THE ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATION OF THE EXISTING GERUS TRANSMISSION SUBSTATION, OTJOZONDJUPA REGION

NAMPOWER ENVIRONMENTAL SECTION
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1 LIST OF TERMS, ACRONYMS AND ABBREVIATIONS

EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act no 7 of 2007
EMP	Environmental Management Plan
ISO	International Organization for Standardization
MET	Ministry of Environment and Tourism
OEMP	Operational Environmental Management plan
SHEW	Safety, Health, Environment and Wellness

2 INTRODUCTION

Gerus substation is an existing substation and was constructed in the 1970s. The substation is situated approximately 26km from Otjiwarongo towards Outjo. The land size around the substation covers approximately 53.4566 hectares on the following portion/farms :

- Portion 1 Farm Randfeld 167 = 16.2542ha
- Portion 1 Farm Tokai 348 = 8.6392 ha
- Portion 3 Farm Randfeld 167 = 21.6654 ha
- Portion 2 Farm Tokai 348 = 6.8978 ha
- Total size = 53.4566 ha

Gerus Substation is a 400/350/220/66/22 substation, one of the major transmission substation within the NamPower network and forming part of the backbone of the network.

The Gerus Transmission substation is connected to the following powerlines:

- Zambezi Substation - Gerus Substation 350kV DC transmission line(Katima mulilo and connecting to Zambia).
- Gerus Substation - Otjikoto Substation 220kV Transmission line 1(Tsumeb and Northern Namibia).
- Gerus Substation - Otjikoto Substation 220kV Transmission line 2(Tsumeb and Northern Namibia).
- Omburu Substation-Gerus Substation 220kV Transmission line
- Gerus Substation- Ombika Substation 66 powerline(providing power to Etosha National Park).
- Gerus Substation - Otjiwarongo Substation 66kV transmission line
- Gerus substation - Whale rock 66kV transmission line
- Gerus Substation - platveld substation 66kV transmission line
- Gerus Substation - Paresis Substation 66kV transmission line
- Gerus Substation - Welwitschia substation 66kV (providing power to Khorixas).
- Gerus Substation - Gerus electrode substation
- Auas –Gerus 400kV Transmission Line (under construction).

NamPower foresees that upgrade and operational activities will be undertaken at the Substation of which some of these activities are listed activities as per the Environmental

Management Act.

3 BACKGROUND

The purpose of this document is, to provide an indication of the anticipated impacts of the operation of the substation and lines on the receiving environment. This EMP document will ensure sound environmental performance by all contractors and NamPower employees during the operation of the substation and lines.

Figure 1: Map showing the substation and lines

The operation of the substation and transmission line can have both positive and negative impact on the environment. However, the negative impacts are limited to the substation boundaries and powerline servitude. It is thus important that good management measures are implemented to ensure that environmental damage is minimised. This Environmental Management Plan (EMP) seeks to manage and keep to a minimum the negative impacts associated with the substation and associated transmission lines and at the same time, enhance the positive and beneficial impacts.

The scope of this EMP include all activities associated with the operation of the substation and associated transmission lines. It is necessary to highlight that the EMP is a living document that should be periodically reviewed and updated. It must also be noted that the EMP should be read in conjunction with laws and regulations outlined in Table 1.

4 OBJECTIVES OF THIS ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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 environmental protection and is in line with National legislation.

This EMP has the following objectives:

- To outline mitigation measures to be implemented during the operation phase, in order to manage and minimise the extent of environmental impacts.
- Minimise negative impacts and enhance positive impacts associated with the operations.
- To ensure that the operational activities do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced.
- To identify key personnel who will be responsible for the implementation of the measures, outline functions and responsibilities.
- To propose mechanisms for monitoring compliance, and preventing long term or permanent environmental degradation.
- Create management structures that address the concerns and complaints of Interested and Affected Parties (I&APs) with regards to the operational activities.

