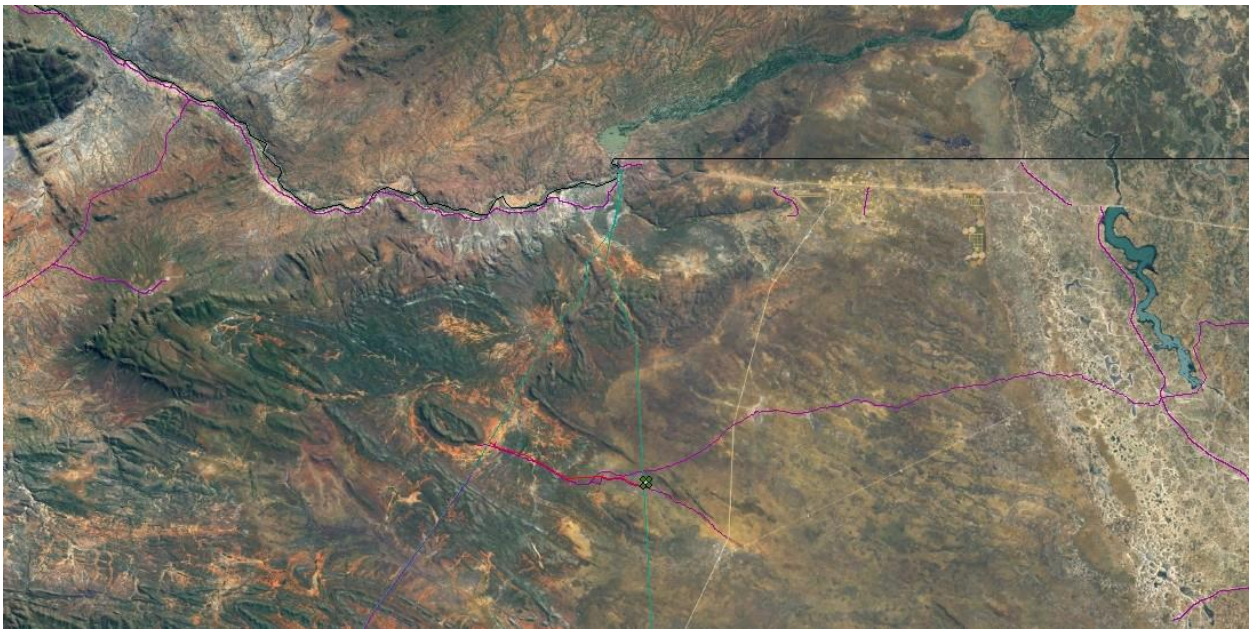
Volume 3

Environmental Management Plan

Kunene substation and associated infrastructure

December 2012



Proponent:

Power Systems Development: Transmission

NamPower

Document written by:

Environmental section

NamPower

Table of Contents

1. Introduction 2
2. Environmental Management Parameters 4
3. General organisational guidelines 16
3.1. EMP Administration 16
3.2. Roles and Responsibilities 16
3.2.1. Project Manager 16
3.2.2. NamPower SHEW section 16
3.2.3. Contractor 16
3.3. Environmental Management and Training 17
3.4. Public Communication 17
3.5. Non-compliance procedure 18
3.6. Inspections, monitoring and audits 18
3.7. Documentation, record keeping and reporting procedures 19

1. Introduction

NamPower plans to construct a transmission station in the Omusati region, approximately 30 km south-west of Ruacana. A site of 30 ha is needed for the station and has been negotiated with local headmen in the area. A single circuit 33 kV distribution lines is also needed to the proposed transmission station with existing infrastructure in the area. A servitude of 22 metres is required for the line, of which at least 12 metres shall be cleared of all vegetation which may influence the operation of the line.

The proposed Kunene transmission station will house the 400 kV line reactors currently located at the Ruacana Power Station. These reactors need to be replaced / refurbished as a matter of urgency and the site at the Power Station is not ideal due to the fact that the effectiveness of the cooling system of the equipment is compromised at the current location. Reactors play an important part in electricity supply systems, by regulating current and protecting equipment from surges, and it is therefore vital to ensure that they operate at optimum capacity.

