



PROPOSED EXPANSION OF THE AUSSENKEHR SUBSTATION

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS – SCOPING REPORT



Appendix K: Environmental Management Programme for Operation of the Aussenkehr Substation

DRAFT

Environmental Assessment Practitioner: Mrs Jaana-Maria Ball

May 2016

17 May 2016

DECLARATION OF INDEPENDENCE

I, Jaana-Maria Ball, confirm my independence as an environmental scientist and declare that I have no interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Lithon Project Consultants (Pty) Ltd was appointed to manage the Environmental Impact Assessment (EIA) process or I was appointed as the Environmental Assessment Practitioner (EAP), in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations, 2012, other than fair remuneration for work performed, specifically in connection with the EIA process for the proposed expansion of the Aussenkehr Substation. I further declare my objectivity in this assessment and that I am confident in the results of the studies undertaken and conclusions drawn as a result of it – within the limitations as are described in the attached report.



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Pr. Sci. Nat. (400049/98), 1998

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My related expertise and experience in undertaking EIAs and Environmental Management Programmes/ Plans (EMPs) for power infrastructure developments is as follows:

NUCLEAR-1 EIA AND EMP - Project Director and Manager (2007 – 2013)

Mega-EIA for the proposed construction, operation and decommissioning of a conventional nuclear power station and associated infrastructure (including transmission lines from the power stations to the substations) in the Western, Northern and Southern Cape Provinces, South Africa. The EIA included the screening and selection of a suitable site for the nuclear plant as well as the transportation of fuel and spent fuel, as well as a scoping process and detailed environmental impact assessment. The EIA involved 29 detailed, independent specialist studies that required integration, the impact assessment process, a complex and massive public consultation process, legal and nuclear technology review studies.

PEBBLE BED MODULAR REACTOR EIA AND EMP - Project Director and Reviewer (2007 – 2010)

Mega-EIA for the proposed construction, operation and decommissioning of the Pebble Bed Modular Reactor and associated infrastructure (including transmission lines from the power station to the substation) in the Western Cape, South Africa. The EIA included a detailed environmental impact assessment, specialist studies and public consultation as well as the transportation of fuel and spent fuel.

PERSEUS - GAMMA, HYDRA - GAMMA AND HYDRA - PERSEUS TRANSMISSION LINE EIAs AND EMPS – Project Director (1999 – 2007)

Multiple EIAs and Public Consultation Processes for the proposed 765 kV transmission power lines from various substations in the Northern Cape and Free State. The EIAs also included the assessment of turn-ins to the substations and substation expansions, as well as associated infrastructure and included the integration of numerous independent specialist studies. Draft Environmental Management Programmes were compiled for the construction and operational phases. A 'walkdown' of the entire line was undertaken with selected specialists post authorisation in order to determine the final placement of the pylons.

BANTAMSKLIP TRANSMISSION LINE EIA AND EMP - Project Director (2008 – 2012)

The EIA was undertaken for the proposed construction, operation and decommissioning of the over 9 000 km of 765 kV transmission lines from the Bantamsklip Nuclear Power Station to the Kappa Substations, the Bantamsklip Nuclear Power Station to the Bacchus Substation, the Bacchus to Kappa Substations and the 400 kV transmission line from the Bacchus to Muldersvlei Substations, as well as all associated infrastructure at the Bantamsklip Power Station site (Western Cape, SA) and expansions required at the substations. The EIA included the screening and selection of suitable corridors, as well as a scoping process and detailed impact assessment. The EIA also included a massive and complex public consultation process and legal review.

BRAAMHOEK PUMPED STORAGE SCHEME EIA AND EMP - Team Leader (2004 – 2005)

Mega EIA, Public Consultation Process, EMP, Water Use Licensing Applications, General Authorisation for Water Use and the South African Department of Mineral and Energy Affairs Applications for the proposed Eskom Braamhoek Pumped Storage Scheme in the Drakensberg. The proposed scheme comprises two reservoirs, interconnected by enclosed tunnel systems, with pump turbine units with a potential generation capacity of approximately 1 333 MW. The project value was over R10 billion and is near completion.