5 POLICY AND LEGISLATIVE FRAMEWORK

Table 1 below outlines the legislative requirements which are applicable to the operational activities.

Legislation:	**Section (s) applicable:**	**Implications:**
Environmental Management Act no 7 of 2007	*Section 3*	• All activities performed should be in line with the following principles: ○ Interested and affected parties should have an opportunity to participate in decision making ○ Listed activities should be subject to an EIA ○ Polluter should pay for rehabilitation ○ Pollution should be minimized

	Section 27
	
	Section 33 onwards
		• Environmental assessments should be carried out for listed activities. The proposed activity can be classified under the following range of activities:
		  ○ Generation of electricity
		  ○ Transmission of electricity
		• These sections details the process to be followed in order to obtain a clearance certificate.
		• All existing listed activities must obtain a clearance certificate within one year of the law coming into effect (February 2013). Therefore, all existing activities which can be considered a listed activity should apply for clearance.

EMA Regulations GN 28-30 (GG 4878) (February 2012)	• Listed activity: • 5.1 • 6 – 9; 13; 15; 21 -24	• This activity can be considered as electricity generation and transmission. • These sections details the process to be followed in terms of producing an Environmental Assessment and this process should be adhered to during the generation of information for this document.
Labour Act no 11 of 2007	• Section 3 • Section 4 • Section 9 • Section 39 - 42	• Children under the age of 16 may not be employed • Forced labour may not be used. • Basic conditions of employment as stipulated by the law must be met. • The employer shall ensure the health and safety of all employees and non-employees on site. Employees must fulfil their duties in order to ensure their own health and safety and that of other employees and persons. Employees may leave the work site if reasonable measures to protect their health are not taken.
Gazette 156 , Regulations relating to the health and safety of employees at work	• Section 39 - 42	• The employer shall ensure the health and safety of all employees and non-employees on site. Employees must fulfil their duties in order to ensure their own health and safety and that of other employees and persons. Employees may leave the work site if reasonable measures to

		protect their health are not taken.
Electricity Act no 4 of 2007	• Section 33	• Installations used for the provision of electricity should be operated with due compliance with the requirements of laws relating to health, safety and environmental standards. Therefore – any company involved within the Electricity Supply Industry must adhere to the laws covering the previously stated aspects or stand to lose their licenses to operate.
Water Act no 54 of 1956	• Section 21 and 66 • Section 23	• Conditions in terms of the disposal and management of effluent are to be adhered to. • Any person causing pollution to a water source shall be guilty of an offence.
Public and Environmental Health Act no 1 of 2015	• Section 52 • Section 53	• A person generating waste must ensure that the waste generated is kept and stored under conditions that causes no harm to human health or damage to the environment. • Waste must only be disposed of at a waste disposal site, including an incinerator approved by the local authority concerned.
Water Resources Management Act no 24 of 2013	• Section 89	• The owner or occupier or other person in control of land where an incident that causes or is likely to cause a water resource to be polluted must take all reasonable measures to contain and minimize the effects of the incident; and to clean up polluted areas and remedy the effects of the incident.
Hazardous Substances Ordinance 14 of 1974	• Section 27	• To provide for the control of substances which may cause injury or ill-health to or death of human beings, by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; • To provide for the division of such substances into groups in relation to the degree of danger; • To provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and

