DRAFT ENVIRONMENTAL MANAGEMENT PLAN

Proposed Integrated Industrial Township & Related Infrastructure titled *"Bakersville Smart Industrial City"*, Situated in Registration Division G, Erongo Region, Namibia

First submission: September 2019 ***(affected by Corona Virus Lockdowns)***
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EAP

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1. General

This report presents the Draft Environmental Management Plan (EMP) developed for the proposed Integrated Industrial Township & Related Infrastructure titled "*Bakersville Smart Industrial City",* Situated in Registration Division G, Erongo Region, Namibia. An Environmental Management Plan (EMP) is the essential and standalone component of an EIA that provides the assurance that the mitigation measures developed for reducing the effects of adverse associated and potential impacts to as low as reasonably practicable (ALARP) as well as those proposed for enhancing beneficial impacts are implemented and maintained throughout the project life cycle. EMP is developed to ensure that the mitigation measures as described in the EIA Report and `monitoring requirements as outlined in the EIA Report and any environmental compliance review shall actually be carried out in subsequent stages of the project. EMP is therefore an important management tool which sets out conditions and targets to be met during project implementation. This EMP contains among others the following key items:

· Summary of potential impacts
· Planned mitigation measures
· Planned environmental monitoring
· Planned public consultation process
· Responsibilities and authorities for implementation of mitigation measures and monitoring requirements.
· Mechanisms for feedback and adjustment

2. The Objectives of the EMP

The objectives are to:

- ensure progressive reduction of the impacts of the project activities on the biophysical, socio-economic and health environment as low as reasonably practicable (ALARP) with the ultimate aim of eliminating them;
- ensure that all mitigation and enhancement measures prescribed during the impact assessment process for eliminating or minimizing the adverse project impacts as well as optimally enhancing the beneficial impacts are fully implemented; and
- provide part of the basis and standards needed for overall planning, monitoring, auditing and review of environmental and socio-economic performance throughout the project life cycle.
- demonstrate that emergency response measures will be in place. This will ensure that adequate responses in case of emergency have been established for the project; and set out the structure that will ensure compliance by BTD and its contractors, with the EMP.

These objectives shall be achieved by:

– ensuring compliance with all stipulated legislation on protection of health, safety and environment policies;

- integrating environmental issues fully into the project development and operational philosophies;
- promoting environmental management awareness among workers;
- rationalizing and streamlining existing environmental activities to add value to efficiency and effectiveness; and
- ensuring that only environmentally sound procedures should be employed during the project execution.

3. Management Organization

Bakersville Township Development CC (BTD) shall retain the primary responsibility of ensuring that environmental commitments are met throughout the life cycle of this project. The company shall establish a schedule for responsibility and training on matters relating to environmental issues shall be a line responsibility for which all levels of personnel are accountable. Top management shall ensure that all environmental considerations are integrated into project execution. The Environment Department of Bakersville Township Development CC shall offer expert advice on protection measures and shall assist to monitor performance.

Bakersville Township Development CC shall appoint an Environmental Monitoring Team (EMT) to ensure effective implementation of the recommendations of the EIA and its management plan. This team shall be made up of representatives of the project team, Safety and Security Departments. The project Safety and Security Team Leader shall additionally provide leadership to the EMT. However, final environmental responsibility lies with the BTD Project Manager. The EMT shall liaise at a predetermined interval with contractors, engineers, quality assurance officers, supervisors and relevant BTD departments on all environmental matters. The Safety and Security Team Leader within the project, assisted by the EMT shall be the focal point for all environmental matters relating to detailed design and monitoring of construction of the industrial township, completion of other components of the project and all associated networks, operation of the Industrial Townships and decommissioning, restoration of sites and abandonment. The EM Team shall verify the effectiveness of the EMP implementation in liaison with Regulators (MEFT: DEA) and other stakeholders as appropriate.

Notwithstanding, all action parties within the project team shall demonstrate compliance directly from their line through to the BTD Project manager. In this way, BTD shall take responsibility for all environmental matters and ensure that contractors comply with all applicable environmental laws, regulations and policies as they apply to this Industrial Township project. In principle, the Contractor responsible for construction critical infrastructure shall be responsible for implementing those aspects of the EIA recommendations that pertain to the engineering, procurement and construction phase of the project.

The Contractor responsible for laying of the electricity and telecommunication lines and line networks shall be responsible for implementing those aspects of the EIA recommendations that pertain to them. Similarly, the Contractor(s) responsible for the operation and maintenance of

the township and all networks shall implement those aspects of the EIA recommendations that are relevant to them during the operations and maintenance of these facilities.

The Contractors for this BTD project shall be required to submit, for approval, their proposal to manage Safety inherent in their contract execution. The EM Team through the Safety and Security Team Leaders will operate in an advisory capacity in all matters; the approval responsibility lies with the BTD Project Manager.

4. Use and Maintenance of the EMP

The EMP shall remain a dynamic working tool and will be owned by the BTD Project team. BTD Safety Manager is, however, the custodian of the document and may exercise auditing role to verify compliance by the project contractor. The EMP shall be updated and revised periodically, throughout the project's life span to incorporate improved technologies, better environmental regulations, management systems, guidelines and policies. Constructive suggestions by users (contractors, management, line and operating personnel) shall be assessed by the EM Team and integrated into the EMP.

4.1. Monitoring

Project activities shall be monitored in order to:

–ensure that the EMP is implemented; and

–assess the efficiency of mitigation actions;

–provide updates where necessary

All contractors shall be required to self-monitor their performance with respect to environmental and social performance. The BTD safety Engineer shall also undertake quarterly environmental assessment and random walk through and spot checks throughout the project lifecycle. Assessment findings shall be reviewed by the project management team and where corrective actions are necessary, specific plans (with designated responsibility and timing) shall be developed to ensure continuous performance improvement.

In addition to assessing operational aspects and monitoring, assessments shall also consider compliance with agreed objectives and targets, and the effectiveness of the EMP and its implementation. The EMP shall, therefore, be subject to ongoing review and development to ensure that it remains appropriate for all aspects of the project. As is typical with all MEFT approved projects, the ministry will carry out an assessment before the end of the project to confirm compliance of project activities to the terms and conditions of the EIA approval.

5. Regulatory Compliance

All environment-related regulations as they apply to the proposed development have been documented and described in the EIA. BTD management shall ensure compliance with these regulations throughout the project's lifecycle,

6. Detailed Design Guidelines

Safety and Environmental Premises cover the minimum performance standards for Safety critical elements to be applied to the design of the facilities for this development have been established as part of the project phases. These standards and criteria are meant to ensure that the design of the facilities for this Industrial Township is in line with currently accepted Safety principles and policies as they apply to this project. In particular, the Safety premise has steered the design towards the goal of preventing/minimizing injuries, ill health, and damage to assets and the (natural and social) environment, to avoid/eliminate liabilities in the future. In the design of the facilities for this pro efficient use of natural resources and energy sources as a requirement has been taken into account. This is aimed at resource conservation and the protection of the environment through prevention/minimization of discharges that have adverse effects on the environment.

The Safety premise is flexible enough to permit refinements and extensions arising from formal safety deliverables that are likely to be produced during successive project development phases.

The driving force for the design is the reduction of risks to people, assets, reputation and the environment in compliance with the principle of As Low as Reasonably Practicable (ALARP). Any residual risks/effects after the application of the ALARP principle shall be managed through continuous improvement of the operation of the Industrial Township and other associated facilities.