A full *Curriculum Vitae* detailing Ms. Ball's knowledge and experience in undertaking assessments, including knowledge of the Environmental Management Act, 2007 (Act No. 7 of 2007), the Environmental Impact Assessment (EIA) Regulations, 2012, and the related guidelines, that have relevance to the proposed activity, is appended in **Annexure A**.

Proposed Expansion of the Aussenkehr Substation

Appendix K: Draft Environmental Management Programme for Operation of the Aussenkehr Substation

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GLOSSARY OF TERMS, DEFINITIONS AND ABBREVIATIONS

Affected Environment	Those parts of the socio-economic and biophysical environment impacted on by development
Alternatives	A possible course of action, in place of another, that would meet the same purpose, need and requirements of the proposal. Alternatives can refer to any of the following but are not limited hereto: alternatives sites (location) for development, type of activity, alternative site layouts, alternative designs, alternative technology (including processes and materials), operational aspects. In Integrated Environmental Management the so-called “no action” alternative may also require investigation in certain circumstances.
Application	An Application for an Environmental Clearance Certificate in terms of the EIA Regulations (2012).
Assessment	The process of collecting, organising, analysing, interpreting and communicating data that are relevant to the decision.
Construction Activity	A construction activity is any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process.
Contractor	That main organisation appointed by the Developer/ Operator to undertake construction activities on the site. The employment of locals are limited on this Substation expansion project, as the work requires highly skilled employees. NamPower will undertake most of the work itself. For the purposes of this EMP the division/ unit within NamPower who will do the work is to be referred to as the Contractor and will take on all the necessary responsibilities outlined in this document.
DEA	Directorate of Environmental Affairs
Developer (or Project Proponent)/ Operator	NamPower
EAP	Environmental Assessment Practitioner, Ms. Jaana-Maria Ball, who has been designated by the proponent, NamPower, to manage the assessment process.
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer

EMP	Environmental Management Programme/ Plan: The EMP for the project sets out general instructions that will be included in a contract document for the construction phase of the project. It describes how activities that may have significant environmental effects on the receiving environment are to be mitigated, controlled and monitored. The EMP will ensure the construction activities are undertaken and managed in an environmentally sound and responsible manner.
Environment	Means the surroundings within which humans exist and that are made up of: <ol style="list-style-type: none"> a. The land, water and atmosphere of the earth. b. Micro-organisms, plant and animal life. c. Any part or combination of a) and b) and the interrelationships among and between them. d. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Specifications (ES)	Instructions and guidelines for specific construction activities designed to help prevent, reduce and/or control the potential environmental implications of these construction activities.
I&APs	Interested and Affected Parties: In relation to the assessment of the listed activity includes any person, group of persons or organisation interested in or affected by an activity, and any organ of state that may have jurisdiction over any aspect of the activity.
kV	Kilo volts
MET	Ministry of Environment and Tourism
Method Statement	A written submission in response to the Specification setting out the plant, materials, labour, timing and method the responsible party proposes using to carry out an activity. The Method Statement shall cover applicable details with regard to: <ul style="list-style-type: none"> • Procedures. • Materials and equipment to be used. • Getting the equipment to and from site. • How the equipment/material will be moved while on site. • How and where material will be stored. • The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or solid material that may occur. • Timing and location of activities. • Compliance/ non-compliance with the Specifications. • Any other information deemed necessary by the Regional Manager (South) or his appointed representative.

MSDS	Material Safety Data Sheet
NGC	Namibia Grape Company
NYS	National Youth Service
PCO	Pest Control Officer
PM	Project Manager: Appointed entity responsible for overall management of the operation phase of the project including the management of all contractors.
PPP	Public Participation (Consultation) Process: A process referred to in Regulation 21 of the EIA Regulations (2012), in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
Project	This refers to all construction activities associated with the proposed activities.
Rehabilitation	Rehabilitation is defined as the return of a disturbed area, feature or structure to a state that approximates to the state (where possible) that it was before disruption, or to an improved state.
Scoping Report	A document prepared by the proponent (or someone appointed by them) to present the case for the assessment of an activity as part of the initial assessment process.
SHE	Safety, Health and Environment
SHEW	Safety, Health and Environment and Wellness
SS	Substation
Solid Waste	Means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
the Act or EMA	Environmental Management Act, 2007 (Act No. 7 of 2007).
TX	Transmission

1 INTRODUCTION

1.1 The Environmental Management Programme

1.1.1 Introduction

This Environmental Management Programme (EMP) for operation forms part of the documentation submitted to the Environmental Commissioner of The Directorate of Environmental Affairs: Ministry of Environment and Tourism (MET) as the competent authority for the authorisation of the proposed expansion of the Aussenkehr Substation, //Karas Region, southern Namibia (**Annexure B**).