		• To provide for matters connected therewith.
Forest Act no 12 of 2001	• Section 66 • Section 41	• Vegetation may not be removed within 100 m of a river, stream or water course • A person shall be liable for damage caused by any fire which arises as a result of activities carried out on site without having taken reasonable measures to prevent a fire.
Fertilizers, farm feeds, agricultural remedies and stock remedies Act no 36 of 1947	• Definitions • Section 7 • Section 10	• Arborocide application is defined as an agricultural remedy under this Act • Only registered herbicides may be used. • May only buy herbicides in a container that complies with the prescribed requirements and is sealed and labelled. • Only allowed to use herbicides in the prescribed manner. • Land owners must be notified about applications, and the following information must be supplied: o Purpose of administration o Registered name and number of the product • Precautions to be taken before, during and after each administration.
Nature Conservation Ordinance no 4 of 1975	• Section 74	• Protected plants may not be removed or damaged without a permit.
Soil Conservation Act no 76 of 1969	• Section 4 • Section 13 • Section 21	• Institutions may be ordered by the relevant Minister to construct soil conservation works when and where necessary. • Fire protection schemes may be implemented to regulate the prohibition of veld burning as well as the prevention, control and extinguishing of veld and forest fires. • It is illegal to damage, destroy / fail to maintain any soil conservation works; fire belts; works constructed in terms of a fire protection scheme.

National Heritage Act No 27 of 2004	• Section: 46, 48, 55	• All heritage resources are to be identified and either protected or removed/mitigated with a permit from the National Monuments Council, before any development may take place • A chance find procedure should be followed in case of discovery of a heritage resource.
Petroleum products and energy Act, 1990 no 13 of 1990, regulations relating to the purchase, sale , supply, acquisition , possession, disposal, storage, transportation, recovery and re-refinement of used mineral oil.	Section 4 Section 10	• Possession of used oil • Permit requirements
Petroleum Products and Energy amendment Act of 2000		• Incidental matters

6 ROLES AND RESPONSIBILITIES

It is the responsibility of NamPower to ensure that all the environmental management actions are carried out effectively and timeously. It is important to note that the successful implementation of the EMP is, however dependent on clearly defined roles and responsibilities by several stakeholders. Below are the key employees that are responsible for the management of environmental and social issues during the operational phase:

Table 2: The roles and responsibilities for operational activities:

Responsible person	Responsibilities
The Area Superintendent	• Is responsible for the enforcement of the EMP • To ensure that environmental requirements are adequately covered in any external service providers contracts. • To ensure that SHE requirements are included in the tender documents sent to the contractors. A copy of this EMP should

	also form part of the tender documents. • To ensure that corrective actions are implemented for non-compliances. • To ensure that appropriate records and information regarding compliance with environmental requirements are maintained. • To ensure that the substation remains in compliance with the requirements of this EMP, through regular communication and monitoring. • To ensure that all incidents, accidents and complaints are reported the project manager. The contractor to ensure that incidents and accidents are investigated to prevent re-occurrence.
Project Manager	• Is responsible for the enforcement of the EMP. • To ensure that SHE requirements are included in the tender documents sent to the contractors. • Must ensure that the contractor remains in compliance with the requirements of this EMP, through regular communication and monitoring.
NamPower SHEW	• To ensure that all requirements with regards to this EMP are fulfilled. • To assist the Project Manager in ensuring that the contractor remains in compliance with this EMP. • Communicate NamPower SHEW requirement to the contractors and NamPower employees. • Request NamPower sections and contractors to submit SHEW files prior to any activity taking place for approval. • Provides SHEW inductions to NamPower and contractor employees. • Implement monitoring and conduct audits in consultation with the Project Manager. • Document and communicate monitoring, audit and inspection findings to project manager and area superintendent. • Communicate the final inspection report to the Project manager on contractor compliance to the EMP before the project close-

	off and final payment is made to the contractor.
Contractor	• Is responsible for the implementation of the EMP • To appoint as SHE officer responsible for the implementation of this EMP. • To ensure that 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. • Ensure that employees are regularly trained and awareness built relating to environmental and social management. • To ensure that all incidents, accidents and complaints are reported the project manager. The contractor to ensure that incidents and accidents are investigated to prevent re-occurrence. • 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.

7 DESCRIPTION OF OPERATIONAL ACTIVITIES TO BE UNDERTAKEN

Table 3: Description of the activities related to the operational activities.