The site proposed for the planned development will allow for more effective cooling of the equipment to take place, but will also allow for the future integration of electricity infrastructure developments in the area. The transmission network in northern Namibia can also be strengthened to 132 kV, which will have a significant positive influence on the quality of supply in the region.

The activities described above are considered listed activities under the Environmental Management Act (no 7 of 2007) and it was therefore necessary to initiate a process to determine, as best possible, the potential environmental impacts of this project on the receiving environment. For the purpose of this project, the receiving environment was considered to be both the social and natural environment in the immediate vicinity of the proposed project areas.

As part of the environmental assessment process, the following activities were carried out:

- Identification of legal requirements
- Desktop study to determine possible conditions expected on site
- Site visits by specialists
- Public participation process

These activities are part of the scoping process aimed at identifying the possible environmental impacts which may require further investigation and to determine possible red-flag areas of the project, which may either result in relocation of the project activities or re-evaluation of the suitability of a project within a specific environmental setting.

The proposed Kunene transmission station and 33kV distribution line from Etoto to the transmission station will be routed through an area mainly inhabited by the indigenous Ovahimba population. They derive their livelihoods from livestock herding and a little cultivation. The area traversed by the line and receiving the transmission station is fairly sparsely populated with concentrations around Etoto and

Otjekua. The main impacts of this project will be on the communal farmers who stand to lose some 0.06% of their grazing area and some vegetation along the line.

Overall, the project is not likely to have such negative impacts that it makes the wisdom of the development questionable. The local community will benefit from the project both in the short and the long run and, from a social impact perspective can be allowed to proceed provided that the mitigation and enhancement measures as proposed are implemented effectively.

Any form of resettlement has been successfully avoided through the careful adjustment of the alignment of the distribution line. It does not traverse any fields or threaten any homesteads. A resettlement action plan is therefore not required for this project.

Based on the findings from the specialist, it is therefore anticipated that the following negative impacts may be expected as part of this project:

- Loss of biodiversity
- Disturbance to habitats
- Disturbance of sensitive wildlife / bird species
- Increased risk of veld fires
- Contribution to the spread of HIV/Aids
- Injury to members of the local community
- Increase in dust and noise levels
- Influence on local culture
- Impact on farming activities
- Disturbance or archaeologically valuable materials
- Disturbance to hydrological flow
- Water pollution
- Erosion

Positive impacts are also likely to occur as a result of the project, and these include but are not limited to:

- Upgrading of other infrastructure
- Creation of temporary employment
- Facilitation of the provision or rural electrification
- Strengthening of electricity network in the region
- Protection of expensive and valuable equipment
- Possible future integration of other projects

The timing of the impacts and significance of each will vary according to the phase of the project being initiated. The significance of the possible impacts will also vary between sites and will be dependent on specific local conditions which may, in all likelihood, vary over time as well.

These impacts can be adequately managed through the implementation of a comprehensive environmental management plan, with regular monitoring and audits.

Therefore, even though impacts are likely to occur, none of the anticipated impacts will significantly alter the ecological or social functioning within the immediate project area or beyond and it is therefore recommended that the project be approved based on the findings detailed in this scoping report without further specialist studies being required.

The purpose of an EMP is to facilitate environmental management during the construction and operational phases of any given development project. The mitigation measures proposed in this document is with reference to the preliminary impact assessment carried out in order to determine the possible impacts of the proposed project and is detailed in subsequent sections of this document.

The EMP is concise and practical to facilitate ease of implementation and compliance monitoring.

2. Environmental Management Parameters

This section provides information with regards to the project specific management parameters which will need to be adhered to during the construction of the Kunene Substation and associated infrastructure. These parameters shall be used as the measure for determining environmental compliance of the contractor during audits and inspections and shall be kept on site at all times.