//Karas region is geographically extensive with low levels of population density. Large parts of the region are comprised of the Namib and Kalahari deserts. Agriculture (most notably small stock and grape farming) is one of the most dominant economic sectors in the proposed area around the Aussenkehr Substation. The majority of the employed population derive income as employees (i.e. private, commercial agriculture and government). There are no settlements or small-scale livelihood activities on the land adjacent to the existing Substation that is proposed for the expansion. The Substation is located on a servitude registered over a small piece of land within Portion 7 Aussenkehr 147, which is owned by the National Youth Service (NYS) and operated by the Namibia Grape Company (NGC). The NGC has a further 388 ha under cultivation immediately adjacent to the proposed site for the substation expansion (**Annexure C**).

The expansion of the substation is urgently required as the Aussenkehr substation currently supplies important agricultural loads in the south of Namibia and in particular the majority of the grape farming industry of Namibia. NamPower has to install an additional 66/22 kV 10 MVA transformer at the Substation (**Annexure D**). The proposed project has an expected completion date of October 2016. Typically the electrical load peaks during the harvest season from November up to January, and NamPower therefore is required to perform this upgrade by this time to avoid costly power interruptions to the whole area due to the existing transformer overloading.

The Scoping Study, and its specialist studies, considered the potential impacts of constructing and operating (including maintaining) the proposed expanded substation and its associated infrastructure (i.e. feeder power line and access track) and recommended that Environmental Clearance be granted for the infrastructure expansion (**Annexure E**).

This EMP is for the operation of the expanded Aussenkehr Substation i.e. the existing Substation and the new expanded part of the Substation, should it receive an Environmental Clearance Certificate and be constructed. It forms Appendix K of the Scoping Report for the Substation Expansion Project. It is concise and practical to ensure easy implementation and compliance by all involved in the operation of the Substation

Another EMP covers the construction phase for the expansion of the Aussenkehr Substation, which can be found in Appendix J of the Scoping Report for the Substation Expansion Project.

1.1.2 Purpose

The preparation of an EMP is recognised as a tool in Integrated Environmental Management to address negative impacts and to enhance positive impacts on site. This EMP informs all relevant role-players in the project as to their environmental rights and duties. Its focus is on the operations at the expanded Aussenkehr Substation.

This EMP must be read in conjunction with the Scoping Report for the proposed expansion of the Aussenkehr Substation, as well as its appendices, and NamPower's policies and General EMPs for operation of substations.

The 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 the Substation. This document comprises the baseline EMP which will be revised in future.

1.1.3 Objectives

The objectives of an EMP are to:

- Ensure compliance with all relevant legislation and Regulations with bearing on the operation of the Substation.
- Ensure that the Substation is operated in a sustainable manner.
- Verify environmental performance through information on impacts as they occur.
- Provide required management actions in order to respond to unforeseen events.
- Provide feedback for continual improvement in environmental performance.
- Refine identified mitigation measures to further reduce potential negative impacts to minimal or insignificant levels.
- Stipulate specific actions to assist in mitigating the environmental impact of the operations.
- Identify measures that could optimize or enhance beneficial impacts.
- Create management structures that address the concerns and complaints of Interested and Affected Parties (I&APs) with regards to the operations of the Substation.
- Establish a method of monitoring and auditing environmental management practices during operation of the Substation.
- Ensure that environmental safety recommendations are complied with.
- Specify time periods within which mitigation measures must be implemented, where appropriate.

1.1.4 Content

The content of the EMP must comply with the Environmental Management Act (Act No. 7 of 2007) and be consistent with the requirements as set out in the EIA Regulations of 2012, and its guidelines, and in summary must contain:

- Details and experience of the person who prepared the EMP.
- Description of the anticipated impacts, and the methods and procedures for mitigating these identified impacts.
- Description of the operational activities the draft EMP will cover.
- Outline of the roles and responsibilities of the personnel involved in the operations as well as the authorities.
- Mechanisms for monitoring compliance with the EMP.
- Time periods within which the measures contemplated in the draft EMP must be implemented.
- Description of the process for managing any environmental damage and identifying required site rehabilitation measures.