Activity	Description	Associated potential impacts
General functioning of the substation and transmission line.	• Physical presence and functional characteristics of the substation and associated lines.	• Bird mortalities through collisions with powerlines. • Visual impact. • Community impacts in a form fatalities or injuries caused by electrocution. • Provision of electricity to communities

Maintenance of the substation and lines	• The maintenance of the substation and lines entails: • General equipment repairs. • Replacement of batteries Servicing batteries. • Maintenance of electrical equipment such as transformers, relays and capacitors. • Maintenance of electrical equipment such as transformers, relays and capacitors. • Construction or repairing of access roads.	• Soil and water contamination • Waste generation • Loss of biodiversity • Social issues related to the introduction of new workers in the area, e.g. HIV/AIDS spreading
Construction	• Construction include the following activities: • • 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. • • Refurbishment of buildings. • • Personnel conduct in surrounding communities.	• Noise emissions • Dust emissions • Introduction of new people in the area leading to the spread of diseases such as HIV/AIDS • Soil and water contamination • Waste generation • Employment of casual workers • Loss of biodiversity • Loss of productive land
Periodic inspections, monitoring,	• Replacement, cleaning and maintenance of	• Soil and ground water contamination as a result of oil

maintenance of the line	substation and line components.	spills • Soil contamination as a result of improper waste handling and disposal. • Loss of biodiversity if existing access roads are not put to use. • Veld fires.
Hazardous Substances	• Storage of hazardous material;	• Possible oil spills and soil contamination due to transformer blow out
Installation of Optic Fibre networks	• Design, Supply, Delivery, Installation and Commissioning of Optic Fiber networks for communication purposes with National Control.	• Loss of biodiversity if existing access roads are not put to use or there will be a need to do bush clearing. • Soil contamination as a result of improper waste handling and disposal.
Vegetation management within the servitude	• Selective herbicide application, mechanical and manual bush clearing	• Loss of biodiversity due to clearing operation. • Soil and groundwater contamination. • Water pollution • Loss of sensitive habitat. • Loss of archaeological resources. • Possible employment opportunities if bush clearing is outsourced.
Safety, Health and Environmental monitoring	• Periodic environmental monitoring and audits to assess compliance to management procedures, and EMP requirements.	• Littering

8 MANAGEMENT AND MITIGATION MEASURES

In order to ensure that the potential impacts are eliminated and/or minimised, it is necessary to ensure that the various activities related to the operation of these powerlines are adequately managed and monitored. Table 4 below outlines mitigation measures as well as objectives to be achieved. A responsible person (s) have been assigned to each mitigation measure (s).

Table 4: Proposed mitigation measures for the general operational activities

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
Safety Health and Environmental (SHE) Awareness	All employees should undergo SHE induction before work commences onsite. • All employees are to be made aware of their individual roles and responsibilities in achieving compliance with the EMP. • Environmental toolbox talks to be conducted by the contractors and records to kept onsite. • Warning signs must be placed on and around the site.	• Area superintendent • Project manager • Contractor
Safety Management	• Develop and implement an occupational health and safety system that comprises key elements such as risk assessment and safe working procedure. • All work activities to be done under the supervision of a competent person. • Anti-climbing devices should be installed on transmission towers and be maintained. • Appropriate warning signs must be placed on the facilities.	• Area superintendent • Project manager • Contractor
Fire Management	• Eliminating the presence of potential sources of ignition and providing appropriate equipment to minimize fire risk. • Fire extinguishers to be readily available onsite, especially when hot works are conducted. • Regular servicing of fire extinguishers. • Maintain servitude access road under the line and leading to the substation to act as fire break.	• Area superintendent • Project manager • Contractor
Air Quality	• Dust generation from all activities will be minimised wherever possible. • Excavation, handling and transportation of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. • Speed limit to be enforced to control dust emissions, and minimize incidents onsite. • Dust suppression measures shall be implemented if necessary. • Vehicle, machinery and equipment shall be maintained in good working order in order to minimise exhaust fumes.	• Area superintendent • Project manager • Contractor