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
1. Implementation	To ensure that the provisions of the EMP are implemented during construction	• The Contractor shall appoint a person from the construction team to take responsibility for the implementation for all provisions of this EMP. • NamPower shall appoint a person to supervise activities taking place on site in order to ensure compliance to SHEW and technical requirements • A member of the SHEW section shall be assigned to the project in order to carry out regular inspections and site visits	Contractor and SHEW section

2. SOCIAL APSECTS	To minimise inappropriate behaviour of contract employees and to reduce complaints from affected land owners.	2.1 **Interaction with Neighbours**
		• All requirements stated in section 3 below with regards to public communication shall be adhered to
		• Employees shall be sensitized to the possible disruption of the daily live of affected parties and the induction programme shall focus on the role they must play to minimise this disruption
		
		2.2 **Access to Private Property**
		• Contractor employees will be allowed to make use of facilities within the boundaries of the work site (as described previously) only. No other property may be entered
		• All work shall be restricted to the designated construction area and marked servitude
		
		2.3 **Archaeological and Cultural Sites**
		• All identified areas of archaeological or cultural significance shall be marked and avoided
		• In the case of an chance find of a site or material of archaeological or cultural significance, the following procedure shall be adhered to:
		• Person identifying archaeological or heritage material
		  ○ If operating machinery or equipment stop work
		  ○ Identify the site with flag tape
			Contractor
			
			Contractor
			
			Contractor

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		○ Determine GPS position if possible ○ Report findings to site supervisor • Action by site supervisor ○ Report findings, site location and actions taken to project manager ○ Cease any works in immediate vicinity • Action by project manager ○ Visit site and determine whether work can proceed without damage to findings ○ Determine and mark exclusion boundary ○ Site location and details to be added to project GIS for field confirmation by archaeologist • Action by archaeologist ○ Inspect site and confirm addition to project GIS ○ Advise National Heritage Council (NHC) and request written permission to remove findings from work area ○ Recovery, packaging and labelling of findings for transfer to National Museum • In the event of discovering human remains ○ Actions as above ○ Field inspection by archaeologist to confirm that remains are human ○ Advise and liaise with NHC and Police ○ Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.	
		2.4 **Social Impact** • Personnel should limit their contact with workers and permanent residents of the area. • Personnel should be properly educated about the impact of HIV / AIDS and other communicable diseases • Any person making themselves guilty of violence, harassment or any other activity deemed inappropriate by the landowner, must immediately be removed from the site.	Contractor

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		• The distribution or supply of intoxicating liquor or drugs of any kind by the employees of the contractor or any contractor is strictly prohibited • The Contractor shall at every site meeting report on the status of the implementation of all provisions of the EMP.	
3. PHYSICAL ENVIRONMENT	To minimise impacts to the physical environment during construction	3.1. **Waste Management** • 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. • Illegal dumping and littering shall not be tolerated • Sites where waste is stored must be adequately protected from animals that might frequent the area. • Ensure that the campsites, the work site and the surroundings are kept in a neat condition at all times and that windblown litter is cleared on a daily basis. • Construction rubble and other waste generated during construction must be disposed of on a regular basis at the closest approved waste management site. A temporary waste site may be demarcated for temporary storage of waste, but this area must be identified and clearly marked on the surface layout plan. • The workforce must be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may be burned or buried on site. • No waste may remain on site after completion of the project. • Toilet facilities should be available in the following ratio: 1 toilet for every 15 females and one toilet for every 20 males. The toilets should be such that it can be transported to various sites and emptied at an approved sewage site. No person should have to walk more than 1 km for the use of a toilet. Toilet facilities may not be placed within	The contractor shall be responsible for all actions stated under this section unless otherwise stated

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		100 m of any watercourse. 3.2. **Hazardous Materials** • A register shall be kept on all hazardous substances and be available for inspection at all times. • Storage areas shall display the required safety signs. • No fuel shall be stored on site • Hazardous substances should be stored in a well-ventilated area, and behind lock and key. • 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. • Oil contaminated soil must be collected, stored and removed for disposal at an appropriate waste storage facility. The area, from which the contaminated soil was taken, must be filled with new soil. The new soil must be free of contamination, and should not be taken from spot within a 100-metre radius of where the spill occurred. • The contractor shall submit a oil spill management procedure prior to starting work on site • Drip trays should be available for all vehicles that are intended to be used during construction. These trays should be placed underneath each vehicle while the vehicles are parked. The drip trays should be cleaned every morning and the spillage handled as hazardous waste • Hazardous substances should be stored according to the MSDS. 3.3 **Temporary Campsites** • Camping activities shall be restricted to the work site and must be arranged	