7. Implementation of Mitigation and Enhancement Measures

The mitigation measures proposed for the significant negative impacts and the measures proposed to enhance the significant positive impacts presented in the EIA Report have been developed into an EMP that provides a detailed action plan with roles and responsibilities for their implementation. Working through the EM Team, the SAFETY, and Security Team Leaders shall ensure that these measures are complied with.

8. Transport Operations

The project shall manage all transportation operations in line with the following guidelines in order to forestall accidents.

8.1. Pre-mobilization of Vehicles

All vehicles to be used for transportation of equipment, materials and personnel shall be pre-mobilized. The pre-mobilization shall be conducted to confirm that the vehicles are fit for purpose and that the drivers of the vehicles as well as their assistants have the necessary competencies needed for the job. It shall also be confirmed during the pre-mobilization exercise that a Job Hazard Analysis (JHA) has been conducted for the project and that all recommended precautions (mitigation measures) have been adopted.

9. Prevention of Accidents/Incidents

Prevention of workplace accidents and incidents during the proposed project shall be achieved using the JHA tool and written Work Instructions (WIs). Consequently, the SAFETY and Security Team Leaders shall arrange for JHA to be conducted for all SAFETY critical activities. Written and explicit work instructions from such activities shall be developed.

Compliance to regulatory standards, operations/maintenance codes and specifications as well as SAFETY guidelines shall form the basis for the execution of the proposed project. However, emergency situations could still occur as a result of equipment failure, weather, negligence and/or sabotage. Consequently, a contingency plan shall be developed as back up to other containment systems put in place to handle such occurrences. As a minimum, the contingency plans that shall apply to both BTD and contractors, shall address the following emergency situations.

- Fires and Explosions;
- Serious injury or illness;
- Weather related disasters; and
- Land vehicle mishaps.

The SAFETY and Security Team Leaders shall ensure that adequate security arrangements are put in place. Such plan shall have inputs from host communities.

The team shall also identify, evaluate and manage the risks to personnel and property arising from malicious practices, crime, civil disorder or armed conflict. The security activities shall be co-coordinated from a common viewpoint by stakeholders and be in line with BTD security guidelines.

In addition, each contractor shall be required to submit a project security plan to BTD for review and approval. As part of the Environmental Management Plan and with the approval of the Project Manager, the Security Team Leader shall organize security workshops to identify, evaluate and recommend contingency plans for all security risks associated with the Industrial Township Projects.

10. Training and Awareness

In order to assure competence and awareness amongst BTD personnel and Contractor staff, the project management shall establish, maintain and operate a training and awareness programme on health, safety and environmental issues. A great deal of attention shall be devoted to the locals in the contractors' teams. The training shall include accident emergency practices, basic First Aid, the use of Personnel Protective Equipment (PPE), etc. Environmental Induction Course and subsequent refresher course relating to the project shall be organized for all work forces. The objective of the courses would be to develop environmental awareness and sensitivity amongst the personnel. The training and awareness programme shall be reviewed periodically by top management and shall include but not restricted to the following aspects:

- SAFETY induction course,
- Emergency response drill,
- hazard recognition and incident reporting personal hygiene and site sanitation issues;
- Community interaction and relations management,
- Basic First Aid for first aiders and more in-depth training for selected personnel, (numbers as required by BTD policy),
- Defensive driving,
- Permit to Work System, and
- SAFETY on site

Certificates of attendance shall be issued to successful participants. BTD shall also conduct SAFETY awareness campaigns for the host communities and general public with the aim of sensitizing them to the potential impacts and hazards associated with its operations and the appropriate response to accidents/incidents. The public awareness campaigns shall be conducted periodically and the proceedings documented for subsequent audit.

11. Maintenance Programme

The maintenance officer to be employed by the contractors for the project shall develop a comprehensive maintenance programme for all equipment. The maintenance schedule contained in the programme shall be designed in line with manufacturer's specifications for each of the equipment. A maintenance logbook shall also be operated and it shall be regularly audited/checked by the SAFETY and Security Team Leader. In addition, the maintenance status (last and next service dates) shall be displayed at appropriate and clearly visible points on each equipment and machine.

12. Construction Guidelines

12.1. Site Preparation/Clearance

Site preparation/clearance works shall be carried out within defined perimeters and only when necessary. The maximum permissible time lapse between site clearing and initiation of construction operations shall be reduced to the barest minimum necessary to permit safe

operations. Areas cleared in excess of operational requirements shall be reinstated with indigenous topsoil and vegetation.

During construction, acquired land not used for project activities shall be fenced off and left undisturbed. As an additional measure to mitigate decline in biodiversity, approved clearing of land for construction activities shall commence only from one section of the project site. This is to give any animals present in the area to be cleared the opportunity to move away.

12.2. Use of Public Rights of Way

All transportation and construction works shall be executed in such manners that will minimize traffic disruption. However, if operational Safety demands that public highways or roads be blocked, then the BTD Project Manager may approve such action only when temporary traffic control and diversion arrangements have been provided. Dumping or storage of litter/debris, tools and equipment in public or private highways and roads shall be prohibited. Contractors shall develop highway and road clearing strategies to ensure that public roads and highways are kept clear, safe and passable.

12.3. Health and Safety of Workers

Throughout the project development HEMP (Hazards and Effects Management Process) shall be applied and shall consist of identifying, assessing and controlling hazards, and putting in measures to recover from the consequences of hazards if the controls fail.

Operations at all work sites shall be subject to government, industry and BTD SAFETY policies and guidelines. All BTD and contractor staff shall be well informed and trained on the safety policies and guidelines. All facilities shall also be designed to enhance Safety planning and activities shall be executed within the confines of relevant legislation and stakeholders' interests.

Contractors shall provide adequate health services as well as site first aid services for its workforce. The first aid services shall be extended to work related visiting personnel and employed casual workers. All construction activities shall be properly managed through careful planning and the application of relevant safety policies including the following:

- Use of Permit to Work (PTW);
- Job Hazard Analysis and toolbox meetings;
- Use of PPE in designated hazard areas:
- Prohibition of alcohol during work hours and at work sites and Facilities:
- Prohibition of smoking in fire hazard areas:

12.4. Emergency Response

In order to safe guard the lives of personnel and contractors during emergency situation, and implement an emergency response plan the following equipment shall be provided as minimum requirements for emergency response action.

- Safety showers at locations in the facility where accidental spillage of chemicals could occur. Supply shall be taken from the firewater system;
- Self contained (storage type) eye wash units shall be provided at battery rooms or units;

- Safety signs and notices shall be provided throughout the Industrial township project site and in accordance with BTD requirements and standards;
- Walkways across pipes and working platforms on heavy machine and equipment shall be provided with non-slip surfaces;
- A general alarm system shall be provided, capable of giving an audible alarm in all areas of the township facilities and visual display in areas of high background noise;
- Two sets of self-contained breathing apparatus shall be provided in
- the control building to allow rescue activities to be performed in smoke conditions.
- Emergency response procedures shall be put in place for snakebites, road traffic accidents, medieval/medial rescue and gas leaks.