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
Resources Efficiency	• Minimise water wastage and record water usage. • Avoid wasteful use of materials. • Source goods and services locally were possible	• Area superintendent • Project manager • Contractor
Waste Management	• Minimise the generation of waste by applying the waste hierarchy. • Substation and lines servitude to be kept free of waste. • No burning, burying or dumping of any waste materials shall be permitted onsite. • Labelled waste bins with lids must be provided onsite for all waste streams where applicable and ensure that waste is disposed at nearest approved waste disposal site. • Ensure that waste segregation is done at source. • Hazardous waste shall be disposed of at a registered waste disposal site. • Safe disposal certificates for hazardous waste must be kept in the SHE file. • Concrete waste must not be dumped on site. • No burning of cleared vegetation shall be allowed on site. • All waste management requirements as stipulated in the herbicide application procedure shall be adhered.	• Area superintendent • Project manager • Contractor
Wastewater management	• Water containing environmental pollutants shall be collected and removed from site. • No waste water runoff or uncontrolled discharges from the site/working areas shall be permitted. • Mobile toilets or septic tanks should be used in remote areas.	• Project manager • Contractor
Hazardous Substances	• The use, handling, storage and disposal of the hazardous chemical must be in accordance with the MSDS. • Containers must be clearly marked to indicate contents, quantities and safety requirements. • Hazardous substances storages areas must be bunded. A bund should be able to contain 110% of the volume of the largest container stored within it. • All transformers to be contained in bunded areas.	• Area superintendent • Project manager • Contractor

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	• Diesel and other liquid fuel, oil and hydraulic fluid must be stored in appropriate storage tanks or in bowsers. • Inspect and maintain hazardous storage areas and bund walls to avoid overflows. • Report any accidental spills that occur onsite. • Spill kit and absorbents must be available onsite. Applicable to substations and campsites. • Hazardous substance storage areas must display safety signs. • All spills must be reported, cleaned and remediated to in compliance with SHEW requirements.	
Social Impact	• Contractor to sign land permission form and agreement with land owners prior to establishing campsites. • Employees should limit their contact with farm workers and other permanent residents of the area. • Employees should be properly educated about the impact of HIV / AIDS and pregnancies. • Any person making himself guilty of violence, harassment or any other activity deemed inappropriate by the landowner, must immediately be removed from the site. • The use of intoxicating liquor or drugs of any kind by the employees is strictly prohibited. • NamPower District Personnel shall take the responsibility of communicating with landowners and neighbours at least 14 days prior to applying herbicides on site. • Appropriate contact numbers shall be made available to the landowner, to ensure open channels of communication and prompt responses to any queries and claims. • All conditions and requirements stated by the landowners shall be documented and adhered to by NamPower employees and contractors prior to work starting	• Area Superintendent • Project Manager • All NamPower employees • Contractor

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	on site. • Ensure that all queries and complaints are documented and dealt with. • A register shall be kept of all complaints from landowners. • All claims shall be handled immediately to ensure timely rectification. • The movements of the NamPower employees, contractor, subcontractor, or their employees, are restricted to the areas of the servitude and those areas permitted by the landowner as per the agreement. Any further encroaching on private property at any time are subject to the owner's permission.	
Cultural resource	• Any chance finds must be reported to NamPower environmental section. • In an event of discovery of human remains or other artefacts the work shall cease. A professional archaeologist is to be consulted and carry out investigation.	• Area superintendent • Project Manager • SHEW • Contractor
Fauna and Flora	• Ensure that the site is kept clean and free of rubbish that could potentially attract animals and pests • Barricading of work area to keep animals and unauthorised persons from site. • NamPower employees and contractor may under no circumstances make use of pesticide or poison to control pests. • Workers should be educated so as not to kill any fauna found onsite. • Poaching or capturing of any animal (wild or domestic) shall be prohibited. • Bird nests may not be disturbed. • The footprint of disturbance should be kept to a minimum. • No domestic animals may be kept onsite site as they can introduce diseases or interbreed with the animals occurring naturally in the area. • Bird flappers/diverters and raptor perches should be added to the line structures in hotspot areas (include areas near dams, river crossings, base of slopes and near cliffs). • All wildlife and electrical infrastructure interactions must be reported to the SHEW section.	• Area superintendent • Project Manager • SHEW • Contractor
Manual and Mechanical	• Obtain a permit from the Ministry of Environment, Forestry and Tourism to	• Area superintendent

