentially selected to encourage social growth and development in the region and Namibia as a country. Management is urged to begin local selection and provide technical training as soon as possible to enable local people to compete for the lower skilled jobs and upskill themselves in anticipation of the proposed project. Have zero tolerance to alcohol in the workplace. Ensure that an Emergency Response Plan is in place, in event of an accident. A First Aid Kit should be available at all times during the construction process. 	Throughout the operations	Contractor and workforce/ Environmental and social consultant to monitor.

Table 9: Action Plan - Rehabilitation

Objective:

To rehabilitation the site office, work sites servitude areas, tracks and other areas disturbed during construction as close to their original a state as reasonably possible

Management and mitigation measures	Action plan	
	Frequency / target date	Responsible parties
<ul style="list-style-type: none"> All construction sites should be photographed (1) before commencement, (2) after completion and (3) after rehabilitation of the activities. All bunding areas, equipment, waste, temporary structures, stockpiles. must be removed from the camp and work sites. All disturbed Arese shall be reshaped to theoretical contours; as close as possible to the natural conditions before construction commenced, including the road reserve, detours, construction camps, and temporary access routes. Alien vegetation particularly the Downy thorn apple (<i>Datura innoxia</i>) and Wild tobacco (<i>Nicotiana glauca</i>) that occur in the project corridor must be weeded. All cuttings must be shaped with a slope to provide a natural appearance, without having to destroy 	Throughout the operations	Contractor/ Environmental and Social Consultant to monitor.

Management and mitigation measures	Action plan	
<p>significant vegetation on top of the slope.</p> <ul style="list-style-type: none">Existing borrow pits adjacent to main roads need also be rehabilitated during rehabilitation phase. <p>Final payment will not be issued unless the environmental consultant is satisfied with the obligations listed under this section(“rehabilitant”).</p>		

8 NON-COMPLIANCE

8.1 PROCEDURES

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ER to impose a penalty. In the event of non-compliance, the following recommended process shall be followed:

- The ER shall issue a notice of non-compliance to the Contractor through the ECO, stating the nature and magnitude of the contravention.
- The Contractor shall act to correct the non-conformance within 24 hours of receipt of the notice, or within a period that may be specified within the noticed.
- The Contractor, through the ECO, shall provide the ER with a written statement describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the Engineer shall impose a monetary penalty based on the condition of contract.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the Engineer shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so.
- In the event of a dispute, difference of opinion, etc. Between any parties with regard to or arising out of interpretation of the conditions of the ESMP, disagreement regarding the implementation or method of implementation of condition of the ESPM, etc. any party shall be entitled to require that the issue be referred to specialists for determination.
- The Engineer shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remedial measures.

8.2 OFFENCES AND PENALTIES

Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications, he shall be liable to pay a penalty fine over and above any other contractual consequence.

The Contractor is deemed NOT to have complied with this Specification if:

- a. Within the boundaries of the site, site extensions and haul/access roads there is evidence of contravention of the specification.
- b. Environmental damage due to negligence.
- c. The Contractor fails to comply with corrective or other instructions issued by the ER within a specific time.
- d. The Contractor fails to respond adequately to complaints from the public.

Penalties for the activities detailed below, will be imposed by the ER on the contractor and/or his subcontractors:

Impact	Penalties
Actions leading to erosion	A penalty equivalent in value to the cost of rehabilitation plus 20%
Oil spills	A penalty equivalent in value to the cost of clean-Operation plus N\$3000
Damage to indigenous vegetation restoration	A penalty equivalent in value to the cost of restoration plus, N\$5000
Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus N\$5000
Damage to cultural sites	A penalty to a maximum of N\$100,000 shall Be paid for any damage to any cultural/historical sites
Damage to trees	A penalty to a maximum of N\$ 10,000 shall be paid for each tree removed without a prior permission, or a maximum of N\$ 5,000 for damage to any tree, which is to be retained on site
Damage to natural fauna	A penalty to a maximum of N\$ 5,000 for damages to any natural occurring animal
Any person, vehicles, plant, or thing related to the Contractors operations within the designated boundaries of a "no-go" area	N\$ 4,000
Litter on site	N\$ 1,000

Deliberate lighting of illegal fires on site	N\$ 5,000
Individuals not making use of the site toilet facilities	N\$ 1,000
Any person, vehicle, item of plant, or any thing related to the Contractors operations causing a public nuisance	N\$ 2,000

- Penalties may be issued per incident at the discretion of the Engineer. The Engineer will inform the Contractor of the contravention and the amount of the fine and will deduct the amount from monies due under the contract.
- For each subsequent similar offence, the fine may, at the discretion of the ER, be doubled in value to a maximum value of N\$ 10,000.
- Payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.
- In the case of a dispute in terms of this sections, the Engineer shall determine as to what constitutes a transgression in terms of this document.

9 ENVIRONMENTAL AUDITING

Auditing should be conducted at least once every three months during construction. Benefits derived from the audit process might include:

- Identification of environmental risk
- Development or improvement of the environmental management system
- Avoidance of financial loss
- Avoidance of legal sanctions
- Increase in staff awareness
- Identify potential cost savings
- Improve dealings with employees, environmental groups, the community, regulators, media, shareholders, or insurance & finance institutions; and

- Establish a history of environmentally responsible operation activities, e.g., through environmental incident reports, environmental monitoring & recording, & reporting to committees or authorities.
- Commonly, the audit of a site will cover all management procedures, operational activities & systems, and environmental issues. The environmental audit will be compiled objectively and conducted by independent entity.

10 PAYMENT

The cost of complying with the environmental regulations shall be covered by the tendered rates for the various items in the schedule of quantities and no separate payment will be made to the Contractor to fulfill the requirements of this section. However, additional payment will be made for specific work instructed by any relevant authority.

11 BORROW PIT REHABILITATION GUIDELINES

11.1 Severity Classification

Borrow pits after use have different shaped and depths and are located in different environments. Therefore, they have to be considered individually. Nevertheless, general criteria can be used to describe the hazard potential.

The following table determines the severity class for the hazard potential of any borrow pit-focussing on the protection of health and safety of both animals and people.

The following methodology is applicable to determine the severity class:

- The borrow pits are checked against the criteria depicted in the table below and their hazard potential is classified as None /Low/ Medium/ High.
- Should any class score fall within the next higher class, then the classification of the borrow pit be determined by that higher class score.

• Example	1. High walls:	<1 m	None
	2. road proximity	<100 m	None
	3. House/Dwelling proximity	400 m	Low
	4.surface water drainage	<500 m	Low
	5. school proximity	<500 m	None
	6. livestock present	0	None

Risk Result:

Low Risk

Severity Classification	A	B	C	D
High Walls (height)	< 1 m	1-2 m	2 - 3 m	>3 m
Road Proximity from shoulder of the road	>100 m	60 - 100 m	20 -60 m	<20 m
House - Dwelling Proximity distance	>250	100 - 250 m	50 - 100 m	<50 m
Surface water drainage lines proximity distance	>500 m	300 - 500 m	100 - 300 m	<100 m
School Proximity distance	>500 m	300 - 500 m	100 - 300 m	<100 m
Livestock present in the camp / area	0	1-5	6-10	>10
Risk - Result	None	Low	Medium	High

11.2 Borrow Pit Rehabilitation

11.2.1 General

In order to reduce the hazard potential of borrow pits several approaches are potentially possible, however not all of them will eliminate the danger of people or animal falling into the pit, however on the other hand, cattle can also not reach the pit to drink, expect if a lockable gate is included. Further, future erosion might extend the borrow pit beyond the fence and subsequently be a potential danger again.

On the other hand, structural measures are more expensive options; however, they potentially mitigate the danger sustainably. Nevertheless, also structural measures will have to be selected carefully. The typical measure is to slope the pit in such a way, that it is safe, but still accessible, as required.