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		beforehand with the appropriate local authority • Adequate ablution facilities must be provided to the staff. These facilities may not be located within 100 m of any river, stream channel, pan, dam or borehole (even if the water source is dry) and should be properly maintained in a hygienic and good working order. • On site waste management facilities are to be provided • Fire extinguishers, first aid kits and any other relevant safety equipment must be easily accessible at all times. 3.4. **Maintenance of Vehicles** • No vehicle maintenance will be allowed on site unless in cases of emergency • Refer to section 3.2 and 3.3. of this document with regards to the management of spills or hazardous waste which may be created as a result of mechanical failure on any vehicle 3.5**. Access roads** • National road laws shall be adhered to when making use of roads in town • All possible steps shall be taken to minimize the disruption of traffic flow as a result of increased traffic activity on and to the site • Clear traffic flow parameters shall be established on site in order to ensure that traffic flow is optimized and risks in terms of accidents or incidents related to traffic movement is minimized	
4. NATURAL ENVIRONMENT	To minimise damage to the natural environment, plants and animals during	4.1 **Water resources** • Surface and ground water shall not be polluted under any circumstances. Storm water shall be managed to ensure that it does not become polluted. • All hazardous substances at the site shall be adequately stored and accurately identified, recorded and labelled	The contractor shall be responsible for all actions stated under this section

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS

	construction	• Temporary toilet facilities (preferably chemical toilets) used at the camp site shall be sited away from any water body.
		• A stream or riverbed should not be obstructed with any material
		• Care should be taken to ensure that diverted flood water does not increase the risk of flooding for neighbouring properties
		• Water must be used sparingly.
		• Naturally occurring water sources may not be used for any personal hygiene -, washing – or recreational activities.
		• Water may only be taken from private, communal or government-owned property on a basis agreed upon between the Contractor and custodian of the water resource
		• Should the contractor be required to use water from a natural source, the contractor shall supply a method statement to that effect.
		• Do not mix concrete directly on the ground. Use plastic liners and mixing trays at all times. Remove waste concrete and sediment sludge to an appropriately designated storage area in order to prevent contamination during rainfall. Contain cement contaminated water within the process water system / dirty water system.
		• The use of herbicides or similar products are not allowed on site
		• Suitable flood protection shall be but I place to prevent the flooding of the site during the summer rain period
		• To minimize the risk of the access road flooding, the following actions shall be undertaken:
		  ○ Large box culverts need to be constructed in the road filling material to permit flow from the one side to the other.
		  ○ A freeboard should be allowed for, in the final level of the proposed access road as well as the final level of the filled terrain for the substation. The level of the final fill surface should be 460 mm above the calculated flood level. This is to allow for wave action, wind generated surge and wave run-up caused by strong winds during the expected 100 year return flood.
		  ○ Gabion mattresses could be constructed on such points of concentrated flow
			unless otherwise stated
			
			Project manager to note and include in project scope of work

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		to curb erosion. o Roads are to be designed to reduce the risk of soil erosion. 4.2. **Fauna** • Ephemeral pans should be avoided during construction – no construction or storage of materials shall take place within the confines of the pan • Breeding sites of raptors and other wild birds must not be disturbed. Nests may not be removed or damaged. Young chicks and eggs may not be removed from the • nests • No birds may be shot or caught. • All bird-power line interactions must be reported to the project manager, who will notify the SHE section • Snaring, poaching, killing, taunting, collecting, smuggling, or abuse of animal wild or domestic animal is prohibited. • No domestic animals (such as cows, chickens, dogs, cats, goats or sheep) may be kept either at the campsite on the construction site since they can introduce diseases or interbreed with the animals occurring naturally in the area. • No domestic or wild animals belonging to landowners, may be caught and killed – meat must be bought from reputable sources • The use of artificial lighting should be avoided as far as possible and when nocturnal lighting is to be utilized, it is recommended that focused lighting be utilized • Any fauna captured on site shall be released in another area with similar habitats • Bird deterrents shall be adhered to the transmission line for a distance of 1.7 km closest to the livestock drinking point (standard double loop diverters) • Regular monitoring of the site (substation and transmission line) shall be carried out in order to determine possible collisions / electrocutions of bird species • The poles closest to the livestock drinking point shall be fitted with a T-shaped perch • Rodent control within the substation will be important in order to avoid the	District personnel will be responsible