1.2 Legal Framework and Environmental Clearance

This EMP is focused on sound environmental management practices and is based on national and international best practices, and relevant legislation, policies and guidelines. It promotes the principle of sustainable development. All stakeholders should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation. All legislation and policies applicable to the development must be strictly enforced, including the following:

- The Constitution of the Republic of Namibia, 1990
- Nature Conservation Ordinance 4, 1975
- National Development Plan: Vision for 2030
- Environmental Management Act No. 7, 2007
- Environmental Assessment Policy for Sustainable Development and Environmental Conservation, 1995
- Convention on Biological Diversity, 1992
- EIA Regulations, 2012
- Labour Act No. 11, 2007, in conjunction with Regulation 156 - 'Regulations Relating to the Health and Safety of Employees at work'

The list of applicable legislation provided above is intended to serve as a guideline only and is not exhaustive nor inclusive.

1.3 Details of the Principal Parties

The Operator of the Aussenkehr Substation is NamPower, the Namibian state power utility. They are also the Project Managers for the operational activities.

The EIA process is being managed by Lithon Project Consultants (Pty) Ltd and the appointed independent Environmental Assessment Practitioner (EAP) is Mrs. Jaana-Maria Ball who is a registered Reviewer and Lead Practitioner with the Environmental Assessment Practitioners Association of Namibia. She prepared all the documentation emanating from this process, as well as this EMP and her credentials as well as CV are contained above and in **Annexure A**.

The independent technical specialist studies that were undertaken to inform the Scoping Study of any potential impacts arising from the proposed development were undertaken by:

- Avifunal Assessment – Dr. CJ Brown of Sustainable Solutions Trust
- Social Impact Assessment – Mrs. Kerry McKune-Desai
- Archaeology Assessment – Prof. John Kinahan
- Botanical Assessment – Dr. Colleen Mannheimer
- Drainage Assessment – Mr. Chris Muir

Their contact details, expertise and experience as well as Declarations of Independence are found in Appendix I of the Scoping Report.

Mr. Johan van Rensburg was the spatial mapping expert who undertook all the mapping for the EIA.

1.4 Summary of the Proposed Activities and findings of the EIA

The proposed project comprises the expansion of the Aussenkehr Substation, which NamPower has operated for a number of years.

This formed the development 'proposal' or proposed expansion project as assessed in Environmental Impact Assessment (EIA) process.

A separate EIA process is being undertaken for the proposed 132 kv transmission line between the Aussenkehr Substation and the Khurub Substation. The two EIAs have been kept separate due to the extreme urgency of the expansion of the Aussenkehr Substation.

The Scoping phase of the EIA for the Aussenkehr Substation expansion assessed the environmental acceptability of expanding the Substation, as well as operating and maintaining the expanded Substation. It also assessed the feeder power line that will enter the expanded substation, as well as the upgrade to the access road.

The following activities are associated with the operation and maintenance of the Aussenkehr Substation:

- Site inspections, including Technical and Safety, Health, Environment and Wellness (SHEW)
- Substation housekeeping, and refurbishment of buildings

- Vegetation management, including herbicide application and manual vegetation clearing
- Maintenance, including replacement of batteries, servicing of batteries, replacement of electrical equipment such as transformers, relays and capacitors, as well as construction or repairing of access roads

1.4.1 Alternatives

A number of alternatives (no-go, technology, methodology, equipment, mitigation measures etc.) to the expansion and operation of the existing substation at Aussenkehr were considered and assessed during the EIA process.

The no-go alternative was not recommended given the importance of the Substation and transmission line in the overall power supply system in Namibia and the need for NamPower to fulfill its mandate as a national Utility.

The site alternative was not considered feasible as the Aussenkehr Substation was optimally located and the land was available for the expansion of the Substation, and this land was fallow and not considered environmentally sensitive.