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
Vegetation Removal	remove protected trees as per the Forest Act No. 12 of 2001. • Measures must be put in place to avoid erosion at rivers, stream channel crossings, and at places where existing erosion scars and dongas are encountered to avoid any further erosion. • Where manual bush-clearing is impractical, mechanical bush clearing shall be used, but an effort must be made to preserve the topsoil structure. • Do not remove wood cut on site as this would affect the recycling of nutrients locally as well as lead to a potential industry in firewood targeting the better quality tree species e.g. Acacia erioloba. • Where clearing is done near a river, the contractor/NamPower must ensure that no felled bushes/branches/shrubs are left behind in the riverbed. • No burning of bush cleared materials is allowed onsite. • Manual and mechanical vegetation removal should be done in accordance with NamPower vegetation clearance and maintenance Procedure.	• Project Manager • SHEW • Contractor
Herbicide Use	• Prevent the application of herbicide(s) in sensitive areas. Sensitive areas are known/expected to have higher biodiversity e.g. Karst mountains, ground dams, etc. • Avoid the spraying of protected tree species not directly affecting the transmission line during the bush clearing operation. • Protected tree species, especially larger specimens, within the affected area i.e. 12m from centre line in either direction not expected to affect the transmission lines could be avoided. • Eradicate all invasive alien species potentially associated with the lines/substation. This would indicate overall environmental commitment. • Avoid spraying herbicide during windy days/periods. See the general product requirements for herbicide used. This could affect non-target areas and	• Area superintendent • Project Manager • SHEW • Contractor

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	species. • Avoid spraying, removing and/or approaching trees with vulture (and other larger raptors) nests along the route. • Herbicide should be applied directly to the plant's stem or leaves as a spray. • Manual vegetation removal should be encouraged. • Herbicide will be handled in accordance with the requirements outlined in the NamPower Vegetation Clearance and Maintenance procedure. • Drainage lines areas all be cleared manually limited sensitive areas – with chemical follow-up.	
Water Resources	• Care must be taken to ensure that pollution of water does not occur. • Herbicides shall not exceed the recommended volume and concentration of application.. • Herbicides application shall be done within the period specified in the specialist reports. • Naturally occurring water resources may not be used for any personal hygiene, mixing herbicides or for washing equipment used for herbicide application. • Water may only be taken from a private or government property based on an agreement between the NamPower, contractor and custodian of the water source.	• Area superintendent • Project Manager • SHEW • Contractor
Campsite Establishment	• NamPower/ Contractor must sign land permission form and agreement with land owners prior to commencement of work onsite. • Adequate ablution facilities must be provided onsite in relation to the number of employees. • Ablution facilities must not be located within 100m of any river, stream channel, pan, dam or borehole • Non-employees are not allowed to reside at the campsite. • Fire extinguishers, first aid kits, assembly point, and emergency numbers must be available onsite.	• Area superintendent • Project Manager • SHEW • Contractor
Site Rehabilitation	• A post construction audit within 1 week prior to the Contractor leaving site must be conducted. • SHEW to sign site close off or take over certificate once remedial corrective	• Area superintendent • Project Manager

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	actions have been implemented.	• SHEW • Contractor

9 REPORTING, MONONITORING AND AUDITING

Environmental monitoring and audits must be conducted during the operational phase. The environmental monitoring and audits must be conducted in line with supporting procedures and requirements of this plan. Monitoring and audit reports detailing the monitoring and audit results shall be prepared by the SHEW section and communicated to the Area Manager , Superintendent and Project Manager. Records of monitoring and auditing report shall be kept and will be made available during inspection and audits.