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		electrocution of owls and other predatory birds • Nest boxes shall be fitted of site should owl nesting become a problem within the substation area • Any negative interaction between animals and the associated infrastructure including power lines and substation equipment shall be recorded and reported to the SHEW section 4.3. **Flora** • Large trees outside the servitude may not be cut down. • Large trees within the servitude and substation area should be avoided as far as possible • Vegetation management through herbicide application will not be allowed • A vegetation management plan is to be developed once all infrastructure associated with this project has been completed • No fires are to be allowed within the confines of the construction area or servitude. Fire management procedures shall be adhered to as detailed previously within the camp site area. • Prevent and discourage the collecting of firewood as dead wood has an important ecological role – especially during the development phase(s). Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g. chopping down of live and/or protected tree species such as Acacia erioloba which is a good quality wood. • Attempt to avoid the removal of bigger trees (especially protected species – i.e. Albizia anthelmintica, Boscia microphylla, Combretum imberbe, Maerua schinzii, Petlophorum africanum, Philenoptera nelsii and Ziziphus mucronata during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna. • Attempt to avoid the removal of interesting and unique trees (especially large	for all subsequent tasks

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		specimens of Colophospermum mopane). • Prevent the planting of potentially invasive alien plant species (e.g. Tecoma stans, Pennisetum setaceum, etc.) for ornamental purposes as part of the landscaping around the substation. Alien species often "escape" and become invasive causing further ecological damage. • Incorporate indigenous vegetation especially the protected species into the overall landscaping of the substation area. • Rehabilitation of the disturbed areas – i.e. initial development access route "scars" and associated tracks, as well as temporary accommodation sites. • Preferably workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, etc.). • Initiate a policy of removal of unique flora (e.g. Aloe species that may be encountered prior to and during construction) within the proposed construction areas. Such flora should be removed to other areas of similar habitat in the area or stored (cared for in onsite nursery conditions) and replanted as part of the overall natural landscaping. 4.4. **Soil Conservation** • Utmost care should be taken to prevent erosion. • Deep ruts and inaccessible sections must be repaired to avoid vehicles having to drive around bad sections (i.e. mud, deep ruts and loose sand) thereby creating new tracks. • Vehicular movement shall be restricted to the servitude and designated construction area • Vehicular speed shall be restricted to 30 km/h when driving on site or within the servitude • All tracks should be rehabilitated at the contractor's expense.	

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
5. MAPS AND PLANS	To ensure that all activities on site are adequately planned and restricted to designated areas and to minimise the footprint of the development area	• A detailed surface layout plan, indicating all activities and development areas shall be kept on site at all times. No disturbance outside of designated areas is allowed. • **The surface layout plan shall indicate the following components:** ○ Waste management site ○ Contractor's laydown or storage areas ○ Ablution facilities and potable water points ○ Existing infrastructure on site	Project Manager and contractor. ECO to monitor
6. HEALTH AND SAFETY	To ensure health and safety of workers and the public at all times during construction	• Site related health and safety concerns is outside the scope of the EMP, but shall be addressed in a project related SHE plan. The contractor shall submit a SHE plan during tender stage which shall be taken into consideration as part of the tender evaluation process. The approved contractor's SHE plan shall then be reviewed; updated; resubmitted and approved before implementation. • Adherence to the SHE plan shall be monitored along with all other requirements stated in this document.	Contractor. Client to approve. SHEW section to monitor and audit
7. REHABILITATION	To rehabilitate the site office, work sites, servitude areas, tracks and other areas disturbed during construction as close to their original state as reasonably possible	The various mitigation measures will be applicable as stipulated in the NamPower EMP • Rehabilitate areas disturbed during construction as soon as practicably possible. Facilitate rehabilitation of disturbed areas by preparing soils and allowing the natural vegetation to re-establish. Grass cover is fundamental as it is the first step to stabilising the soil. • Rehabilitate erosion gullies in construction working areas using suitable material such as gabions, rock-infill or geotextile fabric. Landscape these areas to provide storm water buffering capacity. • All bunding areas, equipment, waste, temporary structures, stockpiles etc., must be removed from the camp and work sites • All disturbed areas shall be reshaped to their original contours; as close as possible to	Contractor. ECO to monitor. Client to approve all rehabilitation once construction is complete.