1.5 The Receiving Environment and Assessment of Potential Impacts

1.5.1 Land use

The surrounding land use is predominantly agriculture and conservation, although the Aussenkehr – Noordoewer valley has recently been declared as a settlement area and a Master Plan is currently being prepared.

1.5.2 Avi-fauna

The avi-faunal scoping study shows that 133 bird species have been recorded in the local area. Of these, 32 species are wetland birds (cormorants, herons, ducks, African Fish Eagle, waders, kingfishers, wagtails) occurring along the Orange River. A further 16 species are directly associated with the reed, woodland and irrigated crop field habitats supported by the river (storks, doves, woodpeckers, swallows, sunbirds, weavers, waxbills). The remainder of the species are associated with the Karoo biome.

Four species are listed as “Threatened” in Namibia’s Red Data book and three species are “Near Threatened”. Black Stork, Booted Eagle and Ludwig’s Bustard are all classed as “Endangered”, the African Fish Eagle is listed as “Vulnerable” and Verreaux’s Eagle, Cape Eagle-Owl and Sclater’s Lark are all “Near Threatened”. All occur as “uncommon” or “rare” in the project area, with the exception of the African Fish Eagle which is recorded as “common” along the Orange River.

None of the species are endemic or near-endemic to Namibia, though 45 species are endemic to southern Africa, and more specifically to the south-western arid zoogeographic region. The proportion of the global populations of these species occurring in Namibia ranges from <5% to over 70%, with 24 species having 30% or more of their

global populations in Namibia. Eight species are Palaearctic migrants, breeding in the northern hemisphere and two are intra-African migrants breeding in southern Africa.

The impacts of operating an expanded Substation at Aussenkehr can be mitigated to a low significance.

1.5.3 Terrestrial Ecology

The Aussenkehr Substation expansion site lies within an area of low botanical diversity and sensitivity. The actual site has previously been cultivated for vineyards and is currently fallow. It does not contain any significant natural vegetation nor fauna (animals). Damage to flora and fauna could be limited during operations, given careful planning and mitigation of collateral damage to the surrounding natural environment, and continual removal of alien vegetation.

1.5.4 Floodline

There are no major drainage catchments in the project area that should affect the operation of the expanded Aussenkehr Substation. The site has a gentle slope that is not prone to water erosion. No impacts are foreseen that cannot be mitigated.

1.5.5 Heritage and Cultural Resources

The land that the Aussenkehr Substation will be expanded into has been disturbed by previous agricultural activities and it is likely that archaeological remains, if present, have been disturbed or damaged. Nevertheless the precautionary principle should be applied as the greater area is rich in archaeological sites.

Should artefacts be found during operation of the Substation these must be appropriately managed to avoid negative impacts and preserve the remains, and applicable legislation followed. If found, the immediate advice of a professional archaeology specialist or the Monuments Council must be sought in this regard before any further damage is done. The area should be immediately marked and cordoned off until expert instruction is obtained.

1.5.6 Social

The Aussenkehr Substation lies within Namibia's //Karas region and Karasburg constituency. //Karas region is geographically extensive with low levels of population density; large parts of the region are comprised of the Namib and Kalahari deserts. Agriculture (most notably grape and small stock farming) is the most dominant economic sectors in the area. The majority of the employed population derive income as employees (i.e. private, commercial agriculture and government). There are no settlements or small-scale livelihood activities in the land next to the existing Substation that is proposed for the expansion. The directly affected land comprises the farm Portion 7 Aussenkjer 147 that is currently undeveloped. It is currently owned by the NYS and operated by the NGC. New permanent positions are expected to be created during the operations of the Substation, as a result of its expansion.

1.5.7 Dust

Wind-blown dust is currently an issue in the Aussenkehr – Noordoewer valley, especially during the dry months.

1.6 Summary of Identified Impacts

Potential impacts of the proposed expansion of the Aussenkehr Substation were assessed as part of the EIA process. They are summarised as follows:

	Project Phase	Significance of Potential Impact <u>without</u> Mitigation	Significance of Potential Impact <u>with</u> Mitigation
Avi-fauna (birds)	Operation	Low (-)	Low (-)
Flora	Construction	Low (-)	Neutral
Fauna	Construction	Low (-)	Neutral
	Operation	Low (-)	Neutral
Archaeology and Heritage Resources	Construction	Low (-)	Neutral
Floodlines	Construction	Low (-)	Neutral
	Operation	Low (-)	Low (-)
Social	Construction	Low (-)	Low (+)
	Operation	Moderate (+)	High (+)
Economic	Construction	High (-)	Low (+)
	Operation	Moderate (+)	High (+)

This assessment, by the EAP, was based on the technical specialist's reports on the sensitivity of the receiving environment. The Scoping Report includes proposed management actions/ mitigation measures to avoid and/ or reduce potential negative environmental impacts.

Operation-related nuisances, (noise, pollution of ground, dust, litter) can be fully mitigated to acceptable levels provided mitigation measures stipulated in the EMP are followed.

The general theme of the comment received from the local public during the Public Participation Process (PPP), undertaken as part of the EIA, was that they wanted the proposed project to go-ahead as soon as possible provided that proposed mitigation measures/ management actions were implemented and monitored.

Given the low significance of any negative potential impacts, and the potential for positive impacts of a high significance on social and economic development, as well as the fact that the proposed expansion project will have a positive impact on the ability of NamPower to continue providing the services of power, the Scoping Report recommended that the proposed expansion project receive an Environmental Clearance Certificate and the proposed activities be implemented at the Aussenkehr Substation as soon as possible.

It was not recommended that the 'no-go' alternative be considered given the importance of the Aussenkehr Substation in the overall power supply system in the //Karas Region.

DRAFT FOR COMMENT

2 MANAGEMENT AND ORGANISATIONAL STRUCTURE

2.1 Contractual Obligations

In order to ensure that the EMP and its derivatives are enforced and implemented, these documents must be given legal standing. This shall be achieved through incorporating the EMP and/or subsequent versions as an addendum to the operational specifications for the Substation, so that the requirements of the EMP and/or derivatives apply and must be met by all parties. This will ensure that the obligations are clearly communicated to NamPower employees and contractors, and budgeted for the environmental requirements specified in the EMP and/or its derivatives.

All parties should note that obligations imposed by the EMP would be legally binding in terms of the Environmental Clearance Certificate granted by the competent authority, the MET, should it be granted.

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 operations.

2.2 The Operator

NamPower is the Operator and has overall responsibility for ensuring that the operations of the Aussenkehr Substation is undertaken in an environmentally sound and responsible manner, and in particular, reflects the requirements and specifications of the EMP and recommendations from the relevant authorities.

The Operator is represented by NamPower's Regional Manager (South), Area Superintendent and District Supervisor. They shall ensure that the requirements outlined in this EMP is implemented and enforced during operation.

2.2.1 Role

The Operator will be required to assume overall responsibility for the environmental aspects of the operation of the Substation.

2.2.2 Responsibilities

The responsibilities of the Operator will include the following:

- Establish and maintain regular and proactive communications with the PM, NamPower personnel operating the Substation, any appointed Contractor(s) and SHEW.
- Review and comment on environmental reports produced by the SHEW.
- Ensure that the EMP is reviewed and updated as necessary.

2.2.3 Reporting Structure

The Operator will liaise with the following stakeholders or I&APs:

- Relevant authorities such as MET
- Neighbouring landowners
- The owner of the land on which a servitude is registered for the Substation, the NYS
- General public

2.3 Project Manager (PM)

NamPower is the Project Manager (PM). The PM will ensure that the approved EMP is included in the operational specifications of the Substation and all contract documentation issued to NamPower employees operating the Substation, as well as any prospective Contractors undertaking maintenance work.

2.3.1 Role

Specific to the implementation of the EMP, the role of the PM will be to:

- Review and approve Method Statements produced by any NamPower employee and any appointed Contractor in response to stipulations in the EMP.
- Implement and manage the EMP, including overseeing the general compliance by NamPower employees and any appointed the Contractor with the EMP and other pertinent site specifications.
- Liaise between and with the Contractor and SHEW on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences.
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the EMP.
- Assign appropriate authority, accountability and responsibility for these personnel to carry out their duties.
- Ensure that all NamPower and Contractor employees are aware of their environmental responsibilities while on site.
- Provide appropriate resources including budgets, equipment, personnel and training for the effective control and management of the environmental risks associated with the work it is appointed for.
- Maintain a record of complaints and communicate these to the PM and the SHEW.

