

UPDATED ENVIRONMENTAL MANAGEMENT PLAN (EMP) REPORT

FOR THE PROPOSED CONSTRUCTION OF A KUNENE VOCATIONAL TRAINING CENTER (KVTC) IN KHORIXAS, KUNENE REGION



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PROJECT DETAILS

TITLE: FINAL UPDATED REPORT: THE ENVIRONMENTAL MANAGEMENT PLANT (EMP) FOR THE PROPOSED CONSTRUCTION OF A KUNENE VOCATIONAL TRAINING CENTER (KVTC) IN KHORIXAS, KUNENE REGION

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DECLARATION

We hereby declare that:

- a. We have the knowledge of and experience in conducting assessments, including knowledge of the Acts, Regulations, and Guidelines that are relevant to the proposed construction activities.

- b. We have performed the work relating to the application objectively, even if this results in views and findings that are not favourable to the proponent.



J Sirunda
Environmental Assessment Practitioner (EAP)

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ABBREVIATIONS AND ACRONYMS

EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
EC	Environmental Commissioner
NTA	Namibia Training Authority
MET	Ministry of Environment and Tourism
MAWF	Ministry of Agriculture Water and Forestry
DWA	Department of Water Affairs
KVTC	Kunene Vocational Training Centre
DEA	Department of Environmental Affairs
SM	Site Manager
ENC	Environmental Coordinator
SF	Site Foreman
PS	Project Staff
PP	Project Proponent
EIA-C	Environmental Impact Assessment Consultant
I&Aps	Interested and Affected Parties
EAs	Environmental Assessments

1. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

1.1. BACKGROUND

The Government has called NTA to expand Vocational Training Education. Kunene Region is one of the areas identified that requires the presence of Namibia Training Authority (NTA). In view of this call, the **Namibia Training Authority (NTA)** is proposing to construct a **Kunene Vocational Training Center (KVTC)** in Khorixas to improve technical skills in that area. KVTC project is aligned to vision 2030 and is aimed to cater for the needs of the greater Kunene Region as per the recommendations of the Vocational Training Education (VET) Expansion Pre-Feasibility Study.

In line with the provisions of the **Environmental Management Act (2007)** and **EIA Regulations (2012)** an **Environmental Impact Assessment (EIA)** is required for “Construction of Massive Building Activities of this magnitude”. It is against this background that, **D&P Engineers and Environmental Consultants** has been appointed to conduct an Environmental Impact Assessment (EIA) and to develop an Environmental Management Plan (EMP) for the proposed activities. However, since **D&P Engineers and Environmental Consultants** is in charge of the Civil and Electrical works of the project under review, D&P Engineers and Environmental Consultants appointed **HJ GeoEnviro Consulting** as an independent consulting firms to conduct the above mentioned assessment for the Namibia Training Authority (NTA). It is against this background, that, the NTA would like to establish a KVTC in Khorixas, to ensure that knowledge development is enhanced in that Kunene Region.

1.2. PROJECT DESCRIPTION AND LOCALITY

Kunene Region is one the poorest region among the seven regions in Namibia. Unemployment rate is extremely high and concomitant high poverty level. In comparison to other regions, educational level is also very low in this region. It is one of the region without a vocational training center. For this reason the NTA is planning to construct a KVTC which will not only serve as a vocational training center but also as a symbol that Kunene Region will be producing future experts in different technical fields. KVTC will be the first tertiary educational institution in Kunene Region.

The proposed site is located along the C39 Road on the outskirts of Khorixas Townlands and next to the Town Cemetery, Sewage ponds, University of Namibia and Old Vocational Training Center (Figure 1, 2 and 3). Khorixas Town Council

approved the request for the donation of 25.5 Hectare of Land to NTA for the construction of the proposed KVTC. The associated resolutions of the Khorixas Town Council are attached to the report as Appendix A.

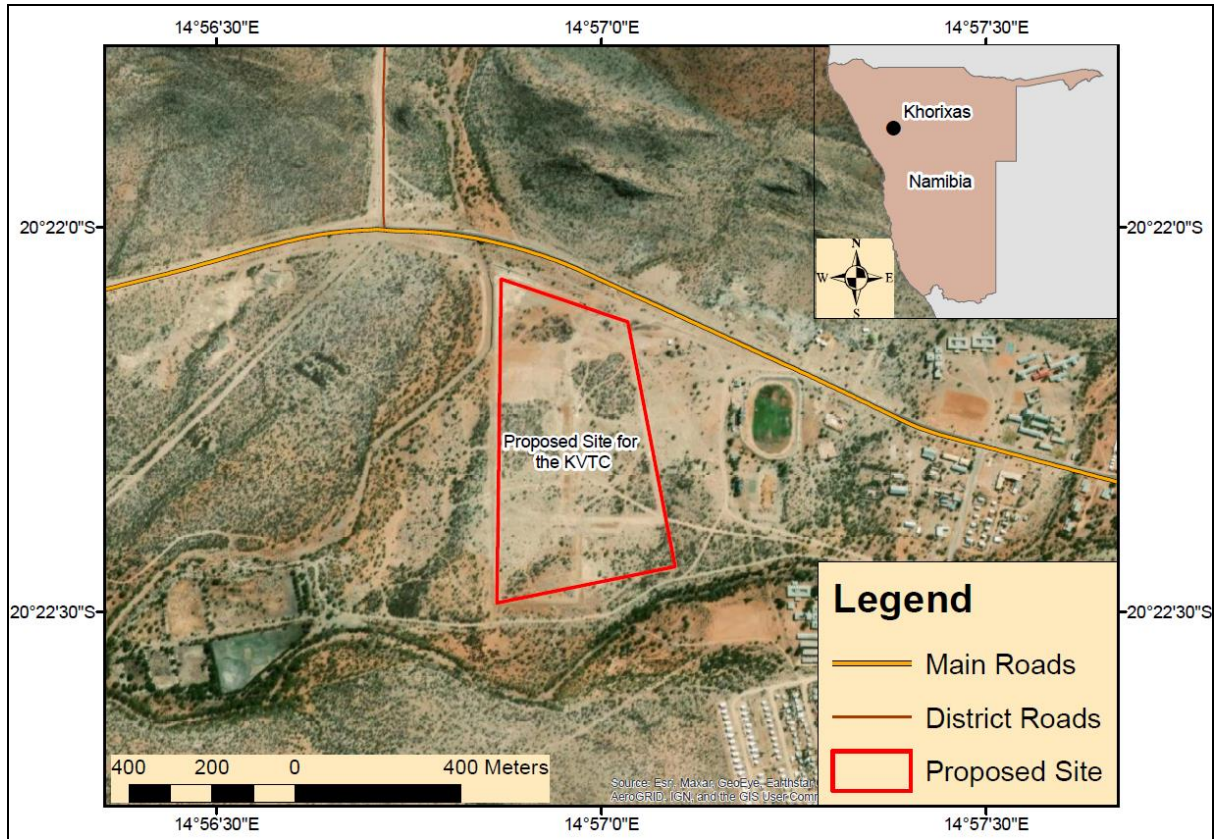


Figure 1: Locality of the proposed NTA KVTC

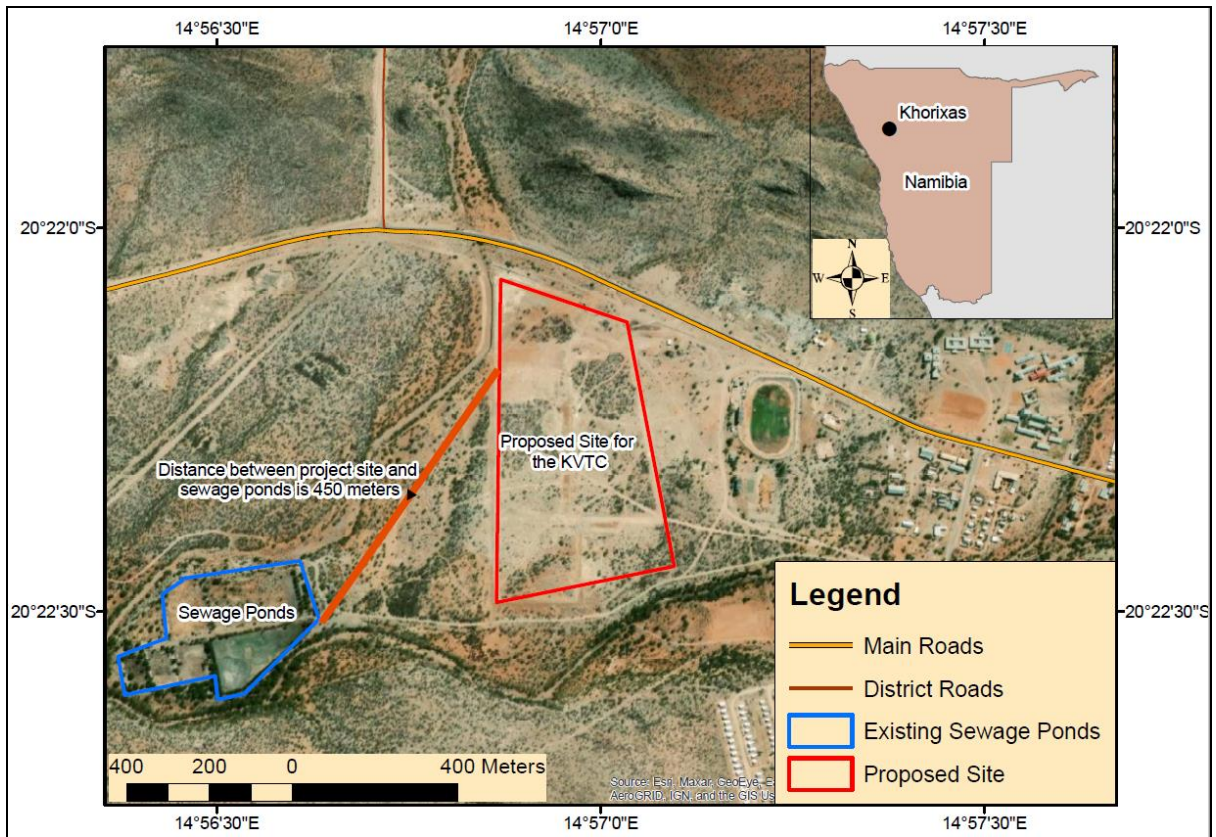


Figure 2: The distance of the proposed NTA KVTC to the sewage ponds

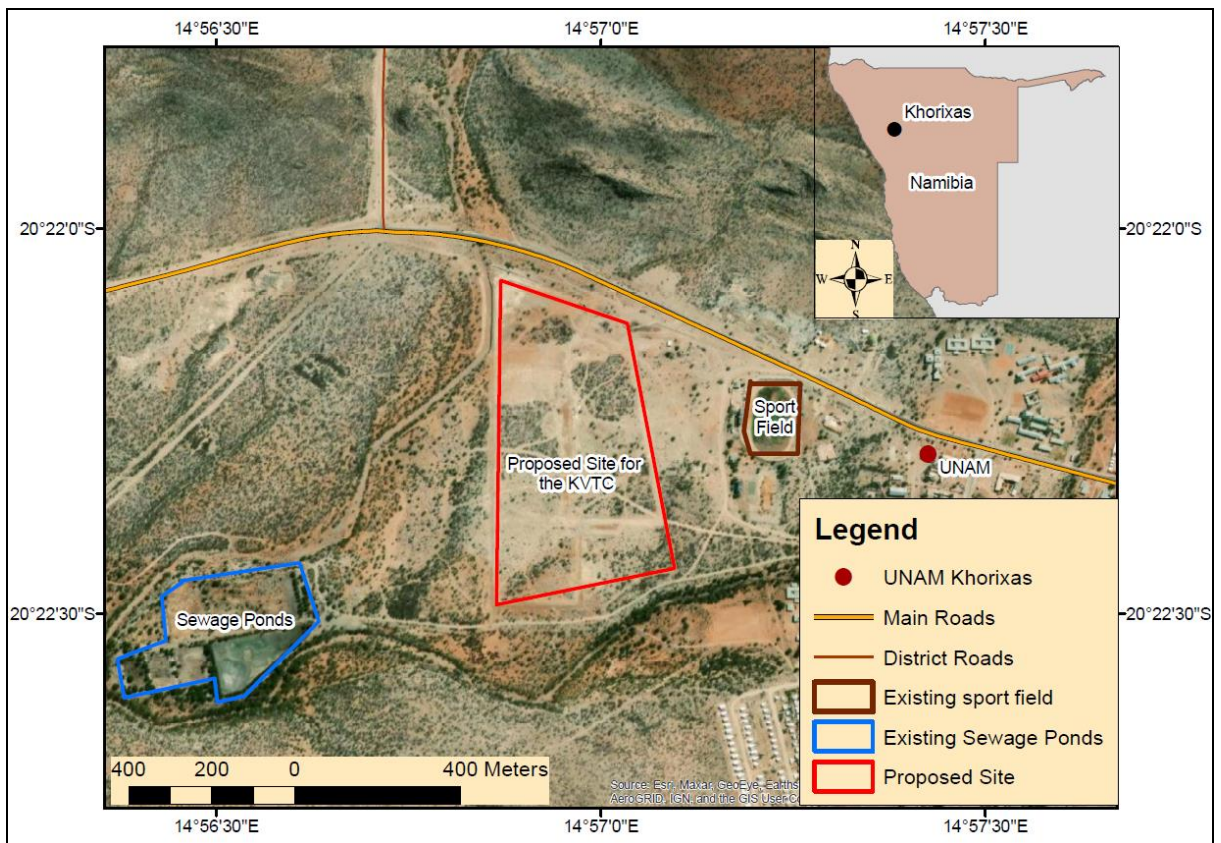


Figure 3: Existing infrastructure surrounding the proposed NTA KVTC

1.3. SUMMARY OF PROPOSED ACTIVITIES

The project consists of two phases. Phase 1, will involve the feasibility study, constructing classrooms and workshops on the Proposed Site for first priority trades/occupations and equipping of the above classrooms and workshops; Constructing. Phase 2, will involve the construction of recreational/ sports facilities and constructing classrooms and workshops for second priority trades/occupations. The above facilities once completed will host about 1600 learners. The proposed trades which will be taught at the KVTC are as shown in **Appendix B** below:

These proposed project activities will be assessed in this report to determine the extent of the associated impact the activities will have on the receiving environment and mitigation measures will be proposed. The table below indicates the project phases the proposed project (**Table 1**) from an environmental impact assessment point of view:

Table 1: KVTC Project Phases

PROJECT PHASES		
PRE-CONSTRUCTION	CONSTRUCTION	OPERATION
Engineering design	Vegetation clearance	Access arrangements
Geotechnical investigations	Establish construction of camps	Routine maintenance
Site evaluation for existing or nearby infrastructure	Access road	Management of vegetation clearance
	Excavations for foundations and sewer lines infrastructure	Repair and maintenance works
	Erection of steel and poles	
	Construction of recreational and sports facilities. Constructing classrooms and workshops for the first priority trades/occupations:	

2.1. STRUCTURAL REQUIREMENTS

At the KVTC, the structure which will be erected there will mainly be recreational/sport facilities such as soccer field, and classrooms and workshops, hostels for learners, dining rooms and packing areas for vehicles. The architectural concept depicts the types of structural requirements for the proposed KVTC (**Appendix C**).

2.2. CONSTRUCTION ACTIVITIES

All moveable components for the KVTC will be transported to site by road on low-bed trailers and small dyna truck. Materials and equipment required for the building construction will be transported from via Windhoek (from South Africa) and/or Walvis Bay along the Windhoek-Otjiwarongo-Swakopmund main road (i.e. the B1 and B2), the Otjiwarongo Khorixas road (C39). No significant impacts associated with traffic interruption are expected on these roads.

Contractors' sites of approximately 250 m by 300 m are normally made at each construction site. The sites for such camps will need to be negotiated between the contractor and the engineering team. There are also a good number of access roads to site. Hopefully only smaller access tracks will be needed in isolated cases. Apart from the access roads, civil works structures will be erected for foundation of the buildings, and more of sewerage pipeline network will also be established to transport the waste from the facilities to the Khorixas Town Council waste water disposal site. The laying of the sewerage pipeline will be in such a way that, it won't cause an inconvenience during maintenance periods.

2.3. MAINTENANCE ACTIVITIES

Once building structures are constructed, it requires little maintenance apart from obvious incidents such as paint fading off, pipeline burst etc. Obvious accidents such as lightning strikes or towers blown over by exceptionally strong winds will be repaired by using established access roads.

2.4. NATURAL MATERIALS AND HUMAN RESOURCES REQUIREMENT

Most component of this project require materials from the surrounding natural environment. Sand and water will be needed for the concrete works associated with building. All other materials will be imported as pre-fabricated components. Since the design of buildings of this nature is of such a technical and skilled nature, there will be limited scope for the recruitment of unskilled labour from the area. Local labour can be used for digging the foundation trenches, and for bush clearing of the access roads and construction area. This represents a mere 5% or less of the total construction costs. Workforce accommodation would ideally be in Khorixas. Accommodation camps are likely to move as construction progresses.

1.4. ENVIRONMENTAL REQUIREMENTS

The proponent NTA is required by law to undertake an Environmental Impact Assessment (EIA) for the proposed construction of the KVTC in line with the following legal requirements:

- Environmental Assessment Policy for Sustainable Development and Environmental Conservation of 1995;
- The Environmental Management Act, (Act No. 7 of 2007) and its EIA regulations of 2012.

1.5. FULLFILMENTS OF ENVIRONMENTAL REQUIREMENTS

The proponent NTA has appointed HJ GeoEnviro cc as the Environmental Consultant. Therefore HJ GeoEnviro cc has prepared this Environmental Assessment Report covering the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) to meet the statutory environmental management requirements of the proposed quarrying activity for the construction of the KVTC in the Kunene region. This Environmental Assessment has been undertaken within the framework of the existing environmental assessment process as described in the Environmental Assessment Policy for Sustainable Development and Environmental Conservation of 1995, published by the Ministry of Environment, Forestry and Tourism as well as the provisions of the Environmental Management Act, (Act No. 7 of 2007) and its EIA regulation of 2012.

1.6. WHAT IS AN ENVIRONMENTAL MANAGEMENT PLAN?

Environmental Management Plans (EMP's) are important tools that focus on the management actions that are required to ensure not only environmental compliance of projects but also on implementing mitigation measures aimed at maximizing positive impacts while minimizing negative ones. The statutory validity and compliance significance of the EMP are inherited from the provisions of Regulations (2012) of the Environmental Management Act (2007) state that "the environmental management plan shall set out steps that are intended to be taken to manage any significant environmental impact that may result from the operation of the undertaking".

Against the above-given context, EMP are thus by their nature recurring processes that transform mitigation measures into actions and through cyclical monitoring, auditing, review, and corrective action ensures conformance with stated EMP aims and objectives. Inherently, an EMP must respond to unforeseen events and changes

in project implementation that were not considered before, and this is achieved through monitoring and auditing, including feedback for continual improvement in environmental performance.

1.7. OBJECTIVE OF THIS EMP

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimizing and maximizing the identified negative and positive impacts respectively. This EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the construction. The specific objectives of this EMP are:

- Ensuring compliance with regulatory authority stipulations and guidelines;
- To formulate measures that will mitigate the adverse impacts of the proposed project on various environmental components, which have been identified during the environmental impact assessment.
- To formulate measures to protect environmental resources where possible.
- To formulate measures to enhance the value of environmental components where possible.
- Responding to changes in project implementation not considered in the EIA;
- Responding to unforeseen events; and
- Providing feedback for continual improvement in environmental performance.

1.8. SCOPE OF THIS EMP

To achieve the above objectives, the scope of this EMP will include the followings:

- Definition of the environmental management objectives to be realized during the life of a project (i.e. construction and operation phases) to enhance benefits and minimize adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification measures, and to what target or performance level.
- Clarification of institutional structures, roles, communication, and reporting processes required as part of the implementation of the EMP.
- Description of requirements for record-keeping, reporting, review, auditing, and updating of the EMP.

1.9. HIERARCHY OF MITIGATION MEASURES IMPLEMENTATION

This EMP have adopted a hierarchy of methods for mitigating significant adverse effects identified in order of preference and as follows:

- i. Enhancement, e.g. provision of new habitats;
- ii. Avoidance, e.g. sensitive design to avoid effects on ecological receptors;
- iii. Reduction, e.g. limitation of effects on receptors through design changes, and;
- iv. Compensation, e.g. community benefits

1.10. MITIGATIONS MEASURES IMPLEMENTATION

The EMP provides a detailed plan of action required in the implementation of the mitigation measures for minimizing and maximizing the identified negative and positive impacts respectively.

The EMP also provides the management actions with roles and responsibilities requirements for the implementation of environmental management strategies by the proponent through the contractors and subcontractors who will be undertaking the exploration activities.

1.11. WHAT ARE THE LEGAL IMPLICATIONS AND OBLIGATIONS UNDER THIS PLAN?

The Environmental Management Plan will be sent to the Directorate of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) for approval. Once the DEAF is satisfied with the contents of the EMP, they will issue a Pro-forma Environmental Clearance Certificate to the proponent NTA. The Environmental Clearance Certificate is linked with the recommendations of the Environmental Management Plan.

The EMP, once accepted with the receivable of the Environmental Clearance, therefore becomes a legally binding document, and each role-player including contractors and sub-contractors who are made responsible to implement the relevant sections of this EMP, are required to abide by the conditions stipulated in this EMP document.

2. ANTICIPATED ENVIRONMENTAL IMPACTS

2.1. POSITIVE IMPACTS

2.1.1. Employment/job creation

The proposed project will create both direct and indirect jobs. The construction phase of the project will employ more people, whereas, the operation and maintenance less employment will be created, which will be more permanent nature.

Enhancement measures for employment/job creation

- Where unskilled labour can be used, a '**locals first**' policy should be considered.
- It is proposed that local people, meaning the community members from Khorixas Town, should be employed as far as possible, especially where no specific skills are required.
- The Khorixas Town Council personnel could be requested to assist with the recruitment of construction workers. NTA should assist to ensure that local receives preference during the recruitment process.
- Both men and women should be granted the opportunity to be employed in this project.

2.1.2. Support to local retailers shop

Construction projects are high foreign currency earner and GDP contributor to the Namibian economy, therefore the presence of construction activities near local authorities stand to benefit the local economy from project related purchases, for example, the retail, accommodation and recreation sectors.

Enhancement measures for support to local retailers shop

- **The contractors** and their employees are encouraged to purchase or support local retailers in Khorixas Town unless the intended material/product to be purchased is not locally available in Khorixas.

2.1.3. Export taxes and VAT payment

Export taxes and VAT payments contribute significantly to the national economy contribution. Thus, without these payments our government will not be able to roll out project on infrastructure, being it water, schools, road or electricity and also sanitation facilities nationwide.

Enhancement measures for export taxes and VAT payment

- **The contractors** and their employees are encouraged to make these payments when applicable to support the economic growth of the country.

2.2. NEGATIVE IMPACTS

2.2.1. Faunal destruction

Faunal destruction is difficult to predict as the development associated with the construction of the KVTC would be localized i.e. specific to each site and depend on the access and maintenance routes which will be used. However, it should be noted that, the proposed project is likely to affect fauna during construction and maintenance phases. But due to the size and duration of the project, the impact is manageable.

Mitigation and enhancement measures

- Avoid development & associated infrastructure in sensitive areas – e.g. in/close to drainage lines, cliffs, boulder and rocky outcrops, especially granite domes. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species.
- Where crossings sensitive sites are unavoidable utmost care is needed to prevent habitat destruction for example the existing drainage or tributaries on site.
- Blading and bulldozing should not be permitted in the river bed. Sensitive vegetation and large trees should be identified and protected. This could also diverge water flow during period of heavy rainfall.
- The ECO should be with the contractor for the duration of the work at these points.
- Avoid placing access routes (roads & tracks) through sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines.
- Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed roads/tracks – especially during the construction phase.
- A tracks map should be made for each stretch of the route,
- Stick to speed limits of maximum 30km/h as this would result in fewer faunal road mortalities. Speed humps could also be used to ensure the speed limit.
- Remove (e.g. capture) unique fauna and sensitive fauna before commencing with the development activities and relocate to a less sensitive/disturbed site if possible.
- Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g. mushrooms, etc.), indiscriminate killing of perceived dangerous species (e.g. snakes, scorpions, etc.) and collecting of wood as

this would diminish and negatively affect the local fauna – especially during the development phase(s).

- Attempt to avoid the removal of bigger trees during the development phase(s) especially with the development of access routes – as these serve as habitat for a myriad of fauna.
- Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires affecting the local fauna, but also causing problems (e.g. loss of grazing & domestic stock mortalities, etc.) for the neighboring farmers.
- Preferably workers should be transported in/out of the construction sites on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.).
- Implement erosion control. The area(s) towards & adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem.
- Avoid construction within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna. Tracks along steep slopes should be negotiated without blading to avoid unnecessary habitat destruction.
- Prevent the number of domestic pets – e.g. cats & dogs – accompanying the workers during the construction phase as cats decimate the local fauna and interbreed & transmit diseases to the indigenous African Wildcat found in the area. Dogs often cause problems when bonding on hunting expeditions thus negatively affecting the local fauna.
- The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all costs.
- During operation avoid the creation of multiples roads strips, which could result in the disturbance of breeding sites for various mammals.

2.2.2. Destruction on vegetation and riparian trees

In view of the dominant vegetation mentioned in the assessment report it is highly unlikely that any of the species in the project area will be compromised, which are all reasonably common and widespread in that region. Track control will be essential in this section.

Mitigation and enhancement measures

- Thus the most pressing need is for the limitation of unnecessary collateral damage through regulation during the construction phase.
- Strict track control will be essential during construction and operational phases. Tracks to be used should be clearly demarcated from very early on, and transgressors should be penalized. This will ensure that no unnecessary vehicular collateral damage will be done.
- Firewood: No collection of firewood should be permitted anywhere along the route, but most particularly, where it is illegal in any case.
- Restoration: Where necessary tracks in should be rehabilitated in cooperation with the Khorixas Town Council.
- Relocation and rescue: Where it is clear that certain large species will be destroyed consideration should be given to offering to rescue the individuals involved and relocate them to the garden in Windhoek.
- Disturbance of marginal vegetation at the mountains should be limited.
- Avoid disturbance on invertebrate on site and along the gravel road stretch.

2.2.3. Disturbance or destruction of archaeological sites

There are no archaeological sites within the boundary of the project area. The archaeological sites are mainly rock arts which are found in most cases at 29 Km from proposed site. Rock arts are of historical importance to the people it belongs to and the nation at large. These arts are protected by laws in Namibia such as the National Heritage Act of 27 of 2004, hosted under the Ministry of Youth. It's widely spread that every project operating within an area where there are lots of archaeological sites is obliged not to destroy or temper with the sites. Therefore, if rock arts of any sort are to be found in and outside the boundary where this project will be operating should not be destroyed or tempered with during the duration of the project. The mitigations measures for the protection of archaeological sites are addressed in EMP and also summarized below.

Mitigation and enhancement measures

- In view of the distance from the site to the archaeological sites, no impacts are expected and therefore no further work is needed.

2.2.4. General neglects during construction phase

2.2.4.1. Solid waste: wires, drill bits, and human waste

Solid waste management is a problem at construction sites, and sometimes this problem extent beyond the construction phase. Therefore proper handling and management of the waste is critical for the protection of the environment and surrounding communities.

Solid waste which will be generated from this project if not managed will have an effect on the environment. The effect will mainly be at the project site. Human waste that will be generated during the construction phase, if not managed will have an effect on the environment although at a small scale.

Mitigation and enhancement measures

- Waste disposal sites should be established on site where paper, plastic and wire should be kept. The collected solid waste should be disposed at Khorixas Town Council solid waste disposal site.
- For human waste, mobile toilet should be made available on site for workers and once these facilities are full, the collected human waste should be disposed at the Khorixas Town Council human waste disposal site. Prior to the disposal of the above mentioned wastes **contractor** must enter into agreement with the Khorixas Town Council for permission to use their facility.

2.2.5. Land or soil disturbance: on site

The sewage line which be connected to the main sewer should be buried at 2.7m under ground. During these process the soil will be removed. Caution should be taken when handling the undisturbed sites and the area at large. Top soil contained in the overburden material will be removed on the surface rocks during the drilling of holes for the pipeline top soil or bottom sediment will be removed. The removed top soil during laying of the pipeline if not properly management will affect the growth of vegetation and the development biodiversity hiding or resting spots.

Mitigation and enhancement measures

- The top soil from 0 to 30cm to be removed and stockpile and to be used during the rehabilitation process.
- The top soil in the immediate vicinity of the sampling site should be removed and stored for re-cultivation during decommissioning.

- It is recommended that top soil to be removed down to the subsoil, where it is significantly thicker than 0.5m, as topsoil is always a scarce resource, and even if this lower material does not contain seed and is poorer in soil organisms, it has been found to be useful in reclamation.
- Where top soil is less than 150mm thick the unconsolidated material beneath should also be removed and treated as topsoil.
- Land markings and pits induced during construction shall be restored to original landform and visual state as much as possible. Furthermore, this mitigation measure shall extend and applies to any disturbance induced by any access road. Raking or/and dragging with tires could help in restoration of vehicle tracks.

2.2.6. Dust generation on site

During the construction process dust will be generated onsite by earth moving equipment and also on the gravel road by trucks and vehicles. Epidemiological studies indicate that workers exposed to construction process dust stand an increased risk of suffering from asthma symptoms, chronic bronchitis, nasal inflammation and impairment of lung function.

Mitigation and enhancement measures

- Measures such as the use of wet processes enclosure of dust-producing processes under negative air pressure (slight vacuum compared to the air pressure outside the enclosure),
- Exhausting air containing dust through a collection system before emission to the atmosphere, and exhaust ventilation should be used in the workplace.
- Use of personal protective equipment for proper dust control for respiratory protection and should be used only where dust control methods are not yet effective or are inadequate.
- Direct skin contact should be prevented by gloves, wearing respiratory protection during cleanup,
- Educational awareness programs for workers should be instituted about hazard of exposure to dust and on the use and maintenance of exhaust ventilation systems, and the use and maintenance of personal protective equipment to avoid risk of dust and noise.

- All gravel roads in construction areas should have a speed limit of 30km/h for light vehicles and 20km/h for heavy vehicles in order to minimise the amount of dust generated by vehicles.
- In addition, where available water allows, roads should be sprayed with water on a regular basis in order to prevent dust creation.

2.2.7. Noise and vibration on site

Noise emissions are commonly associated with all earth moving equipment and drilling activities. The main noise sources are associated with drilling, breaking, crushing and handling–moving, screening, and transport of equipment or materials to or from the construction site. Considering the close proximity of the area to the surrounding farm community, mitigation measures will be introduced to minimize the impact of noise and vibration.

Mitigation and enhancement measures

- Reduction of noise from drilling rigs by using down hole drilling or hydraulic drilling;
- Implementation of enclosure and cladding of processing to contain noise and vibration impacts.
- Installation of proper sound barriers and (or) noise containments, with enclosures and curtains at or near the source equipment.
- Use of rubber-lined or soundproof surfaces on processing equipment (e.g. screens, chutes, transfer points, and buckets);
- Use of rubber-belt transport and conveyors;
- Installation of natural barriers at facility boundaries (e.g. Vegetation curtains or soil berms);
- Optimization of internal-traffic routing, particularly to minimize vehicle-reversing needs (reducing noise from reversing alarms) and to maximize distances to the closest sensitive receptors;
- A speed limit for trucks should be considered;
- Construction of berms for visual and noise screening.
-

2.3. IMPLEMENTING THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.3.1. Overview

In the preceding sections, the environmental aspects which may be affected by the proposed project have been categorized into negative and positive impacts. As an extension of the preceding sections, this section summarizes the objectives, indicators to be observed, schedules to be adhered to roles and responsibilities of various stakeholders to the EMP.

The following abbreviations are used to indicate who is responsible for what impact mitigation objective:

- Site Manager and Environmental Coordinator SM/ENCO
- Site Foreman SF
- Project Staff PS
- Project Proponent PP
- Environmental Impact Assessment Consultant EIA_C
- Environmental Commissioner EC
- Interested and Affected parties I & AP

Table 2: Project Planning and Implementation

Objectives	Indicators	Schedule	Responsibility
Establish a strong environmental protocol from project implementation to final closure to ensure least possible impacts to the environment	Resources (Financial, human, equipment and safety gear) are provided for the awareness, meetings, monitoring and reporting.	At the beginning of the construction phase.	PP, SM
	Expedite the appointment of a	At the planning	PP, I & AP

Objectives	Indicators	Schedule	Responsibility
To maximize the economic spin off into the local economy.	senior person to assume the responsibility of an environmental coordinator (ENC)	stage or at the beginning of the implementation phase of the construction phase	

Table 3: Implementing the EMP

Objectives	Indicators	Schedule	Responsibility
To define roles and responsibilities according to the EMP	Staff and site visitors are aware of requirements and contents of the EMP	From the start to the closure of the construction phase	ENC
To implement environmental management that is preventative and proactive	Inappropriate behavior will be corrected. Explanation as to why inappropriate behavior is unacceptable, and if appropriate the perpetrator is disciplined.	From the start to the closure of the construction phase	ENC

Table 4 below indicates the implementation plan for the identified positive impacts associated with the project:

Table 4: Implementing of the Positive Impacts

Objectives	Indicators	Schedule	Responsibility
The objective pertaining to creation of employment/job relates to an internal company policy of maximizing employing local people, particular in semi to unskilled job categories	At least 60 % of the semi-skilled to unskilled site workers should be locals	From the beginning of the construction phase right through to the end.	SM, PP

Objectives	Indicators	Schedule	Responsibility
To maximize the economic spin off into the local economy and nation at large through export taxes and VAT payment	The towns of Khorixas should first be considered in the procurement of services and equipment, particularly those which can be sourced locally	From the planning of the construction phase right through to the end	PP, SM

Table 5 below indicates the implementation plan for the identified negative impacts associated with the project:

Table 5: Implementing of the Negative Impacts

Objectives	Indicators	Schedule	Responsibility
To avoid any form of litter by paper, wires, human waste and drill bites on and around the construction sites	No litter or/and remnants of litter shall be visible around the construction sites	From the beginning of the construction and operational phase right through to the end	SF, PS, SM
To avoid any form of oil spills on and around the construction sites	No oil spillage or/and remnants of oil spillage shall be visible around the construction sites	From the beginning of the construction phase right through to the end	SF, PS
To minimize land and soil disturbance	Driving tracks and excavation shall be restricted and only be visible within the construction sites.	From the beginning of the construction phase right through to the end	SM, SF
To minimize dust generation on site and atmospheric pollution	Emissions/generation particulate content of the dust around the site and gravel roads shall not exceed maximum allowable concentration that	From the beginning of the construction phase right through to the end	SM,SF

Objectives	Indicators	Schedule	Responsibility
	may affect human being and animals.		
To protect and conserve fauna and flora within the project area	Minimum levels of habitat disturbance as prescribed in sub-section 1.5.1 and 1.5.2 should be adhered to.	From the beginning of the construction phase right through to the end	SM,SF
To ensure compliance with statutory requirements and EMP	Assurance measures shall be put in place and Periodic inspections aimed at corrective action undertaken, recorded and documented	From the beginning of the construction phase right through to the end	EIA-C,EC, PP

2.4. MONITORING, REPORTING AND CORRECTIVE ACTION

2.4.1. Overview

Monitoring of the EMP performance for the proposed construction of KVTC project by **Contractors** emphasizes early dictation, reporting and corrective action. It is divided into three parts, namely:

- Monitoring of activities and effects to be undertaken by the environmental coordinator (ENC)
- Reporting of all incidents and situations which have the potential of jeopardizing compliance of statutory provisions as well as provisions of this EMP.
- Taking corrective measures which are prompt, adequate and long lasting in addressing non-compliance activities or behavior.

Table 6: Solid waste disposal: wire, paper, drill bites, and human waste

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are disposal drums/bins available or full?					
Is there any litter around the site and its surroundings?					

Table 7: Oil spillage or used oil

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are disposal drums available or full?					
Is there any oil spills around the site and its surroundings?					

Table 8: Land and Soil Disturbance

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are there any deviations from the provisions of the EMP on land and soil disturbance?					
Are car track barricades in place?					

Table 9: Dust generation on site and gravel roads stretch

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are there any deviations from the provisions of the EMP on dust pollution?					
Are the particulate levels acceptable?					

Table 10: Biodiversity (fauna and flora)

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are there any deviations from the provisions of the EMP on biodiversity?					
It is traipses harvesting plant taking place feeding of animal or introduction					

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
of animals?					

Table 11: Noise and Vibration on site

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are there any deviations from the provisions of the EMP on noise and vibration on site?					
Are there any complaints from the surroundings neighbour about noise emanating from the sites or tracks transporting the aggregates?					

Table 12: Compliance

Mitigation	Compliance	Follow up Action Required	By Whom	When	Date Completed
Are staff members and site visitors aware of the provisions of the EMP?					
Is there a copy of the EMP on site?					
Ask at least two people on various provisions of the EMP?					

2.5. ENVIRONMENTAL AWARENESS

Environmental regulations, rules and procedures apply to everybody, including subcontractors, visitors, permanent and temporal workers. Therefore anybody who finds him or herself within the boundaries of the construction sites must adhere to the Environmental Code of Conduct as outlined in this section of the EMP.

- The term environment refers to the whole surrounding around us, or conditions in which a person, animal, or plant lives or operates. In context of this project, the term environment denotes the natural surroundings in a particular geographical area, especially as affected by human activity.
- The environmental coordinator will implement on site environmental guidelines and has the authority to issue warnings as well as discipline any person who transgresses environmental rules and procedures. Persistent transgression of environmental rules will result in a disciplinary hearing and thereafter continued noncompliance behaviour will result in permanent removal from the construction sites.
- Continuous assistance from the environmental coordinator must be maintained in case some members of the project team do not understand or do not know how to keep up with established environmental guidelines.

2.5.1. Natural environment management guidelines

- a. Never feed, tease or play with, hunt, kill, destroy or set devices to trap any wild animal (including birds, reptiles and mammals), livestock or pets. Do not bring any wild animal or pet to the construction sites;
- b. Do not pick any plant or take any animal out of the construction area EVER. You will be prosecuted and asked to leave the project area;
- c. Never leave rubbish and food scraps or bones where it will attract animals, birds or insects. Rubbish must be thrown into the correct rubbish bins or bags provided;
- d. Protect the surface material by not driving over it unnecessarily;
- e. Do not drive over, build upon, or camp on any sensitive habitats for plants and animals;
- f. Do not cut down any part of living trees / bushes for firewood;
- g. Do not destroy bird nest, dens, burrow pits, termite hills etc. or any other natural objects in the area.

2.5.2. Vehicle use and access guidance

- i. Never drive any vehicle without a valid licence for that particular vehicle and do not drive any vehicle that appears not to be road-worthy;
- ii. Never drive any vehicle when under the influence of alcohol or drugs;
- iii. DO NOT make any new roads without permission. Stay within demarcated areas;
- iv. Avoid U-Turns and large turning circles. 3-point turns are encouraged. Do not ever drive on rocky slopes;
- v. Stay on the road, do not make a second set of tracks and do not cut corners;
- vi. DO NOT SPEED - 30 km per hour for normal vehicles and 20km per hour for heavy trucks on gravel roads and around the site;
- vii. No off-road driving is allowed;
- viii. Vehicles may only drive on demarcated roads;
- ix. Adhere to speed limits (i.e. 60 km per hour for normal vehicles and 30km per hour for heavy trucks on gravel roads and around the site) and drive with headlights switched on along any gravel road.

2.5.3. Control of dust guidance

- a. Do not make new roads or clear any vegetation unless instructed to do so by your Contractor or the Environmental Coordinator or site manager;
- b. Do not try to disturb the surface of the natural landscape as little as possible.

- c. Do not speed on gravel roads and around the construction sites, and adhere to the speed limits.
- d. Apply water to suppress the dust where the generation of the dust on either gravel roads or construction sites is beyond control.

2.5.4. Health and safety guidance

- a. Drink lots of water every day, but only from the fresh water supplies;
- b. Take the necessary precautions to avoid contracting the HIV/AIDS virus;
- c. Never enter any area that is out of bounds, or demarcated as dangerous or wander off without informing or permission of team leader;
- d. Never climb over any fence or trespass on private property without permission of the landowner or consultation with the Environmental Coordinator, Site Manager;
- e. Report to your Contractor if you see a stranger or unauthorised person in the construction area;
- f. Do not remove any vehicle, machinery, equipment or any other object from the construction camp site or along the profile or at a seismic testing station without permission of your Contractor or Site Manager;
- g. Wear protective clothing and equipment required and according to instructions from your Contractor or Site Manager;
- h. Do not engage in sexual relationship with minor and also adheres to zero tolerance to spread HIV/AIDS.

2.5.5. Preventing pollution and dangerous working conditions guidance

- I. Never throw any hazardous substance such as fuel, oil, solvents, etc. into streams or onto the ground;
- II. Never allow any hazardous substance to soak into the soil;
- III. Immediately tell your Contractor or Environmental Coordinator when you spill, or notice any hazardous substance being spilled anywhere in the field or camp;
- IV. Report to your Contractor or Environmental Coordinator when you notice any container, which may hold a hazardous substance, overflow, leak or drip;
- V. Immediately report to your Contractor or Environmental Coordinator when you notice overflowing problems or unhygienic conditions at the ablution facilities, vehicles, equipment and machinery, containers and other surfaces.

2.5.6. Disposal of solid and liquid waste guidance

- a. Learn to know the difference between the two main types of waste, namely: General Waste; and Hazardous Waste.
- b. Learn how to identify the containers, bins, drums or bags for the different types of wastes. Never dispose of hazardous waste in the bins or skips intended for general waste or construction rubble;
- c. Never burn or bury any waste on the camp or in the field;
- d. Never overfill any waste container, drum, bin or bag. Inform your Contractor or the Environmental Coordinator/ Site Manager if the containers, drums, bins or skips are nearly full;
- e. Never litter or throwaway any waste on the site, in the field or along any road.
- f. No illegal dumping;
- g. Littering is prohibited.

2.5.7. Dealing with environmental complaints guidance

- a. If you have any complaint about dangerous working conditions or potential pollution to the environment, immediately report this to the Environmental Coordinator
- b. If any person complains to you about noise, lights, littering, pollution, or any other harmful or dangerous condition, immediately report this to your Contractor.

2.5.8. Environmental Personnel Register

Table 13 shows the Environmental Personnel Register to be signed by every person who receives or attends the Environmental Awareness Training or who has the training material explained to him or her or in possession of the training material.

Table 13: Environmental Personnel Register

Date	Name	Company	Signature

2.6. SITE CLOSURE AND REHABILITATION

In the context the proposed project, rehabilitation refers to the process of returning disturbed land and soil to some degree of its pristine state. The scope of the **Contractor** site rehabilitation emphasizes the backfilling of trenches and power line holes and cover with top soil in areas that will be disturbed by construction activities. These will be but not limited to the access road, vehicle tracks around the site, removal and restoration of areas covered by stockpile and rock piles. Furthermore, this section outlines rehabilitation objectives and proposes rehabilitation commitments which the proponent shall adhere to.

2.6.1. Objectives of the site closure and rehabilitation

- Reduction or elimination of the need for a long term management program to control and minimize the long term impacts.
- Clean up, treatment or restoration of disturbed or/and contaminated areas.

In addition, the following rehabilitation measures are important and should be implemented wherever necessary:

- A site inspection will be held after completion of the construction process to determine the nature and scope of the rehabilitation work to be undertaken. The rehabilitation will be done to the satisfaction of both **Contactors, NTA** and **MET**.
- The rehabilitation work should commence soon after the end of the active construction period.
- The access road and all vehicle tracks should be rehabilitated by raking or dragging with tyres or tree branches (other suitable methods) behind a vehicle.

- With regard to both biological productivity and erosion, topsoil is arguably the most important resource in the project area, for that reason, the recovered topsoil and subsoil should be utilized to reconstruct the original soil profile.
- All waste shall be removed, and potential hazards, particularly pits closed and left in a safe disposition.
- All rehabilitated areas shall be considered no go areas and the environmental coordinator shall ensure that none of the staff members enters the area after rehabilitation.

3. CONCLUSION AND RECOMMENDATIONS

2.1. CONCLUSION

The fundamental principle behind environmental assessments (EAs) is to ensure a balance in social, economic and environmental needs, particularly when proposed projects are of such a nature that they negatively affect some needs at the expense of the other. Ultimately, EAs should enhance proposed projects' propensity towards being more beneficial and important by suggesting measures, designing and implementing programs and plans to that effect.

Against this background, it is anticipated that this project will be beneficial and important to the proponent, national economy, the local social conditions and the local economy if the guidelines and mitigation measures suggested in this EMP are implemented. However, it should be acknowledged that disturbance to the environment will be incurred, but that will be minimal and within legally acceptable levels.

This EMP should be viewed as a framework for integrating mitigation measures and applicable legal tools to ensure both compliance and sustainability. It is therefore very important that the contractors and NTA provides adequate resources (human, financial, tangible and intangible assets) for the implementation of the plan.

2.2. RECOMMENDATIONS

The proposed project to construct the **Kunene Vocational Training Center (KVTC) in Khorixas, Kunene Region** may go ahead provided that all the provisions of the EMP as well as all issued permit are followed. Recommended actions to be implemented by Contractors as part of the management of the likely impacts through implementations of the EMP are:

- Contract an Environmental Coordinator / Consultant / suitable in-house resources person to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed construction programme period;
- Provide with other support, human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the planned construction activities ;

- Develop a simplified environmental induction and awareness programme for all the workforce, contractors and sub-contractors.
- Where contracted service providers are likely to cause environmental Impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities;
- Implement internal and external monitoring of the actions and management strategies developed during the construction period and a final Environmental Monitoring report be prepared by the Environmental Coordinator / Consultant / Suitable in-house resource person and to be submitted to the regulators and to end the proposed construction project;
- Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA for possible construction projects.

It is hereby recommended that NTA/Contractors take all the necessary steps to implement all the recommendations of the EMP for the successful implementation and completion of the proposed project.

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