However, this might require the upper rim to be extended further, and adjacent land use (e.g., homesteads) might be too close to realize this option. Further, dozing soil into the pit in order to reduce

the slope and to prevent future erosion on the one hand, on the other hand reduces the storage volume, which will be opposed by the local community, as experienced numerous times in the past.

Further, depending on the soil type, the loose soil in the borrow pit, once soaked with water poses a life treat to animals as they can get stuck and if not being able to free themselves, they will die.

11.2.2 Option One

This option is considered the ideal rehabilitation option and it has to be considered as first option for borrow pits with a severity Classification of

- ✓ **None or**
 - ✓ **Low or**
 - ✓ **Medium**
- and
- ✓ **where enough material is available for the rehabilitation actions.**

The following mitigation measures have to be applied:

1. The borrow pit floor will be levelled and no topographical high points will be present on the floor.
2. No walls or steps will be present in or around the borrow pit.
3. The borrow pit floor will be free of any spoils, large rocks or any form of construction waste.
4. The slopes will have a gradient not steeper than 1:3 and will be graded or bladed.
5. Should dead vegetation be available, it will be distributed evenly on the slopes to prevent wind and water erosion.
6. Overburden, top-soil and any other material, which was removed when the borrow pit was opened and stockpiled on the outer sides of the borrow pit with a maximum thickness of 300 mm.
7. Finishing of the slopes should be done in concentric circles, starting from the borrow pit floor and moving upwards towards ground level to prevent initial erosion induced by water and wind.
8. Remaining material (overburden and topsoil) will be shaped as a berm with a maximum slope 1:3, with a distance of at least 3.0 m from the edge of the borrow pit and not closer than 9.0 m to any structures (roads, buildings, etc.). The berm will not be higher than 1.0 m.

All alien vegetation has been removed from the floor, the slopes and berms of the borrow pit.

11.2.3 Option Two

Should the application of the first rehabilitation option not be possible, this Option Two shall be considered.

This rehabilitation option is applicable to borrow pits, which have a Severity Classification of

- ✓ **High or**
- ✓ **Where sloping to the outside not possible due to adjacent obstacles or**
- ✓ **Where not enough material is available for the rehabilitation actions of Option one**

The following mitigation measure have to be applied:

1. The borrow pit floor will be levelled and no topographical high points will be present on the floor.
2. The borrow pit floor will be free of any spoils, large rocks or any form of construction waste.
3. The borrow pit will be fenced off:
 - a. With mesh wire and galvanized steel pole, minimum height 1.2m,
 - b. With one access to the pit, which will be controlled by a gate of the same material as the fence, the gate will be lockable and access granted to the landowner only, if possible,
 - c. With the fence being constructed at least 5.0 m from the edge of the borrow pit, enclosing the entire borrow pit.
4. A distance of at least 9.0 m to any adjacent structures, roads and other obstacles shall be maintained.
5. All alien vegetation has been removed from the floor, the slopes and berms of the borrow pit.

11.3 Borrow pit taking-Over Certificate

It is essential that any borrow pit after rehabilitation meets all requirements set out in Option One (ideally) or Option Two (alternatively). Only after the rehabilitation meeting all requirements, the borrow pit can be handed over to the landowner and officially considered as rehabilitated.

After the borrow pit has been handed over, the contractor or any other party may not be allowed to engage in any further activities in or around the handed-over borrow pit. This includes, but is not limited to activities such as further excavations, dumping of overburden or spoils, sloping, etc.

In order to keep records of the rehabilitation operation meeting all requirements and in order to avoid claims from the public with regard to unrehabilitated borrow pits, it is prudent to record the completion of rehabilitation in accordance with the specification and the acceptance thereof.

The following Borrow pit Tanking-Over Certificate shall therefore be signed by the parties upon completion of the rehabilitation and handed over to the client for record keeping.