The following general monitoring indicators and guidelines are recommended should herbicides be used to do vegetation management along the line:

Table 5: General monitoring indicators and guidelines recommended after herbicide application

Monitor trees adjacent the cleared area after herbicide application	A survey in year 1 (i.e. 6 months after application of herbicide) should be conducted along the affected route to determine the effect of the herbicide on non-target areas – i.e. adjacent vegetation. Focus on protected tree species along the route
Monitor coppicing and regrowth after herbicide application	A survey in year 2 (i.e. 1 year after application of herbicide) should be conducted along the affected route to determine the effect of the herbicide on bush clearing. This would indicate the success of the herbicide used as well as indicate the necessity of follow-up treatment.
Sample any open surface water after herbicide application	Very few open water sources are located along the route and although it is recommended that herbicides not be used in “high” and “medium” sensitivity areas, monitoring this would be viewed as a good practice. Take water samples from any surface water encountered and have these analysed to determine if herbicide used has entered these sources.

10 NON-COMPLIANCE AND CONFLICT MANAGEMENT PROCEDURES

The Area Superintendent shall ensure that the employees and external service providers comply with the requirements outlined in this EMP. 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 SHEW Section and reported to the Area manager, Superintendent and Project Manager for corrective actions.
- Area Superintendent / Project Manager shall notify the employees about the non-compliance .
- Corrective and preventative actions must be implemented on an agreed timeframes.
- Follow – up inspections shall be conducted to assess whether the corrective and preventative actions were implemented effectively.

NamPower has the right to stop all contractor's activities if it is found that a gross violation of the EMP is taking place.The contractor shall notify NamPower of the following:

- Conflicts arising with any landowner / representative.
- Any special conditions requested by a landowner / representative.

11 RECORD KEEPING

Record keeping is important for the effective functioning and implementation of an EMP. EMP documentation must be kept in both the hard copy and electronic format for safe keeping. These must include:

- Copy of the Environmental Clearance Certificate
- A copy of an EMP
- EMP implementation activities
- Induction records
- Resource use records i.e. water and fuel consumption
- Audit and Inspection reports

In case vegetation management is conducted and is done using herbicides, the following records should be kept:

- Date of application
- Herbicide applied
- Persons responsible for application

- Supervisor
- Type of herbicide used
- Method of application
- Timing of application
- Equipment used
- Concentration of herbicide used

12 CONCLUSION

All management measures and legal requirements outlined in this EMP should be implemented in order to ensure environmental compliance by all parties undertaking the operational activities. This will ensure that potential negative impacts are identified, avoided or mitigated.

13 ANNEXURES

ANNEXURE 1: HERBICIDE APPLICATION GUIDELINE

Management requirement
Recommended herbicide: Access 240 SL or any similar product with picloram or tricoplyr as active ingredients should be used
Recommended Application method: Foliar application – spray or paint-on-stump –is recommended as this is target specific. Access mixed with water and Actipron (wetting agent).
Technique: The herbicide can be applied directly to the plant – stem or leaves – as a spray. Trees and shrubs with a stem diameter <10cm can be sprayed directly, but trees with a stem diameter >10cm should be felled before treatment of the cut surface for best results. Treatment should be done as soon as possible after felling and the entire cut surface and stump should be wetted. Coppice growth can also effectively be controlled.
Use: Active growing season – i.e. September to April (best in early growing season – September to November – before main rains) has best results.
Concentration Foliar application = 350ml/100l water + Actipron Super 500ml/100l spray mix. Cut stump application = 2l/100l water + Actipron Super 2l/100l spray mix.
Application repeatability ▪ Year 1: Apply herbicide (early growing season) ▪ Year 2: Follow-up to target any regrowth and coppicing (early growing season) ▪ Thereafter: As required – i.e. dependent on coppicing potential of various species. This could be determined during routine line inspections.