COMPONENT	OBJECTIVE	MANAGEMENT MEASURES	RESPONSIBILITY/ PARTNERSHIPS
		the natural conditions before construction commenced, including the road reserve, detours, construction camps, and temporary access routes. • Compacted areas shall be ripped to allow natural vegetation to re-establish.	

3. General organisational guidelines

3.1. EMP Administration

Copies of the Environmental Management Plan (EMP) shall be kept at the site office and will be distributed to all senior contract personnel. All senior personnel shall be required to familiarise themselves with the contents of this document and shall attend induction long with all other personnel prior to work starting on site.

3.2. Roles and Responsibilities

The implementation of the EMP requires the involvement of 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 has been identified as it pertains to this project:

3.2.1. Project Manager

- Is responsible for the enforcement of the EMP
- Must make sure that SHE requirements are included in the tender documents sent to the contractor
- Must ensure that a SHE 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.

3.2.2. NamPower SHEW section

- Assist the Project Manager in ensuring the contractor remains in compliance with this EMP through:
- Provides SHE 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

3.2.3. 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 SHE 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 SHE section
- Ensuring that all employees receive a SHE 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.

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

3.3. 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 construction workers 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 training and to agree on the training content.

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

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.

3.4. Public Communication

Since a public participation process was not initiated during the assessment phase of this project, it is of great importance that all interested and affected parties are informed about the project prior to work commencing on site.

The following activities shall be carried out prior to work starting on site all interested and affected parties (as detailed in the Environmental Scoping report), shall be informed of the intention to start work on site with the necessary contact numbers being made available to the affected parties.

3.5. Non-compliance procedure

The Contractor shall comply with the environmental specifications and requirements on an on-going basis and any failure on their part to do so will entitle the Project Manager to impose any corrective actions required, including possible penalties as deemed appropriate by NamPower policies and procedures. In the event of non-compliance the following recommended process shall be followed:

- Non-compliances can be identified during inspections or audits carried out by a designated member of the SHEW section and reported to the Project Manager
- The Project Manager shall issue a notice of non-compliance to the Contractor, stating the nature and magnitude of the contravention.
- The Contractor shall act to correct the non-conformance within 24 hours of receipt of the notice, or within a period that may be specified within the notice.
- The Contractor shall provide the Project Manager with a written statement describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the Project Manager shall impose a penalty in line with the conditions of contract.
- The Engineer shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remedial measures.
- 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

3.6. Inspections, monitoring and audits

Environmental inspections and monitoring should 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 loss;
- avoidance of legal sanctions;
- increase in staff awareness;
- identify potential cost savings;

At least one audit shall be carried out for every six months (or part thereof) for the entire construction period.
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.

3.7. 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 should include:

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

Responsibilities must be assigned 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).

The Environmental Officer is responsible for ensuring that the registration and updating of all relevant EMP documentation is carried out. It is the responsibility of the Project Manager to ensure that all personnel are performing according to the requirements of this procedure and to initiate the revision of controlled documents, when required by changes in process, operating procedures, legislation, specifications, monitoring or audit findings or any other circumstances, by informing the Environmental Officer of the changes. A controlled document is official only if the issue/revision has been approved. The Environmental Officer and Project Manager are responsible for ensuring that the latest versions of documents are used to conduct tasks which may impact on the project environment.