During operations, fire fighting and associated facilities shall be inspected and tested on a periodic basis to verify inventory and function. Also, BTD shall carry out programmes to educate the relevant communities and local health facilities on what to do in case of a major incident of fire/accident. In situations where evacuation of personnel is necessary as a result of fire or any other related accidents, BTD shall follow the emergency medical evacuation procedure with responsible parties.

Table 1: Personnel Responsibilities during Emergency Evacuation

Action Party	Responsibility
Personnel at scene of incident	• Maintain calmness and alert people around • Contact site nurse or first aider / supervisor/safety officer. • Begin mustering action
Medical personnel on site	• Arrange and administer first aid for sick/injured
Site supervisor/safety officer	• Contact project engineer / safety manager and report the following; o precise location and time of incidence; o site condition o patient(s)/injured or casualty; and o o other pertinent information
Site Supervisor	o Arrange for medical evacuation after due consultation with Management
SHE Manager	o To liaise with management to arrange for medical evacuation o Furnish management with available particulars/report about the emergency as provided by the site supervisor/safety officer o Conclude medical evacuation by ensuring the casualty is o transferred from the first aid clinic (after a life saving treatment) to the Walvis Bay Hospital.

12.5. Pollution Control

12.5.1. Air Pollution

In operating equipment BTD shall utilize all practical methods and devices available to control, prevent and otherwise minimize atmospheric emissions or the discharge of air contaminants. Good engine efficiency of equipment and vehicles shall be maintained. Indiscriminate burning

of materials resulting from clearance of trees, leaves, bushes and combustible materials for the Industrial Township shall not be permitted.

12.5.2. Water and Soil Pollution (water pollution is projected due to climate change)

a) **Wastewaters:** (future) Pollution of surface water by project-related waste including concrete waste water shall be prevented by proper management practices. Contaminated or potentially contaminated plant area run-offs shall be collected and treated to meet regulatory requirements before discharge.

b) **Soil:** BTD shall ensure that all construction activities are performed by methods that will prevent pollution of the soil media by concrete mixtures, debris, and other objectionable pollutants. In the event of a significant soil pollutant from lubricant spill, relevant spill control measures shall be applied and contaminated soil shall be cleaned as appropriate. Regular checks shall be conducted on equipment to minimize any lube oil and combustible leaks from engines.

12.5.3. Noise Pollution

BTD shall comply with all requirements for noise control and with regulatory standards. For example, BTD shall ensure that contractor plans activities such that MEFT (EMA Act of 2007 and Its Regulations) and the World Bank Guidelines shall not be exceeded at the nearest communities especially at nights. All equipment shall be maintained at optimal working conditions and recommended work practices shall be employed to minimize noise. Night operations shall be avoided except when absolutely necessary. In such instances, adequate measures shall be taken to reduce the noise involved and keep working hours to a minimum.

Earmuffs shall be provided for all workers and any visitor within the vicinity of high noise generating equipment or operations. If noise levels at any time give rise to public complaint, the issue shall be treated, as public nuisance and BTD will take appropriate measures to resolve the problem with the appropriate authorities. In any case, communities shall be consulted prior to periods of expected peak noise levels; safe separation distances and buffer zones shall be established between the Industrial Township construction work sites and host communities to reduce the impact of high noise levels from the facilities. Also, noise mapping of the construction site shall be done and a map produced and visibly displayed. The possibility of encroachment up to the fence line is taken into account in the design of noise reduction measures.

12.6. Waste Management Guidelines

The handling, storage and disposal of all wastes that will be generated during the life of the project shall be in accordance with MEFT / EMA Act of 2007 guidelines and BTD approved waste management procedure. These guidelines are binding on all staff and contractors involved in the proposed project with respect to the:

- Emission or release of pollutants, exhaust and/or fugitive gases.
- Discharge or spill of effluent into surface water, land; and
- Discharge of solid wastes (including domestic waste) into surface water or land.

A detailed waste management plan shall be developed for the wastes generated during the decommissioning and abandonment of facilities. This waste management plan for these wastes

shall be subject to approval by the regulatory authorities prior to abandonment in the design of this plan the focus shall be on optimal recycling and reuse of materials.

12.6.1. Waste Handling

For proper handling and disposal, wastes shall be well defined at source and the definition transmitted along with the waste to the final disposal points. Contractors and BTD personnel shall define and document all wastes generated in the course of work. Basic information that must be provided, as a minimum, for adequate definition of wastes include:

- Waste type identification
- Proper waste categorization
- Waste segregation information
- Recommended Management practices

12.6.2. Waste Minimization

Waste minimization implies reduction to the greatest extent possible of the volume or toxicity of waste materials. The four principles of waste minimization process; recycle, reduce, reuse and recover shall be adopted as applicable. Opportunities to achieve significant waste volume reductions during the proposed project are functions of activity level, age, depreciation and maintenance level of facilities and operating equipment. As much as possible, excavated materials shall be used for landscaping or other remedial works on site. The key elements of the four-waste minimization/management Principles /practices are outlined below.

Table 2: Waste Inventory

Category	Definition	
Reduce	·	Process modification / design change
	·	Material elimination
	·	Inventory control and management
	·	Material substitution
	·	Improved housekeeping
Reuse	·	Chemical/oil containers
	·	Re-use waste heat
Recycle/Recover	·	Recycle scrap material
	·	Recycle paper
	·	Burn waste lubricating oil for energy recovery
	·	Recover oil from tank bottoms

12.6.3. Wastes Inventory

An inventory of waste generated shall be maintained. Weighing scales or measuring devices shall be provided to measure quantities of waste generated/discharged. Records of waste generated, treated and sent for disposal shall be maintained on site. Wastes to be transferred from rig to offsite facilities for treatment and disposal shall be done in accordance with the BTD waste transfer process and in line with statutory requirements

12.6.4. Waste Disposal

All waste, shall be cleared regularly from the site and disposed off at BTD or Government designated areas and facilities. Wastes in transit must be accompanied and tracked by consignment notes. The waste consignment notes that contain the following information as a minimum:

- Date of dispatch;
- Description of waste;
- Waste quantity/container type;
- Consignee/driver name and means of transportation; and
- Confirmation of actual disposal (time and date).

Only government approved waste management contractors shall be engaged for the waste categories they are licensed to dispose. Waste management audit of contractors' facilities shall be carried out in consultation with the Chemical Environment department of BTD, and findings shall be properly documented and followed up. Accommodations, catering services and work sites shall maintain acceptable standards of hygiene and good housekeeping.

12.6.5. Operational Wastes and Disposal Methods

Waste shall be managed in accordance with MEFT and BTD waste management guidelines and procedures. The Contractor will develop a Waste Management Plan to be approved by BTD and will be responsible for the management of all wastes from cradle to grave using licensed third-party waste management contractors and facilities. Detailed inventory of the waste types, sources, and planned management practices during the proposed development is presented below:

Table 3: *Waste Stream Management Guideline for Proposed "Bakersville Smart Industrial City" City Project*

Waste / Emission	Category	Hazard	Origin	Disposal Option(s)
CONSTRUCTION PHASE				
Wood scraps, pallets and packaging materials	Non-hazardous (combustible)	Attracts rodents	Wooden crates, paper cartons/sacks, plastic wrappings, Styrofoam, etc.	Wood pallets/paper cartons shall be returned to the supplier and non-reusable one safely contained and evacuated to approved facilities for incineration
Empty drums & aerosol cans (plastic & steel)	Potentially Hazardous (non-combustible)	Dependent of Original contents of drum	Packaging of lubricating oil, fuel and corrosion chemicals	Residue from drums shall be purged and cleaned before reuse (subject to quality assurance). Return empty gas cylinders to supplier(s) for refilling. Return drums, barrels, and used containers to vendor or crush at site for recycling
Used and waste lube oil	Hazardous (combustible)	Potential to contaminate soil and water bodies	Lube oil flushes and equipment vehicles	Recycle at a permitted treatment facility
Oily rags & sorbents; used protective clothing (hand gloves, coveralls, shoes, rainwear, etc.	Hazardous (combustible)	Potential water & Sediment contamination from hydrocarbons	Maintenance & spill clean-up operations, regular work wear	Where possible, oily rags and protective clothing shall be washed and reused at site. Otherwise, these wastes shall be drained of excess hydrocarbon, packaged separately and contained Safely for incineration in approved facilities.
Paint & paint-related materials	Hazardous (combustible)	Potential to contaminate soil	Paint cans, spent thinner, epoxides, latex, etc.	Safely contained in designated containers and locations prior to evacuation to approved facilities for recycling or incineration.
Batteries: (lead-acid, nickel- cadmium)	Toxic and corrosive	Corrosive adverse environmental, health & safety effects. Lead or heavy metals may cause contamination to surface water / sediment	Warning equipment, Portable & emergency Electrical tools & electronics, construction & transmission facilities	Lead-acid and Ni Cd batteries shall be safely kept at designated storage locations for evacuation to facilities where they will be recycled, incinerated and safely disposed.
Spent lubricants	Hazardous (combustible)	Potential for water, soil, and sediment	Engine and rotating equipment, lubricating	Collect in properly labeled metal or plastic drums placed at designated strategic locations and

		contamination by hydrocarbons	system, etc.	sealed to prevent spill during evacuation. To be recycled or incinerated in approved facilities.
Sewage Sludge	Non-Hazardous	Potential to contaminate water column & sediment	On-site sanitary sewage treatment system	Sent offsite to sewage treatment facility
OPERATION PHASE				
Domestic waste (empty food containers, food waste, used cooking oils, office wastes, construction)	Non-hazardous (combustible, biodegradable)	Attracts rodent and arthropods.	Accommodation, office, canteen, worksite	Manually sort plastics and metals for recycling. Appropriate segregate and contain for evacuation to approved incineration facilities
Oil & fuel filter cartridges, waste water filters	Hazardous (combustible)	Potential water and sediment contamination from hydrocarbons	Internal combustion engines, equipment maintenance and repairs	Collect in properly labelled metal or plastic drums placed at designated strategic locations. Store in sealed, properly labelled metal or plastic drums placed in a closed container located within the designated hazardous waste storage area for evacuation to incineration sites.
Scrap metal chippings, scrap cables	Non-hazardous (combustible)	Safety risks	Scrapped equipment / engine parts / miscellaneous refuse metal	Recycled or re-used. Non reusable materials shall be stored in the designated containers for evacuation and disposal at recycling facilities.
Medical waste (soiled dressings, empty drug containers, used needles & syringes, expired drugs, blood & blood products, cultures and stocks)	Hazardous (combustible)	Potential health risk	BTD clinics / health centers, site first-aid treatment	– All medical waste shall be packaged separately and safely contained in Designated containers for incineration at approved facilities. – Empty drug carton/bottles may be re-used at the clinics subject to quality assurance. – Used syringes/needles, containers for storing blood & its products, and culture/ stocks media shall be autoclaved (sterilized) and shall be safely contained in designated containers for incineration at approved facilities.
Refrigerants (HCFC)	Non-combustion source-emission	Stratospheric ozone depletion, formation of photochemical	Refrigerants & air Conditioners	Safely contain in designated locations for return to manufacturer, or to approved reuse, and recycling facilities.

		smog;		
Diesel fuel spill/leaks	Hazardous (combustible)	Potential to contamination of soil, water bodies & sediment	Fuel storage/transfer lines, leaking pipes, equipment, etc.	Store in sealed drums for recycling
Sanitary wastewater	Hazardous (non combustible)	Potential to contaminate water column & sediment	Sinks, shower, liquid effluent from toilets etc.	At camps, treated in sewage treatment plant to regulatory limits with certified equipment before discharge if feasible. Otherwise, shall be collected and taken offsite to approved sewage treatment facilities and treated to meet regulatory requirements before discharge offsite.
Oil sorbents	Hazardous (combustible)	Potential to contamination of soil,	Cleanup of small spills	Recycled or disposed of by certified oil recycler
DEMOBILIZATION				
Contaminated soil affected by spills/leak	Hazardous (combustible)	Potential to Contaminate immediate environment	Top soil removed from spill/leak site	safely contained in sealed designated containers for evacuation to incineration facilities

12.6.6. Traffic Management Plan Guideline

Table below presents the guideline for traffic management plan for the "Bakersville Smart Industrial City".

Table 4: *Guideline for Traffic Management Plan for "Bakersville Smart Industrial City",*

Objective	**It is to ensure minimal interference with public transportation and navigation.**
Target	**Minimal interference with the use of public access site.**
Actions	– All vehicles to be used for the movement of equipment and materials shall be pre-mobilized by the Contractor-HSE personnel. – Movement of large volume of material will be organized in such a manner as not to disturb other users of the site and shall be planned for low traffic period. – Access to construction sites shall be by means of transportation approved by management only. – All operators of passenger/materials haulage vehicles drivers shall be trained, tested and certified before they are engaged by the Contractor. Driver awareness and safety management programmes must be devised, implemented and recorded, for audit and monitoring purposes. – Speed limits should be adopted for trip duration and driver roasters arranged to avoid overtiredness. – Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents. – Using locally sourced materials, whenever possible, to minimize transport distances. – Locating associated facilities such as worker camps close to project site (if possible) to minimize external traffic. – All transportation and construction works shall be executed in such a manner that will ensure minimal interference with the use of public access. – Vehicle use on site shall be restricted to the minimum required and only in accordance with the site plan prepared for the purpose of preventing unnecessary damage to non - working areas. Vehicles shall not move on side slopes prone to erosion or sensitive to disturbance without specific approved management measures. – Approved haul or access shall be planned and constructed to follow the natural contours, as far as possible. – Dumping or storage of litter/debris, tools and equipment into the desert shall be prohibited.
Monitoring	The Contractor HSE personnel shall monitor all journeys and movements.
Reporting	Reports of any major disruption of traffic shall be prepared.

12.7. Prevention of Erosion

During construction of Building/Other Structures foundations, the contractors shall where necessarily ensure that surface water flow on land or swamp areas are controlled and if necessary channelled into temporary discharge pits. Such pits shall be located, designed and constructed in a manner that will minimize the potential threat of erosion. Muddy water and surface runoff from work sites shall be drained into suitable silt traps before discharge into the environment. Excessive site clearing shall be avoided and exposed surfaces shall be re-vegetated as soon as practicable to minimize erosion.

13. Operational Guidelines

Other than during commissioning, start-up and rectification of system upset periods, the Industrial Township project facilities shall be operated in compliance with project engineering and environmental standards.

13.1. Noise Minimization Guidelines

Noise generators include the following

- during site clearing and construction
- during operation of the line - noise charged conductors
- these controlled by appropriate clearance from the conductors

Noise and vibration generated by facilities and equipment shall meet the ergonomic requirements of BTD and other National and International Standards, Codes of Practice and Statutory Regulations. Where noise level exceeds the stipulated limits, it shall be treated as nuisance and the contractor concerned shall put in place adequate mitigation measures to ensure that the situation is properly addressed. All personnel working for a long period in high noise area shall be required to use earmuffs at all times. Permanent warning signs shall be posted at the boundaries of these restricted areas. The following noise limits shall be used in the design.

Areas in workshops and machinery buildings where communication is required

– Workshops for light maintenance	70 dB (A)
– Workshop offices, plant offices and con rooms	70 dB (A)
– Open plan offices and control rooms	60 dB (A)
– Social rooms, changing rooms, wash places and toilets	50 dB (A)
– Offices and conference rooms	50 dB (A)
– Sleeping areas	45 dB (A)
	40 dB (A)

14. Site Inspection Procedures

Throughout the project's life, the EM Team and representatives of regulatory bodies shall carry out regular inspection of all facilities to check for their integrity. The main objective of such inspections shall be to assess compliance level with mitigation measures and recommendations of the EIA. When the SAFETY and Security Team Leader request such inspection, the site shall therefore be made accessible to such inspectors upon authentication of identity to:

- Examine and inspect all equipment that could cause accidents;
- Collect samples of any atmospheric emissions, effluent discharges or solid waste deposition for analyses and interpretation;
- Examine all construction and operation logbooks for environmentally related issues. After each inspection, the Team shall compile a site inspection report detailing the:
- Specific facilities or areas inspected,
- Details of project activities, and
- Highlights of any observed non-compliance/persistent negligence.

In case of non-compliance, the Contractor shall be requested to take appropriate measures. The inspection procedure shall be repeated after implementation.

15. Audit Programme

Environmental audit shall be conducted at the project site before mobilization and during operation. Mobilization is to commence only after the BTD Industrial Township Project Manager on the advice of the SAFETY and Security Team Leader has provided authorization. Construction activities will be subject to regular audits after mobilization. The audit process shall be used to assure that the equipment used for construction and the operations of the Industrial Township and its associated facilities meet the requirements and specification outlined in the EIA and also to assess its environmental performance during these phases of the project. This will ensure that environmental protection and management procedures are being enforced.

15.1. Objectives

In implementing the audit programme, facilities perceived as having high environmental risks shall be thoroughly investigated. The audit programme shall;

- Examine compliance with regulatory requirements;
- Examine line management systems, plant operations, monitoring practices etc;
- Identify current and potential environmental problems especially during the various phases of the project
- Assure implementation of recommended practices and procedures;
- Make recommendation for the improvement of the management system of the Industrial Township project operation.

After every audit exercise, the environmental auditor shall produce an environmental audit report that shall be submitted to BTD and the Industrial Township Operation and Maintenance department.

16. Environmental Monitoring Plan

The overall objective of (performance) monitoring shall be to identify any unanticipated changes to the biophysical, health and social environment brought about by the Industrial Township Project Baseline information against which development and post development impacts and mitigation measures can be measured and compared has been established. BTD shall ensure that deviations from the baseline beyond reasonable limits shall trigger corrective actions so that monitoring becomes a dynamic activity as opposed to passive collection of data.

This Environmental Monitoring Plan has been formulated with the aim of ensuring that all the identified significant impacts from the project are mitigated to as low as reasonably possible and that key performance indicators are monitored periodically to track how effectively mitigation measures are implemented. It specifies the mitigation measures, monitoring requirements, duration and frequency of the monitoring, and the action parties to manage the biophysical, social and health environment at the various phases of the project.

In formulating this plan, care has been taken to ensure that BTD complies fully with EMA Act of 2007 and its Regulations. regulatory control measures: international best practice and self-imposed standards (BTD Safety Policy). In addition, the plan also provides for measures to mitigate indirect impacts of the project that may result from influx of people into the project area as well as practical proposals for the enhancement of significant positive impacts.

It is recognized that many of the host communities lack basic infrastructure and have needs that though unrelated to the project, have generated concerns from stakeholders. These and related issues have been considered in a separate section on Community Development.

Once this proposed Environmental Monitoring Plan has been reviewed, it shall be prepared as a stand-alone document and signed by the asset manager. This is to ensure ownership and implementation of the EMP and shall be updated as results of monitoring determine the effectiveness or otherwise of the proposed mitigation/enhancements.

The EMP will also be reviewed as environmental regulations, guidelines and policies (including those of BTD) are updated and/or changed.

Details of the Environmental Management and Monitoring Plan (EMP) follow up process covering the project phases are presented in table below.

16.1. Management Plan Requirements

This EMP has been structured so as to provide its various intended recipients (Developer, ER, consulting engineers and contractors) with mitigation measures immediately applicable to their respective scopes of work. The management requirements for the various recipients carrying out work for this project are divided according to the main project phases:

- Permit and relevant legal requirements (**Table 5**);
- Development Guidelines (**Table 6**);
- Planning and Design Phase requirements (**Table 7**);
- Construction Tender Preparation Phase requirements (**Table 8**);
- Construction Phase mitigation requirements (**Table 9**); and
- Operation and Maintenance Phase mitigation requirements (**Table 10**).

Table 5: Relevant guidelines and legislated permit requirements

THEME	LEGISLATION INSTRUMENT	MANAGEMENT REQUIREMENTS	CONTACT PERSON
Environmental	Environmental Management Act (EMA) 7 of 2007 EIA Regulations (EIAR) (GN) No. 28/2007 (GG No. 4878)	The amendment, transfer or renewal of the Environmental Clearance Certificate (ECC) (EMA S39-42; EIAR S19 & 20). Amendments to this EMP will require an amendment of the ECC for these developments.	Ms Saima Angula Tel: 061 284 2751
	"List of activities that may not be undertaken without ECC" GG No. 4878 GN No. 29	Any activities listed in this listing notice require an ECC and hence an Environmental Assessment.	
Labour	Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.	Labour Law Advice: Tel: 061 309 957
Roads	Roads Ordinance 17	– Width of proclaimed roads and road reserve boundaries (S3.1) – Control of traffic on urban trunk and main roads (S27.1) – Rails, tracks, bridges, wires, cables, subways or culverts across or under	Mr E. de Paauw Tel : (061) 284 7027

		proclaimed roads (S36.1) – Infringements and obstructions on and interference with proclaimed roads. (S37.1) – Distance from proclaimed roads at which fences are erected (S38).	
Water	Water Act 54 of 1956	Section 21 details provisions relating to effluent discharge permits.	Mr. Witbooi (MWAF): Tel: (061) 208 7226
	Water Quality Guidelines for Drinking Water and Waste Water Treatment	Details specific quantities in terms of water quality determinants, which waste water, should be treated to before being discharged into the environment.	

16.2. Planning And Design Phase

The management requirements detailed in the table below need to be carried out before any tender documents are drafted for the construction of services infrastructure while necessary preliminary legislative and administrative arrangements are made in preparation for the sale of erven. These management requirements are also applicable for the period during which engineering designs/drawings are carried out.