ANNEXURE 2: MONITORING CHECKLIST FOR BUSH CLEARING AND HERBICIDE APPLICATION

Activity: Bush clearing **Site:**	**Compliance**	
	Yes	**No**
Manual clearing conducted		
Mechanical clearing conducted		
Area adequately cleared – i.e. 12m from centre line		
Protected tree species on 12m boundary only trimmed		
Protected tree species not affecting line left *in situ*		
Raptor and vulture nesting sites left undisturbed		
Overall access improved		
Activity: Chemical application		
Active ingredient used = Triclopyr		
Application method used = spray		
Application technique used = spray leaves/cut stumps		
Application season = Sep to April (Sep to Nov = best)		
Application conditions = no wind		
Application procedures = protective masks/equipment used		
Application knowledge = certified users only		
Storage = safe/secure		
Storage = chemical register maintained		
Storage = equipment clean/functional		
Concentration: Foliar application = 350ml/100l water + Actipron Super 500ml/100l spray mix		
Concentration: Cut stump application = 2l/100l water + Actipron Super 2l/100l spray mix		
Repeatability: Year 1		
Repeatability: Year 2		

Repeatability: Year 3		
Sensitive “hotspot” areas avoided		
Water – open surface water encountered		
Water – open surface water samples taken		
Collateral damage observed (i.e. non target areas/species affected)		
Any complaints from landowners		

ANNEXURE 3: LANDOWNER PERMISSION FORM

Landowner Permission Form

Landowner name: Contact number:

Representative name:

Farm name:

Contractor:

Representative name: Contact number:

General Notice

This form is to be used prior to a contractor entering a landowner's property to commence any work related to the construction or maintenance of power-line structures and servitudes.

The form must be completed by either the landowner or his / her legal representative on the property.

Section A: Before activities commence

Activities to be undertaken on the property (completed by the contractor):

Use of water resources		Camping	
Powerline erection		Bush clearing	
Powerline refurbishment		Herbicide application	
Trimming of vegetation		Access road usage	
Use of other infrastructure (please specify)		Rehabilitation	

Specific conditions to be MEFT on the property (as stipulated by the landowner):

_____
_____
_____
_____

Dates when access is needed:

From: _____

To: _____

Signatures (prior to entry)

_____ _____

Landowner/Representative Contractor representative

_____ _____

Date Date

Section B: Upon completion of work and prior to leaving the property

Remarks on compliance or misconduct (upon completion of activities):

_____
_____
_____
_____
_____
_____

_____

Issues still to be resolved upon completion of activities:

_____
_____
_____
_____
_____

Signatures (upon completion)

_____ _____

Landowner/Representative Contractor representative

_____ _____

Date Date

ANNEXURE 4: PRE-APPLICATION CONSENT FORM FOR HERBICIDE/PESTICIDE APPLICATION

PRE-APPLICATION CONSENT FORM	
Name of Landowner / Representative:	
Contact Details:	
Name of Farm:	
Name of Contractor:	
Name and Details of Contact Person:	
Herbicide/pesticide to be used:	
Period of Application:	
NamPower District Supervisor:	
Contact Details:	
NamPower Installation to be Treated:	
Comments from Landowner/Representative:	
Signed:	
Landowner/ Representative:	NamPower Representative:
Date:	Date:

ANNEXURE 4: POST APPLICATION REVIEW FORM FOR HERBICIDE/PESTICIDE APPLICATIONS

POST-APPLICATION REVIEW FORM	
Name of Landowner / Representative:	
Contact Details:	
Name of Farm:	
Name of Contractor:	
Name and Details of Contact Person:	
Herbicide/pesticide to be used:	
Period of Application:	
NamPower District Supervisor:	
Contact Details:	
NamPower Installation to be Treated:	
Outstanding Issues:	
Signed:	
Landowner/ Representative:	NamPower Representative:
Date:	Date: