



ENVIRONMENTAL MANAGEMENT PLAN FOR THE CONSTRUCTION OF THE BRAKWATER 66kV/11kV SUBSTATION



JULY 2020

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LIST OF TERMS, ACRONYMS AND ABBREVIATIONS

DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMA	Environmental Management Act no 7 of 2007
EMP	Environmental Management Plan
MET	Ministry of Environment and Tourism
SHEW	Safety, Health, Environment and Wellness
PCO	Pest Control Officer
ECO	Environmental Control Officer
MSDS	Material Safety Data Sheet

DEFINITIONS

Construction: Means the building, erection or modification of a facility, structure or infrastructure that is necessary for undertaking of an activity including the modification, alteration, upgrading or decommissioning of such facility, structure or infrastructure.

Contractor: Means a person (other than a NamPower employee) or a company contracted/ legally appointed by NamPower to perform work for NamPower on a NamPower site/premises.

INTRODUCTION

Due to the increase in energy demand within the Brakwater area, NamPower has received a request from Electrification to provide a 20 MVA supply at a site close to the existing Brakwater Reticulation. NamPower has thus purchased a two (2) hectare portion of land on Plot 138 Brakwater No: 48, belonging to Siegmar Pascheka. This plot is located less than a kilometer north of the NamPower Brakwater Depot and the reticulation will be split in order to cater for increased energy supply to plots within the area.

There is an existing proclaimed gravel road next to the plot which passes by the proposed development and can be used as an access route on site.

Several activities to be undertaken during the construction of the substation are listed activities thus NamPower would like to apply for an Environmental Clearance Certificate which has thus been supported by a Scoping Report, this EMP and an EMP for the operation of the substation.

It is important to note that any construction activity will result in an impact on the receiving environment due to the fact that the present-day social and environmental processes will be disturbed and thus it will take some time before the environment can either return to a state similar to the pre-construction state or find a new equilibrium. The proposed project will take place at Plot 138 Brakwater No:48 and the portion of land NamPower would like to buy for this purpose is considered to be “already disturbed” as it is in its natural state thus the possible impacts which may result because of this project will be less if the necessary precautions are implemented.

The significance of the possible impacts on the environment have been identified such that ways to counteract the impacts most likely to occur or most likely to cause significant impact on the environment can be determined. For the purpose of this project, impacts were evaluated based on the severity of the potential impact and likelihood of the “event” occurring.

Aims

The aim of the EMP is to detail the management actions required to implement the mitigation measures identified in the Scoping Report thereby ensuring that the construction of Brakwater Substation is carried out in a manner that takes cognisance of

sustainable development and is in line with National legislation. These actions are required to minimise negative impacts and enhance positive impacts associated with the operations.

It is important to note that an EMP is a working document and may be updated and amended as new information (e.g. environmental data), policies, authority guidelines and technologies develop.

This EMP is concise and practical to ensure easy implementation and compliance by all involved in this project.

Positive and negative impacts as well as impacts which may affect both the social and natural environment have been considered in order to provide a complete picture of the impact that the project may have on the receiving environment.

The following aspects were evaluated, and their impacts identified as follows:

- Social aspects
 - Introduction of NamPower PSC employees
 - Alteration to surrounding environment
 - Construction activities on site
 - Traffic flow during construction
 - Disturbance to animal migratory paths

- Environmental aspects
 - Removal of vegetation
 - Habitat destruction
 - Waste creation
 - Change in topography
 - Erosion
 - Noise
 - Alteration to surface water flow

EMP Administration

The Contractor will receive copies of the Environmental Management Plan (EMP) and all personnel shall be required to familiarise themselves with the contents of this document.

Roles and Responsibilities

It is the responsibility of NamPower to ensure that all management actions are carried out. The successful implementation of the EMP is, however dependant on clearly defined roles and responsibilities by several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase of the project. The following roles and responsibilities have been identified as it pertains to this project:

1. Project Manager

- Is responsible for the enforcement of the EMP
- Must make sure that Safety Health and Environment (SHE) requirements are included in the tender documents sent to the contractor
- Must ensure that a Safety Health Environment and Wellness (SHEW) clause is included in the contract document and communicated to the Contractor before the inception of the project.
- Must ensure that the contractor remains in compliance with the requirements of this EMP, through regular communication and monitoring.

2. NamPower SHEW

- To ensure that all requirements with regards to this EMP are fulfilled.
- Assist the Project Manager in ensuring the contractor remains in compliance with this EMP.
- Provides SHEW inductions for the Contractors and their employees
- Organize and implement monitoring and audit functions, in consultation with the Project Manager
- Report back to the Project manager on contractor compliance to the EMP before the project close-off and final payment is made to the contractor

3. Contractor

- Is responsible for the implementation of the EMP
- Ensuring all tasks undertaken under the scope of work, are in accordance both with NamPower's SHEW policies and procedures as well as to the requirements of this EMP.
- Putting in writing a system of communication, in which all incidents and accidents are reported to the SHEW section
- Ensuring that all employees receive a SHEW induction before the start of the project.

- Ensuring that the work being done does not create a nuisance to any being working, residing or living on adjacent properties or within the immediate surroundings of the site.

NamPower has the right to ban any employee from the site, which have not attended a SHEW induction, until the time that they receive induction. NamPower also has the right to stop all construction activities if it is found that a gross violation of the EMP is taking place.

Recording and Reporting

The Environmentalist assigned by NamPower to the project, shall submit an environmental compliance report at regular intervals, to the Project Manager. These reports shall include a description of all activities on site, problems identified, non-conformances, commendable project progress noted and remedial action implemented in the event of non-conformances.

Records relating to compliance monitoring shall be kept on site and will be made available for inspection by relevant competent authority.

Environmental Management and Training

Before any work is commenced on the site, the Contractor shall ensure that adequate environmental awareness training of site personnel takes place and that all employees receive an induction presentation on the importance and implications of this EMP. The Contractor shall liaise with the Project Manager prior to the commencement date to fix a date and venue for the induction and to agree on the content.

The Contractor shall provide a suitable venue and ensure that the specified employees attend the course. Contractor shall ensure that all attendees sign an attendance register. As a minimum, training should include:

- Explanation of the importance of complying with the EMP,
- Discussion of the potential environmental impacts of construction activities,
- The benefits of improved personal performance,
- Employees' roles and responsibilities, including emergency preparedness,
- Explanation of the mitigation measures that must be implemented when carrying out their activities,

- Explanation of the specifics of this EMP and sensitive areas,
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.

The contractor shall keep records of all environmental training sessions, including names, dates and the information presented.

Construction Phase EMP

The section below summarises the possible impacts which NamPower’s construction activities are likely to have on the environment and details mitigation measures to ensure that these construction phase activities are managed sustainably. Each objective is also tied to a responsible person. The following project specific mitigation measures shall be applicable to the proposed project:

ASPECT	Management objective	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	Responsible person
Environmental Awareness	Minimise the occurrence of environmental impact on the work and surrounding area.	<ul style="list-style-type: none"> • All staff to receive environmental awareness training • All new staff coming onto site shall receive environmental awareness training. • Refresher environmental awareness training to be available when required. • The contractor shall erect and maintain information posters at key locations on site. • All staff are to be made aware of their individual roles and responsibilities in achieving compliance with the environmental authorisation and EMP. • Regular project meetings shall be scheduled between the Contractor ,Subcontractor and NamPower project team. • Continuous awareness training shall be conducted by the Contractor on specific issues during toolbox talks; either as a selected environmental topic of interest, or a discussion on non-compliance, incident or even that has occurred. Whenever necessary, advice/suggestions from SHEW can be requested. 	Project manager, and contractor, Environmentalist (NamPower)
Health, Safety and Security	Reasonable measures are taken to ensure the safety of the public at all times during construction.	<ul style="list-style-type: none"> • Identify fire hazards, demarcate and restrict public access to the site. • The owners of Plot Pascheka will be notified 14 days prior to construction about the project and the Contractor team leader will be introduced to the landowners or their representatives • Maintain an incident and complaints register. 	Project Manager and Contactor

		<ul style="list-style-type: none"> • Personnel should be properly educated about the impact of HIV / AIDS. • Any person making himself guilty of violence, harassment or any other activity deemed inappropriate by the community , must immediately be removed from the site. 	
Interaction with landowners /Community	Construction related activity inside No-Go areas is prevented in an effort to avoid environmental impacts to such areas.	<ul style="list-style-type: none"> • Areas outside the project area must be treated as no-go areas. • No traps are to be set for animals on the farm. • Erect, demarcate and maintain temporary fence around perimeter of any no go area. • Unauthorised access and construction related activity inside No-Go areas is prohibited. • Before work commences, NamPower shall inform all affected landowners and authorities about the project, at least 14 days before the start of the project. • NamPower shall secure all rights of way to cross over private properties. The contractors may not stray from the NamPower work area. • The contractor shall inform the owner or his legal representative before entering onto any private property, of his intention to do so and shall make such arrangements with such owner or his legal representative as may be necessary to ensure free and unhampered entry to, and movement on or over the property concerned, for the duration of the project. This should be done at least one month in advance and written proof of such communication should be available at all times. • The success of the project depends on good relations with the landowners. Thus, the landowners must have knowledge of any changes to the construction that might occur, but only if they are affected by it. • A system of communication must be devised by the contractor and made available to NamPower, in order to inform NamPower about all incidents and accidents (including those affecting the environment) and injuries sustained. • Appropriate contact numbers shall be made available to the landowner, to ensure open channels of communication and prompt responses to any queries and claims. • The rights and privacy of the landowner shall be respected at all times and all staff shall be sensitised to the fact that they are working on private property. • The contractor shall not interfere, under any circumstances, with build infrastructure belonging to the landowners. No construction worker is allowed to access any of the neighboring properties without the direct consent of the property owner. • Construction activities shall be limited to daylight hours only and no noisy activities may be carried out during the night. • A register shall be kept of all complaints from landowners. All claims shall be handled immediately to ensure timely rectification. • The Contractor is wholly accountable for his workforce transgressions. 	Contractor
Archaeological and Cultural sites		<ul style="list-style-type: none"> • Should a heritage site or archaeological site be uncovered or discovered during construction activities, cease any work in immediate vicinity, clearly mark the area and take GPS readings. The contractor or staff immediately should notify 	Contractor,Project Manager, Environmentalist .

		NamPower who will then notify the National Heritage Council in terms of the National Heritage Act (27 of 2004).	
Waste management	To avoid ,manage and mitigate potential impacts to the environment caused by waste water discharge and litter during construction	<ul style="list-style-type: none"> • Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended materials into watercourses or water bodies shall be designed and implemented. • Runoff from the cement/concrete batching areas shall be strictly controlled and contained water shall be collected, stored, either treated or disposed of-site at a location approved by the environmental officer. • Illegal dumping is prohibited . • Waste is to be disposed at the nearest municipal dumpsite. • Separate waste containers must be provided for hazardous waste, potentially hazardous waste, general waste and construction waste. Hazardous / harmful waste must be clearly distinguishable as such. • Containers shall be provided with lid or netting to prevent the waste from being removed by scavengers or wind. • Waste containers should not be over-filled. • No waste may be burned on site. All waste products must be moved to the nearest waste dump at a weekly basis. • Impermeable temporary septic tanks are to be provided in sufficient quantity to manage waste water. • Waste water to be disposed of according to waste management specification. Permits for disposal at external sewage sites and proof of disposal shall be obtained. 	Contractor
Hazardous Substances	Minimise the risk of impact to the environment through safe storage, handling use and disposal of hazardous substances	<ul style="list-style-type: none"> • All hazardous substance will be stored in suitable containers as defined in the method statement or Material safety data sheet (MSDS). • Containers will be clearly marked to indicate contents, quantities and safety requirements. • All storage areas will be bunded. The bund should be of sufficient capacity to contain a spill/leak from stored containers plus 10% of the volume of the content. • The contractor shall ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers. • The tanks /bowsers shall be situated on a smooth impermeable surface(concrete) bund. The impermeable lining shall extend to the crest of the bund and volume inside the bund shall be 130% of the total capacity of the storage tanks/bowser (110% statutory requirement plus an allowance for rainfall. • Adequate firefighting equipment shall be made available at all hazardous storage areas. • In an event of a spill , contaminated soil must be collected in containers and stored in a central location and disposed of at approved dumpsite. • No smoking shall be allowed within the vicinity of the hazardous storage area. • Drip trays should always be kept on site in the event of leakage fleet of machinery. • No smoking shall be allowed within the vicinity of the hazardous area. • Hazardous substances should be stored in a well-ventilated area behind lock and key. 	Contractor

		<ul style="list-style-type: none"> Used oils, fuel, paints, grease and solvents should be stored in drums or other suitable containers, which must be labelled, sealed and removed from the site to an appropriate disposal site or recycling facility. Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately. Waste matter from or containing chemicals, oils, paint solvents, etc. may be poured into drains and not onto the ground. Hazardous waste shall be disposed of at a registered waste disposal site. 	
Batching plant	Control concrete and cement batching activities in order to prevent spillage and contamination of soil, surface water and ground water	<ul style="list-style-type: none"> Concrete mixing shall be carried out on an impermeable surface such as on boards or plastic sheeting or within a bunded area with an impermeable surface). Bagged cement must be stored in an appropriate facility and at least 10m away from water drains . Hardened concrete from washout facility or concrete mixer must be either reused or disposed of at an appropriate licenced disposal facility. Any access sand and stone and cement must be removed from site on completion of the construction phase. Ready mix concrete is encouraged. 	Contractor
Vegetation clearing	To clear the project site prior to construction without causing unnecessary environmental damage.	<ul style="list-style-type: none"> Indigenous vegetation which does not interfere with safe construction of the substation shall be left undisturbed. Permits for removal must be obtained from the competent authority (Directorate of Forestry) prior to cutting or clearing affected species in case of protected plants. No bush clearing is allowed outside the 2 ha portion of land. The objective of bush clearing is to clear the minimum number of trees and bush necessary for the construction of the substation. No burning of vegetation is allowed as an alternative to cutting of vegetation. No herbicide application is allowed at the substation site. 	Contractor, Project Manager and Environmentalist
Water resources		<ul style="list-style-type: none"> Do not mix concrete directly on the ground. Use plastic liners and mixing tray at all times. Remove waste concrete and sediment sludge to an appropriately designated storage area in order to prevent contamination during rainfall. Water must be used sparingly and the Contractor must record and report water use monthly. 	Contractor
Protection of Fauna	Ensure care is taken to minimise disturbance to fauna during construction	<ul style="list-style-type: none"> No interference with livestock or wildlife shall occur Poaching is prohibited. 	Contractor
Veld fire prevention		<ul style="list-style-type: none"> Firefighting equipment must be kept in close proximity to the where work is taking place, at all times during construction. Smokers must be cautious at all times no lit cigarretes should be thrown away. Fires are to be limited to the campsite only, as this will reduce the fire hazard. Any cases of veld fires caused during the construction period must be reported immediately 	Contractor

Emergency procedure	Enable a rapid and effective response to all types of environmental, Safety and health emergencies.	<ul style="list-style-type: none"> Emergency numbers to be kept in fleet. 	Contractor
Increase in traffic and Safety and Emergency situations	Minimise potential risk of injury and/or death to third parties.	<ul style="list-style-type: none"> The existing tracks and proclaimed road will be used . Basic road safety behaviour for all contractors, especially drivers, through training and awareness will be undertaken. Typical issues include: <ul style="list-style-type: none"> Keeping to 20km/hr speed limit. Ensuring that all drivers have valid licenses. Making sure that all vehicles are roadworthy. Zero tolerance for drinking and driving. Using lights appropriately for visibility. Road accidents are considered emergencies and will be handled in accordance with the NamPower's Emergency Response Procedure(s) and National road safety regulations. 	Contractor
Noise from transportation activities	Manage increase in disturbing noise levels (nuisance) Nuisance and health impacts	<ul style="list-style-type: none"> All noise generating activities will be kept to a minimum. No traffic, unless in emergencies or if continuous pouring of concrete will be allowed, between sunset and sunrise. Concrete pouring activities should be planned such that they occur during the morning hours to avoid late night driving. Traffic activities will be limited to the daylight hours between sunrise and sunset to avoid undue noise disturbance. Compliance with relevant standards, specifications and legislation concerning noise will be adhered to. 	Contractor
Dust and other air emissions	Manage increase in dust levels (nuisance & health impacts)	<ul style="list-style-type: none"> Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. Dust generation from all activities will be minimised wherever possible. A maximum speed limit of 20 km/hr will be enforced to control dust emissions, and minimize incidents onsite. Transport of construction material will ensure measures to prevent fugitive dust emissions. Dust suppression measures shall be implemented if necessary. Dust may be controlled by damping of the road with water when necessary to minimise nuisance dust. Construction machinery and equipment will be maintained in good working order in order to minimise exhaust fumes. 	Contractor
Site Rehabilitation	Minimize visual and ecological pollution	<ul style="list-style-type: none"> Rehabilitate all features , infrastructure associated with the construction phase that is not in use. All areas disturbed by construction activities shall be subjected to rehabilitation. All spoil and waste will be removed to a registered waste site and certificate of disposal provided. All equipment used as part of construction to be removed from site. 	Contractor, Project Manager and Environmentalist

NON-COMPLIANCE PROCEDURES DURING CONSTRUCTION

The contractor shall comply with the environmental specifications and requirements and any failure on their part will entitle the Project Manager to impose corrective actions required. In the event of non-compliance the following recommended process shall be followed:

- Non-compliances will be identified during inspections or audits carried out by the Environmentalist or NamPower SHEW section and reported to the Project Manager for corrective action.
- The Project Manager shall issue a notice of non-compliance to the Contractor, stating the nature and magnitude of the contravention and shall be discussed at project site meetings.
- The Contractor shall act to correct the non-conformance within 14 days of notification.
- The Project Manager shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remedial measures.
- If a trend of non-conformances or of unresponsiveness to non-conformances is identified, it is up to the discretion of the Project Manager to follow the appropriate NamPower procedure to limit a contractor's ability to carry out future work for the company for a given period of time

SUB-CONTRACTOR MANAGEMENT

The contractor shall in writing inform its sub-contractors and issue them a copy of this EMP and SHE Plan. Sub-contractors shall indicate in writing their commitment to comply with these plans. The Contractor has the overall responsibility of ensuring that all its sub-contractors comply with both plans.

ENVIRONMENTAL MONITORING AND AUDITING

Environmental monitoring must be conducted at least once every month during construction. Benefits derived from the monitoring and final audit process might include:

- identification of environmental risk;
- development or improvement of the environmental management system;
- avoidance of financial and time loss;
- avoidance of legal sanctions;

- increase in staff awareness;
- identify potential cost savings;

Commonly, the environmental monitoring or audit of a site will cover all management procedures, operational activities & systems, and environmental issues and will be carried out by the NamPower SHEW section.

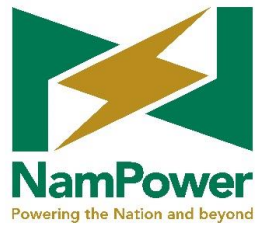
DOCUMENTATION, RECORD KEEPING AND REPORTING PROCEDURES

It is vital that an appropriate document handling and retrieval system be developed for all EMP documentation. This will ensure that there is adequate EMP documentation control and will facilitate easy document access and evaluation. EMP documentation must include:

- EMP implementation activity specifications;
- Induction records;
- site inspection reports; and
- monitoring reports;

Responsibilities must be assigned by the NamPower responsible persons/contractor to relevant personnel for ensuring that the EMP documentation system is maintained and that document control is ensured through access by and distribution to, identified personnel.

Document control is important for the effective functioning of an EMP. A document handling system must be established to ensure adequate control of updating and availability of all documents required for the effective functioning of the EMP. This procedure applies to the EMP as well as procedures and policies relating to the EMP, which must be controlled (i.e. identified, registered and changes recorded).



ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATION OF THE BRAKWATER 66kV/11kV SUBSTATION



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INTRODUCTION

Due to the increase in energy demand within the Brakwater area, NamPower has received a request from Electrification to provide a 20 MVA supply at a site close to the existing Brakwater Reticulation. NamPower has thus purchased a two (2) hectare portion of land on Plot 138 Brakwater No: 48, belonging to Siegmar Pascheka. This plot is located less than a kilometer north of the NamPower Brakwater Depot and the reticulation will be split in order to cater for increased energy supply to plots within the area.

There is an existing proclaimed gravel road next to the plot which passes by the proposed development and can be used as an access route on site.

There are a number of operational activities which will most likely be undertaken at the substation once construction has been completed and some of these activities are listed. There is therefore a need for the submission of this Operational Environmental Management Plan (EMP) towards application for an environmental clearance certificate. The significance of the possible impacts on the environment have been identified such that ways to counteract the impacts most likely to occur or most likely to cause significant impact on the environment can be determined.

AIMS

The aim of this operational EMP is to detail the management actions required to implement the mitigation measures identified thereby ensuring that any operational phase activity is carried out in a manner that takes cognisance of sustainable development and is in line with National legislation. These actions are required to minimise negative impacts and enhance positive impacts associated with the operations.

It is important to note that an EMP is a working document and therefore may be updated and amended as new information (e.g. environmental data), policies, authority guidelines and technologies develop especially during operational phase of this Substation.

This operational EMP is concise and practical to ensure easy implementation and compliance by all involved in this project and also during operation of the substation

Positive and negative impacts as well as impacts which may affect both the social and natural environment have been considered in order to provide a complete picture of the impacts that the project may have on the receiving environment.

ROLES AND RESPONSIBILITIES

It is the responsibility of NamPower to ensure that all management actions are carried out. The successful implementation of the EMP is, however dependant on clearly defined roles and responsibilities by several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase of the project.

The following roles and responsibilities have been identified as it pertains to this project:

1. Project Manager

- Is responsible for the enforcement of the EMP
- Must make sure that Safety Health and Environment (SHE) requirements are included in the tender documents sent to the contractor
- Must ensure that a Safety Health Environment and Wellness (SHEW) clause is included in the contract document and communicated to the contractor before the inception of the project.
- Must ensure that the contractor remains in compliance with the requirements of this EMP, through regular communication and monitoring.

2. NamPower SHEW

- To ensure that all requirements with regards to this EMP are fulfilled.
- Assist the Project Manager in ensuring the contractor remains in compliance with this EMP.
- Provides SHEW inductions for the contractors and their employees
- Organize and implement monitoring and audit functions, in consultation with the Project Manager
- Report back to the Project manager on contractor compliance to the EMP before the project close-off and final payment is made to the contractor.

3. Contractor

- Is responsible for the implementation of the EMP
- Ensuring all tasks undertaken under the scope of work, are in accordance both with NamPower's SHEW policies and procedures as well as to the requirements of this EMP.
- Putting in writing a system of communication, in which all incidents and accidents are reported to the SHEW section

- Ensuring that all employees receive a SHEW induction before the start of the project.
- Ensuring that the work being done does not create a nuisance to any being working, residing or living on adjacent properties or within the immediate surroundings of the site.

NamPower has the right to ban any employee from the site, which have not attended a SHEW induction, until the time that they receive induction. NamPower also has the right to stop all construction activities if it is found that a gross violation of the EMP is taking place.

RECORDING AND REPORTING

The Environmentalist assigned by NamPower to the project, shall submit an environmental compliance report at regular intervals, to the Project Manager. These reports shall include a description of all activities on site, problems identified, non-conformances, commendable project progress noted and remedial action implemented in the event of non-conformances.

Records relating to compliance monitoring shall be kept on site and will be made available for inspection by relevant competent authority which in this instance will be the Ministry of Environment and Tourism. Matters shall also be discussed during site meetings and project meetings.

ENVIRONMENTAL MANAGEMENT AND TRAINING

Before any work is commenced on the site, the Contractor shall ensure that adequate environmental awareness training of site personnel takes place and that all employees receive an induction presentation on the importance and implications of the EMP. The Contractor shall liaise with the Project Manager prior to the commencement date to fix a date and venue for the induction and to agree on the content.

The Contractor shall provide a suitable venue and ensure that the specified employees attend the course. Contractor shall ensure that all attendees sign an attendance register.

As a minimum, training must include:

- Explanation of the importance of complying with the EMP,
- Discussion of the potential environmental impacts of construction activities,
- The benefits of improved personal performance,
- Employees' roles and responsibilities, including emergency preparedness,

- Explanation of the mitigation measures that must be implemented when carrying out their activities,
- Explanation of the specifics of this EMP and sensitive areas,
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.

The contractor shall keep records of all environmental training sessions, including names, dates and the information presented.

DESCRIPTION OF ACTIVITIES TO BE UNDERTAKEN

The following activities are associated with the operation and maintenance of a transmission station in general and with the operational environment in question:

- Site inspections
 - Technical
 - SHEW
- Substation housekeeping, and refurbishment of buildings
- Vegetation management
 - Manual vegetation clearing
- Maintenance
 - Replacement of batteries
 - Servicing batteries
 - Replacing electrical equipment such as transformers, relays and capacitors
 - Maintenance of electrical equipment such as transformers, relays and capacitors
 - Construction or repairing of access roads
- Extension or upgrading of substation
 - Construction of temporary or permanent buildings (digging and setting of foundations, digging of cable trenches)
 - Extension of boundary fences
 - Construction of additional feeder bays
 - Upgrade of electrical equipment (either in size, capacity or technology)
 - Connection of new lines to Substations

It is important to note that all environmental issues will be taken into account from the onset of the project to ensure environmental best practice is incorporated during the operational phase activities.

IDENTIFIED IMPACTS

The main purpose of the environmental assessment process which was carried out for this substation was to understand the significance of potential impacts associated with the operation of the substation. Issues or impacts of less significance were screened out of the assessment process, with supporting reasons to ensure that the study focuses on the potentially “significant impacts” identified for the proposed site. Potentially significant impacts may be experienced in terms of waste (hazardous and general waste) ,air quality (dust), noise and socio-economic aspects. It must be noted that no potentially significant impacts are anticipated since the proposed substation is are located within an already environmentally disturbed area.

The following aspects were evaluated, and their impacts identified as follows:

- Social aspects
 - Introduction of contractors to work environment
 - Nuisance to residents in nearby environment due to construction or maintenance
 - Improved energy supply
 - Employment opportunities
- Environmental aspects
 - Habitat destruction
 - Waste creation
 - Erosion

OPERATIONAL PHASE EMP

The section below summarises the possible impacts which NamPower’s operations are likely to have on the environment and details mitigation measures to ensure that these operational phase activities are managed sustainably. Each objective is also

tied to a responsible person. The following project specific mitigation measures shall be applicable to the proposed project:

BRAKWATER SUBSTATION OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PLAN

ASPECT	Management objective	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	Responsible person
No-Go areas	Operation related activity inside no-go areas is prevented in an effort to avoid environmental impacts to such areas.	<ul style="list-style-type: none"> • Areas outside the project area must be treated as no-go areas. • Erect, demarcate and maintain temporary fence around perimeter of any no go area. • Unauthorised access and construction related activity inside No-Go areas is prohibited. 	Contractor
Access Road	Minimise impact to the environment through planned and controlled movement of vehicles on site	<ul style="list-style-type: none"> • Use of existing roads and tracks shall be implemented. 	Contractor
Fencing and gate installation	Ensure safe and controlled access to the site	<ul style="list-style-type: none"> • Fenced areas with gates access will remain locked after hours, during weekends and on holidays if staff are away from site. • All demarcation fencing and barriers shall be maintained in good working order for the duration of the construction period. • Use of existing gates provided to gain access to all parts of the defined working area where possible. 	Project manager, and contractor
Waste management	To avoid ,manage and mitigate potential impacts to the environment caused by waste water discharge during operation	<ul style="list-style-type: none"> • Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended materials shall be designed and implemented. • Runoff from the cement/concrete batching areas shall be strictly controlled and contained water shall be collected, stored, either treated 	Contractor

		or disposed of-site at a location approved by the Environmentalist.	
Solid waste Management	To avoid ,manage and mitigate potential impacts to the environment caused by incorrect storage, handling and general disposal of general and hazardous solid waste.	<ul style="list-style-type: none"> • Sufficient ,waste collection bins with lids/netting shall be provided onsite to prevent animals from scavenging on the waste as well as to prevent wind-blown waste on site. • Hazardous waste shall be segregated from general waste into separate bins and clearly marked for each waste type. • Staff shall be trained in waste segregation. • Bins shall be emptied regularly. • General waste shall be disposed of at recognised and registered waste disposal sites/recycling companies. • Hazardous waste shall be disposed of at a registered waste disposal site. • Certificates of disposal for general waste ,hazardous waste shall be maintained. • Under no circumstances shall any waste be disposed of ,burned or buried on site. 	Contractor
Hazardous Substances	Minimise the risk of impact to the environment through safe storage, handling use and disposal of hazardous substances	<ul style="list-style-type: none"> • All hazardous substances will be stored in suitable containers as defined in the method statement or Material safety data sheet (MSDS). • Containers will be clearly marked to indicate contents, quantities and safety requirements. • All storage areas will be bunded. The bund should be of sufficient capacity to contain a spill/leak from stored containers. • The contractor shall ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers. • The tanks /bowsers shall be situated on a smooth impermeable surface (concrete) bund. The impermeable lining shall extend to the crest of the bund and volume inside the bund shall be 130% of the total capacity of the storage tanks/bowser (110% statutory requirement plus an allowance for rainfall. • Adequate firefighting equipment shall be made available at all hazardous storage areas. 	Contractor

		<ul style="list-style-type: none"> • In an event of a spill , contaminated soil must be collected in containers and stored in a central location and disposed of at approved dumpsite. • No smoking shall be allowed within the vicinity of the hazardous storage area. • Dirt drums shall be stored on a drip tray or within a bunded area. 	
Batching plant	Control concrete and cement batching activities in order to prevent spillage and contamination of soil, surface water and ground water	<ul style="list-style-type: none"> • Concrete mixing shall be carried out on an impermeable surface such as on boards or plastic sheeting or within a bunded area with an impermeable surface). • Bagged cement must be stored in an appropriate facility and at least 10m away from water drains . • Hardened concrete from washout facility or concrete mixer must be either reused or disposed of at an appropriate licenced disposal facility. • Any access sand and stone and cement must be removed from site on completion of the construction phase. • Ready mix concrete is encouraged. 	Contractor
Vegetation clearing	To ensure the safe mechanical and electrical construction and operation of the substation without causing unnecessary environmental damage.	<ul style="list-style-type: none"> • Indigenous vegetation which does not interfere with safe construction and operation of the substation shall be left undisturbed. • No herbicide application will be carried out on this site. 	Contractor, Project Manager and Environmentalist
Protection of Fauna	Ensure care is taken to minimise disturbance to fauna during operation	<ul style="list-style-type: none"> • No interference with livestock shall occur. • The breeding sites of raptors and other wild birds species in close proximity to the substation is prohibited. • Poaching is prohibited. 	NamPower
Protection of heritage resources	Prevent damage and destruction to fossils, artefacts and materials of heritage significance.	<ul style="list-style-type: none"> • Carryout general monitoring of excavation for potential fossils, artefacts and materials of heritage importance. • All work must cease immediately ,if any human remains or other archaeological chance find are uncovered. Such materials must be reported to archaeologist so that a systematic and professional investigation can be undertaken. 	Contractor, Project Manager and Environmentalist

Safety of the public	Reasonable measures are taken to ensure the safety of the public at all times during operation.	<ul style="list-style-type: none"> Identify fire hazards, demarcate and restrict public access to the site. All unattended open excavations must be adequately fenced or demarcated. Maintain an incident and complaints register. 	Project Manager and Contactor
Sanitation	Supply suitably located ,clean and well maintained toilet facilities in an effort to minimise the risk of disease and impact on the environment.	<ul style="list-style-type: none"> Mobile toilets are to be installed onsite if no other ablution facilities are available. No indiscriminate use of the veld for the purposes of ablutions shall be permitted. Ablution facilities shall be located within 100m of the work area. 	Contractor and Project Manager
Prevention of disease		<ul style="list-style-type: none"> Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS. Information and education relating to sexually transmitted diseases to be made available to construction workers. 	Contractor and Environmentalist
Emergency procedure	Enable a rapid and effective response to all types of environmental, Safety and health emergencies.	<ul style="list-style-type: none"> Emergency numbers to be readily available in fleet. 	Contractor
Increase in traffic and Safety and Emergency situations	Minimise potential risk of injury and/or death to third parties.	<ul style="list-style-type: none"> The existing proclaimed road will be used as an access route only. Access by third parties shall be recorded and all parties will be made aware of the risks on site. Warning signs will be installed where necessary. Basic road safety behaviour for all contractors, especially drivers, through training and awareness will be undertaken. Typical issues include: <ul style="list-style-type: none"> Keeping to 20km/hr speed limit. Ensuring that all drivers have valid licenses. Making sure that all vehicles are roadworthy. Zero tolerance for drinking and driving. Using lights appropriately for visibility. 	Contractor

		<ul style="list-style-type: none"> Road accidents are considered emergencies and will be handled in accordance with the NamPower's Emergency Response Procedure(s) and national road regulations. 	
Noise from transportation activities	Manage increase in disturbing noise levels (nuisance) Nuisance and health impacts	<ul style="list-style-type: none"> All noise generating activities will be kept to a minimum. No traffic, unless in emergencies or if continuous pouring of concrete will be allowed, between sunset and sunrise. Concrete pouring activities should be planned such that they occur during the morning hours to avoid late night driving. Traffic activities will be limited to the daylight hours between sunrise and sunset to avoid undue noise disturbance. Compliance with relevant standards, specifications and legislation concerning noise will be adhered to. 	Contractor
Dust and other air emissions	Manage increase in dust levels (nuisance & health impacts)	<ul style="list-style-type: none"> Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. Dust generation from all activities will be minimised wherever possible. A maximum speed limit of 20 km/hr will be enforced to control dust emissions, and minimize incidents onsite. Transport of construction material will ensure measures to prevent fugitive dust emissions. Dust suppression measures shall be implemented if necessary. Dust may be controlled by damping of the road with water when necessary to minimise nuisance dust. Machinery and equipment will be maintained in good working order in order to minimise exhaust fumes. 	Contractor
Site Rehabilitation	Minimize visual and ecological pollution	<ul style="list-style-type: none"> Rehabilitate all features and infrastructure associated with the operational phase that is not in use. All areas disturbed by operational activities shall be subjected to rehabilitation. All spoil and waste will be removed to a registered waste site and certificate of disposal provided. All equipment used as part of operation to be removed from site. 	Contractor

NON-COMPLIANCE PROCEDURES

NamPower Regional Manager (Central), Area Superintendent and District Supervisor shall ensure that the Contractor complies with requirements outlined in this EMP is implemented and enforced during operation and any failure on their part will entitle the Project Manager to impose corrective action required. In the event of non-compliance the following recommended process shall be followed:

- Non-compliances will be identified during inspections or audits carried out by the Environmentalist and reported to the Project Manager for corrective action.
- The Project Manager shall notify the Contractor of the non-compliance
- The Contractor shall act to correct the non-conformance within 14 days of notification.
- The Project Manager shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remedial measures.

SUB-CONTRACTOR MANAGEMENT

The contractor shall in writing inform its sub-contractors and issue them a copy of this EMP and SHE Plan. Sub-contractors shall indicate in writing their commitment to comply with these plans. The Contractor has the overall responsibility of ensuring that all it's sub-contractors comply with both plans.

ENVIRONMENTAL MONITORING AND AUDITING

Environmental monitoring must be conducted at least once every month during construction and operation. Benefits derived from the monitoring and final audit process might include:

- identification of environmental risk;
- development or improvement of the environmental management system;
- avoidance of financial and time loss;
- avoidance of legal sanctions;
- increase in staff awareness;
- identify potential cost savings;

The environmental monitoring or audit of a site generally covers all management procedures, operational activities & systems, and environmental issues and will be carried out by the NamPower SHEW section.

DOCUMENTATION, RECORD KEEPING AND REPORTING PROCEDURES

It is vital that an appropriate document handling and retrieval system be developed for all EMP documentation. This will ensure that there is adequate EMP documentation control and will facilitate easy document access and evaluation. EMP documentation must include:

- EMP implementation activity specifications;
- Induction records;
- Site inspection reports; and
- Monitoring reports;

Responsibilities must be assigned by the NamPower responsible persons/contractor to relevant personnel for ensuring that the EMP documentation system is maintained and that document control is ensured through access by and distribution to, identified personnel.

Document control is important for the effective functioning of an EMP. A document handling system must be established to ensure adequate control of updating and availability of all documents required for the effective functioning of the EMP. This procedure applies to the EMP as well as procedures and policies relating to the EMP, which must be controlled (i.e. identified, registered and changes recorded).