Table 6: Management requirements for the Planning and Design phase

ASPECT	MANAGEMENT REQUIREMENT
Solid Waste Management	A suitable solid waste disposal site should be identified and a separate EA should be conducted for that site. This EA should consider as a minimum the following: – The Minimum Requirements for Waste Disposal by Landfill1 should be adhered to – The new site should be located a sufficient distance from residential areas so as to avoid causing health and nuisance impacts to residents. – The new site should not pose a threat to groundwater resources. – Given the prevailing wind direction of south-west it is recommended that the site be located to the north of the town. – The new solid waste facility should incorporate recycling into their waste management system. – In the event that residential erven are serviced before a suitable location for a new solid waste disposal site is found, a health inspector from the Ministry of Health and Social Services (or private health assessment professional) should determine a

	minimum safe residential distance from the waste site. The aforementioned determination should inform the sale and occupation of erven until such time as the solid waste disposal site has been relocated and the current site rehabilitated according to the Minimum Requirements for Waste Disposal by Landfill. – The existing solid waste disposal site should be rehabilitated according to the Minimum Requirements for Waste Disposal by Landfill.
Sewage reticulation	– The development of a new wastewater treatment facility should undergo an EA as required by the EIA. – Sewerage lines should not be laid within river channels. – Sewer pipes should avoid crossing rivers. Where this is not possible the design should comply with the South African Bureau of Standards 1200 for sewer pipe designs. – Water reclamation should be investigated and if feasible and practical incorporated into the new design of the sewerage system.
Stormwater infrastructure	Despite the area being arid in nature, a Stormwater Management Plan should be developed by BTD for all planned development and should address as a minimum the following: Cumulative stormwater issues: – Ensure that the stormwater system is separate from the sewerage system. – Canalizing of run-off with concrete should be avoided as far as possible and natural run-off surfaces utilized or enhanced. – Storm water channels should be accommodated next to roads in the reserve. – Where practical/feasible consider soft/permeable road shoulder options – minimise paved or impermeable areas. – Run-off from areas where surface water might become contaminated should be captured, detained and treated to sewage effluent standards.
Potable water infrastructure	Equipment considered during the design of new infrastructure (e.g., water meters) must be readily available
Borrow pits	Existing borrow pits should each have their own ECC. Currently this is not the case and as such an EA should be conducted for each of these borrow pits.
Biodiversity and Aesthetics	All trees (a "tree" is defined as an indigenous woody perennial plant with a trunk diameter ≥150 mm) that occur within the subdivisions and townships, which have not been officially surveyed by a registered land surveyor, should be surveyed and incorporated into the national Geographic Information System (GIS). In this way these trees will form part of the Town Planning Scheme and their preservation can thus receive legal force.
Road infrastructure	The following should be adhered to with respect to any development near Roads Authority declared roads: – There is a 45-metre building restriction applicable along Trunk Road 0701, measured from the centerline of the road.

	– The road reserve width is 60 metres (measured 30 metres to each side of the centerline of the trunk road). – The 15-metre-wide area between the road reserve line and the building restriction line needs to be declared as public open space. – The accesses onto the trunk road will need to be designed and constructed to the standards and specifications of the Roads Authority (Namibia), (no costs are involved); detailed / draft drawings need to be submitted to the Roads Authority for approval before commencement of any road construction work
Maintenance of services infrastructure	Ensure that a sufficient number of qualitied staff are appointed to cater for increased demand for infrastructure maintenance (particularly stormwater, wastewater and potable water reticulation) upon completion of construction of such services.
EMP Implementation	The contractor needs to appoint an Employer's Representative (ER) (or assign the role to an existing Town Council staff member) that will act as the Contractor's on-site implementing agent. This person should be responsible to ensure that the contractor's responsibilities are executed in compliance with relevant legislation and this EMP.

16.3. Construction Tender Preparation Phase

The management requirements described below should be consulted and carried out when the construction tender documents for the services infrastructure are prepared.

Table 7: Construction tender preparation phase management requirements

ASPECT	MANAGEMENT REQUIREMENTS
EMP implementation	Relevant sections of this EMP should be included in the tender documents for all development so that tenderers can make provision for the implementation of the EMP: – Construction of services infrastructure – Maintenance of services infrastructure
Financial provision	– Financial provision for the compilation of a Waste Management Plan should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. – Financial provision for topsoil management and the rehabilitation of exhausted borrow pits should be included as a cost item within construction tender documents. – Financial provision for the co-opting of a Health Officer from the Ministry of Health and Social Services to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase should be included as a cost item within construction tender documents. – Financial provision for the facilitation of an induction programme for senior, temporary construction personnel as well as subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. – Financial provision for the compilation of a Tree Management Plan should be included as a cost item within construction tender documents. – Financial provision for the drafting of a Communication Plan should be included as a cost item within construction tender documents.

Recruitment	– Provisions designed to maximize the use of local labour should be included within tender documents concerning the construction and/or maintenance of services infrastructure. – A provision stating that all unskilled labour should be sourced from local communities should be included within tenders concerning the construction and/or maintenance of services infrastructure. – Specific recruitment procedures ensuring qualified local companies enjoy preference during tender adjudication should be included within tenders concerning the construction and/or maintenance of services infrastructure. – Provisions promoting gender equality pertaining to recruitment should be included within tender documents concerning the construction and/or maintenance of services infrastructure. – Women should be given preference for certain unskilled jobs (e.g. flag bearers, catering).

16.4. Construction Mitigation Details

The following table provides a large-scale overview of all the major environmental management themes pertaining to both generic and site-specific construction mitigation details. This table serves to act as quick reference, for the detailed mitigation details that follow below, for the implementation of the construction component of this EMP. This chapter may be used as a guide when developing EMPs for other construction activities within the development areas in question.

Table 8: Generic and site-specific environmental management actions for the construction phase

MITIGATION ISSUE	OBJECTIVE TO BE ATTAINED	GENERIC MITIGATION DETAILS
Waste Management	``	Section 1
``	Ensure topsoil protection and post-construction rehabilitation.	Section 2
Health and Safety	Safeguard health and safety of labourers and general public.	Section 3
Dust and Noise	Avoid and where not possible minimise dust and noise associated with construction.	Section 4
Environmental Awareness and Training	Awareness creation regarding the provisions of the EMP as well as importance of safeguarding environmental resources.	Section 5
Employment Creation and Recruitment	Minimise negative conflict through legal and fair recruitment practices.	Section 6
Stakeholder Communication	Provide a platform for stakeholders to raise grievances and receive feedback and hence minimise negative conflict	Section 7

MITIGATION ISSUE	OBJECTIVE TO BE ATTAINED	GENERIC MITIGATION DETAILS
Socio-economic and Miscellaneous	Ensure due consideration is given to matters regarding the cultural and general wellbeing of the affected community and matters incidental thereto.	Section 8

16.4.1. Section 1: Waste Management

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Waste Management Plan	The Contractor should compile a Waste Management Plan which should address as a minimum the mitigation measures included below.
Hazardous Waste	– All heavy construction vehicles and equipment on site should be provided with a drip tray. – Drip trays are to be transported with vehicles wherever they go. – Drip trays should be cleaned daily and spillage handled, stored and disposed of as hazardous waste. – All heavy construction vehicles should be serviced / maintained regularly to prevent oil leakages. – Maintenance and washing of construction vehicles should be take place only at a designated workshop area. – The workshop area should be lined with concrete and sloped so as to collect and detain all run-offs. – The workshop should have an oil-water separator for collected run-off from washing. – Spilled cement and/or concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. – All hazardous substances (e.g. fuel etc.) or chemicals should be stored in a specific location on an impermeable surface that is secured
Sewage and Grey Water	– Sewage should not be discharged directly onto open soil. – All sewage must be removed regularly and disposed of at a recognized sewage treatment facility. – The water collected from wash basins and showers (grey water), should not be left stagnant for long periods of time as this promotes parasite and bacterial proliferation. Grey water should be recycled and - : o Used for dust suppression; o Used to water a vegetable garden, or to support a small nursery; o Used to clean equipment. – Grey water that is not recycled should be removed along with sewage on a regular basis.
General Waste	– The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. – No waste may be buried or burned. – Waste containers (bins) should be emptied regularly and removed from site to a recognized (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot.

	– A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. – Construction laborers should be sensitized to dispose of waste in a responsible manner and not to litter. – No waste may remain on site after the completion of the project

16.4.2. Section 2: Borrow Pits (if any)

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Topsoil	– When excavating, topsoil should be stockpiled in a demarcated area. – Stockpiled topsoil should be used to rehabilitate the nearest borrow area (existing borrow pits), if such an area is located less than 20 km from the stockpile.
Rehabilitation	– Upon completion of the construction phase, consultations should be held with the local community/property owner(s) regarding the post-construction use of exhausted borrow pits. – In the event that no post-construction uses are requested, all exhausted borrow pits and excavated areas need to be rehabilitated as follows: – Borrow pits and excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with / contaminated with an oil spill) may be dumped as backfill. – Rehabilitated borrow pits and excavated areas need to match the contours of the existing landscape. – The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of re-vegetation and reduces the chances of potential erosion. – Topsoil is to be spread across borrow pit and spread evenly. – Deep ripping is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. – Ripping should be done along slopes, not up and down a slope which could lead to enhanced erosion. – Rehabilitated borrow pits need to remain fenced-off after the decommissioning of the project to prevent livestock from straying into and destroying the newly established vegetation on the area / green zones.

16.4.3. Section 3: Health and Safety

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
HIV/AIDS and TB training	The Contractor should approach the Ministry of Health and Social Services to co-opt a Health Officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.
Road Safety	– Demarcate roads clearly. – Off-road driving should not be allowed.

	– All vehicles that transport materials to and from the site must be roadworthy. – Drivers that transport materials should have valid driver's license and should adhere to all traffic rules and regulations. – Loads upon vehicles should be properly secured to avoid items falling off the vehicle thereby endangering other road users or the immediate environment.
Safety Around Excavated and Work Areas	– Excavations should be left open for shortest time possible. – Excavate short lengths of trenches and box areas for services or foundations in such a way that the trench will not be left unattended for more than 24 hours. – The following areas should be demarcated with danger tape: o All excavation works; o Soil and other building material stockpiles; and o Temporary waste stockpiles. – Provide additional warning signage in areas of movement and in "no personnel" areas where workers are not active. – Borrow pits are to be fenced-off with steel wire. – Work areas must be set out and isolated with danger tape on a daily basis. – All building materials and equipment are to be stored only within designated areas. – Only construction personnel should be allowed within these work areas. – Two fire extinguishers should be available at fuel storage areas /depots (to be serviced regularly). – Comply with all mitigation measures laid out in **Section 1** (Waste Management mitigation details)
Ablutions	– Separate toilets should be available for men and women and should be clearly indicated – Portable toilets (i.e. easily transportable) should be available at every construction site: o 1 toilet for every 25 females. o 1 toilet for every 50 males. – Sewage needs to be removed on a regular basis to an approved (municipal) sewage disposal site. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed. – Workers responsible for cleaning the toilets should be provided with latex gloves and masks.
General	– Dust protection masks should be provided to workers if they complain about dust. – Sufficient potable water reserves should be available to workers at all times. – No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). – No workers should be allowed to drink alcohol during work hours. – No workers should be allowed on site if under the influence of alcohol.

16.4.4. Section 4: Dust and Noise

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Dust	– A watering truck / bowser should be used on gravel haul roads used by heavy vehicle movement especially during dry and windy conditions. – However, due consideration should be given to water restrictions during dry seasons occasioned by droughts and famine.
Noise	– Work hours should be confined between 08h00 and 17h00, and the use of heavy equipment, power tools and the movement of heavy vehicles is should be at least 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given one week's written notice.

16.4.5. Section 5: Site Environmental Awareness and Training (SEAT)

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Environmental Induction (Training)	– The interactive trainings should be developed for site supervisors, managers and the general workers with the aim of providing with an introduction to environmental issues on construction site. – SEAT is designed to meet the basic environmental knowledge that the subcontract chain are required to prove to major contractors, and covers the environmental aspects of the Environmental Management policies and regulations. SEAT is designed to bring the construction workers environmental and sustainability knowledge up to date by giving a thorough overview of the subject, relevant legislation and the industry best practice. – Will enable construction site workers to identify, control and minimise the environmental impacts of their work and where possible identify environmental improvements opportunities. – The briefings and trainings should be done by the Environmental Officer prior to construction in the form of an on-site talk (toolbox talks).

16.4.6. Section 6: Employment Creation and Recruitment

MITIGATION ASPECT	PROPOSED MITIGATION ACTION

Legislation	Adhere to the legal provisions in the Labour Act for the recruitment of labour (target percentages for gender balance, optimal use of local labor and SMEs – Affirmative Repositioning (AR), etc.) in the Contract.
Recruitment	The Contractor should compile a formal recruitment process, including the following provisions as a minimum: – Recruitment should not take place at construction sites (the local Councilor's Offices to help identify a suitable and conducive place for recruitment purposes). – Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the standing rules – First preference will be given to qualified personnel within the Erongo region. – Clearly explain to all job-seekers the terms and conditions of their respective employment contracts (e.g. period of employment etc.) – make use of interpreters where necessary.

16.4.7. Section 7: Stakeholder Communication

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Communication Plan	The Contractor or appointed private property developer (if applicable) should draft a Communication Plan, which should outline as a minimum the following: – How Interested and Affected Parties (I&APs), who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records; – How these I&APs will be consulted on an ongoing basis; – Make provision for grievance mechanisms – i.e. how concerns can be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event that feedback is deemed unsatisfactory.
General communication matters	– The ER in collaboration with the appointed private property developer (if applicable) must appoint an ECO to liaise between the Contractor, I&APs, Developer, and consultants. – The Contractor shall at every monthly site meeting report on the status of the implementation of all provisions of the EMP. – The Contractor should implement the environmental awareness training as stipulated in **Section 5** (see above). – The Contractor must list the I&APs of the project and their contact details with whom ongoing communication would be required for duration of the contract. This list, together with the Communication Plan must be agreed upon and given to the ER before construction commences. – The Communication Plan, once agreed upon by the Developer, shall be legally binding. – All communication with the I&APs must take place through the ECO.

	– A copy of the EMP must be available at the site office and should be accessible to all I&APs – Key representatives from the above mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress. – The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences. – A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. – All people on the I&APs list should be informed about the availability of the complaints register and associated grievance mechanisms in writing by the ER prior to the commencement of construction activities.

16.4.8. Section 8: Socio-Economic and Miscellaneous

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
Archaeology	Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: – If operating machinery or equipment stop work; – Demarcate the site with danger tape; – Determine GPS position if possible; – Report findings to the construction foreman; – Report findings, site location and actions taken to superintendent; – Cease any works in immediate vicinity; – Visit site and determine whether work can proceed without damage to findings; – Determine and demarcate exclusion boundary; – Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; – Inspect site and confirm addition to project GIS; – Advise the National Heritage Council (NHC) and request written permission to remove findings from work area; and – Recovery, packaging and labelling of findings for transfer to National Museum. Should human remains be found, the following actions will be required: ▪ Apply the chance find procedure as described above; ▪ Schedule a field inspection with an archaeologist to confirm that remains are human; ▪ Advise and liaise with the NHC and Police; and ▪ Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.

17. Operation and Maintenance Phase

The following mitigation measures should be complied with and carried out during any maintenance works associated with the services infrastructure within the planned development areas.

Table 9: Operation and maintenance phase mitigation measures

MITIGATION ASPECT	PROPOSED MITIGATION ACTION
EMP implementation	If any construction is to be conducted as part of maintenance works for the services infrastructure within the project area, please refer to the construction mitigation measures of this EMP.
Post-construction usage of borrow pits	Borrow pits to be utilized post-construction should adhere to the same topsoil and rehabilitation measures outlined within construction mitigation measures of this EMP above.
Post-construction environmental training and awareness	All contractors appointed for maintenance work on the respective services infrastructure must ensure that all personnel are aware of necessary health, safety and environmental (SHE) considerations applicable to their respective work.
Property development	The Property Development EMP should be included as part of the title deed for every erf sold.

18. Decommissioning

The permanent closure of these developments is not envisaged. However, in the event that they are decommissioned the following mitigation measures should be adhered to.

Table 10: Decommissioning phase mitigation measures

ASPECT	MITIGATION MEASURE
Construction related activities	Many of the mitigation measures prescribed for construction activity for these developments (above) would be applicable to some of the decommissioning activities. These should be adhered to where applicable.
Rehabilitation	In the event that decommissioning is deemed necessary, excavations need to be rehabilitated (see above).

19. Environmental Monitoring & Auditing (EM&A)

The Environmental Monitoring and Auditing aims to ensure that the organization has factored in all aspects of environmental management in its business functions either as a Developer and/

or Operator of schemes (Operations and Maintenance) with an impacting function on the environment or as a Regulator, with a management function, to control activities that may have an impact on the environment (DWAF, 2013).

19.1. Purpose of the EM&A:

The purpose of environmental monitoring and auditing is to verify that all relevant laws and policies are adhered to, that environmental management tools are used effectively, and to identify and correct environmental issues.

The resident engineer (project manager) should monitor overall aspects of the project, e.g. labour issues and complaints raised by the community, so they can be addressed thoroughly involving the Project Steering Committee. The ECO should monitor construction activities at least once a month. Environmental audit must BE carried out and monthly reports should be compiled and presented to the PSC for discussion if need be. It is highlighted that regular meetings between the resident engineer, site manager and ECO should be held to ensure that anticipated environmental impacts are within predicted levels, e.g. noise generation and the implementation of the EMP is effective.

20. Managing Stakeholder Perceptions

Public interest in this project is expected to be high. The issue of industrial township development appears to be a sensitive one. The project will have impacts on the surrounding communities especially during construction and operation (e.g., noise, traffic, dust, emissions, etc.) and from the influx of workforce.

Effective and realistic measures to mitigate/enhance these impacts have been proposed. Nevertheless, stakeholder perceptions are bound to persist. In executing the Industrial Township project, BTD shall manage these perceptions by employing and sustaining dialogue as well as involvement of the communities and other stakeholders in all phases of the project.

In particular, BTD

- shall ensure that the communities are involved in the environmental monitoring and management plan for this project.
- Use available records on community development and other community-based activities as evidence of good corporate neighbourliness.

21. EMP and Community Development

Most Community Development (CD) projects arise out of Participatory Rural Appraisal (PRA) exercises. The EMT shall ensure that in implementing the provisions of this EMP, development projects arising from PRAs do not conflict with the development programmes of government authorities, and other non-state actors within the Industrial Township area. The EMT shall integrate whatever projects that will arise from the PRA for this project area with the community development programmes.

22. Responsibilities and Cost for EMP Implementation and Monitoring

Mitigation measures for each of the phases have been presented in this EMP. The contractor will be directly responsible for financing the implementation of mitigation and monitoring measures from inception to the completion of the Industrial Township project. The cost of impacts mitigation monitoring will be included in the contract value and will be monitored by BTD designated representatives assigned to the project.

BTD shall be responsible for auditing of the activities of the Contractor and for the associated funding. During operations, BTD will be responsible for financing and managing mitigation measures and monitoring activities in line with their established practices nationwide.

Part of the conditions of the approval of the EIA by MEFT is that there will be regulatory monitoring of the approved project impacts mitigations and monitoring measures. The timing and frequency of the monitoring is determined by the MEFT.

23. Decommissioning, Restoration and Abandonment

The need may arise to decommission the Industrial Township. BTD standard procedures for decommissioning Industrial townships shall be invoked. The activities planned for this phase of the project include:

- Dismantling of building including excavation
- Dismantling of all surface equipment including power and Ttelecommunication installations.
- Removal and disposal of concrete works

For abandonment, strict adherence to facilities abandonment policy of BTD and guidelines of the MEFT, which includes restoring the project environment to its original status as much as possible, shall be encouraged. The procedure shall be in accordance with approved BTD, MEFT and international industry standards.

24. CONCLUSION

The report presents the Environmental Management Plan (EMP), for the proposed Integrated Industrial Township & Related Infrastructure titled “Bakersville Smart Industrial City”, Situated in Registration Division G, Erongo Region, Namibia. The development shall be a centre of conglomeration of residential properties operating with state-of-the-art facilities and delivering in a highly environmentally sustainable manner using cutting edge

and smart technologies in NNamibia. The project is part of the efforts of Bakersville Township Development to contribute to the growth of Namibian economy.

The EIA shall serve as a reference platform against which future changes in the environment vis-à-vis the project in view can be monitored. The document shall also provide the necessary information required for the issuance of Approval and Environmental Impact Statement for the proposed project by the Environmental Commissioner – Ministry of Environment, Forestry and Tourism and other interest groups.

Multidisciplinary approach was employed in the assessment of the natural environmental status and sensitivities of the various ecological components of the project area with the use of extensive literature survey, field sampling, measurement/testing, analysis and methodologies compatible with national and international standards.

The sensitivity of the environment to element of the proposed project activities were identified and assessed and appropriate mitigation measures were developed to reduce their adverse effects to ALARP on one hand and enhance their beneficial contributions on the other hand.

This Environmental Management Plan (EMP) covering the biophysical and socio-economic aspects of the project was developed in order to ensure that mitigation measures would be established and maintained throughout the life cycle of the project. Mitigation measures were based on best available technology, safety, health and environmental considerations.

Consultation with the host communities was carried out and is expected to continue throughout the life cycle of the project.

On the basis of the outcome and findings of thee EIA document the proposed Integrated Industrial Township & Related Infrastructure titled “Bakersville Smart Industrial City”, is capable of achieving its goal of growing Namibian economy in an environmentally sustainable manner if the recommendations made in this report are implemented methodically with due diligence.