2.3.2 Responsibilities

The PM's responsibilities will include:

- Be familiar with the contents of the EMP, and his role and responsibilities as defined therein.

- Communicate to the Contractor, verbally and in writing, the advice of the SHEW and the outcome and recommendations of the SHEW Reports.
- Request for, review and approve the Method Statements prepared by the Contractor in consultation with the SHEW.
- Review and approve drawings produced by the Engineer, Contractor or professional team in connection with any aspect of the proposed development.
- Issue site instructions giving effect to the SHEW's recommendations and requirements where necessary.
- Review complaints received and make instructions as necessary.
- Discuss with the SHEW the application of penalties for the infringement of the Environmental Specifications (ES), and other possible enforcement measures when necessary.
- Implement NamPower's industrial relations policies and penalties, as and when necessary.
- Implement Temporary Work Stoppages as advised by the SHEW, where serious environmental infringements and non-compliances continue to occur.
- Facilitate proactive communication between all role-players in the interests of effective environmental management.
- Remove and prevent NamPower employees, or other persons from the Substation site, which have not attended a SHEW induction, until the time that they receive it or it they are doing damage to the environment.
- Cease all activities on site, if it is found that a gross violation of the EMP is taking place.

2.3.3 Reporting Structure

The PM will report to the Operator, as and when required.

2.4 Safety, Health, Environment and Wellness (SHEW)

The Operator must liaise with NamPower's Safety, Health, Environment and Wellness (SHEW) Department for a suitably qualified and experienced SHEW staff member to monitor implementation of the EMP and measure environmental compliance during the operations of the Substation. The SHEW is independent from the Operator/ PM and the Contractor. The SHEW is given authority to ensure that the EMP is fully implemented and that appropriate actions are undertaken to address any discrepancies and non-compliances.

2.4.1 Role

The overall role of the SHEW is to be the site 'custodian' for the implementation, integration and maintenance of the EMP in accordance with the legal and/ or contractual requirements. The SHEW will be required to liaise with the PM on the level of compliance with the EMP achieved by the NamPower and/ or appointed Contractors (and its sub-contractors) on a regular basis for the duration of the operation of the Substation.

2.4.2 Responsibilities

The SHEW will have the following responsibilities, at a minimum:

- To advise the PM on the interpretation and enforcement of the Environmental Specifications (ES), including evaluation of non-compliances.
- To supply environmental information as and when required.
- Train NamPower employees with respect to implementation of the EMP and general SHEW matters.
- To review and approve Method Statements produced by the NamPower personnel operating the Substation, any appointed Contractor, in conjunction with the PM.
- To demarcate particularly sensitive areas (including all no-go areas) and to pass instructions through the PM concerning operations in these areas.
- To monitor any basic physical changes to the environment as a consequence of operations – e.g. evidence of erosion, dust generation – according to an audit schedule.
- Attend regular site meetings between the various parties.
- To undertake regular monthly audits of the operations and to generate monthly audit reports. These reports are to be forwarded to the PM/ Operator.
- To communicate frequently and openly with the NamPower personnel operating the substation, any appointed Contractor and the PM to ensure effective, proactive environmental management, with the overall objective of preventing or reducing negative environmental impacts and/or enhancing positive environmental impacts.
- To advise the PM on remedial actions for the protection of the environment in the event of any accidents or emergencies during operation, and to advise on appropriate clean-up activities.
- Review complaints received and make instructions as necessary.
- Identify and make recommendations for minor amendments to the EMP as and when appropriate.
- Ensure that the NamPower employees that operate the Substation, any appointed Contractor receive the appropriate environmental awareness training prior to commencing activities, especially with respect to the dangers and precautions needed when working with electrical power.

2.4.3 Reporting Structure

The SHEW will report to the PM.

2.5 Contractor

The Operator/ PM may appoint a Contractor, from time to time, to assist with the operation of the Substation. It will be binding on any appointed Contractor to undertake the activities in an environmentally responsible manner, as described in the EMP.

2.5.1 Role

The employment of locals are limited on this Substation expansion project, as the work requires highly skilled employees. NamPower employee will largely operate the Substation.

Specific to the EMP, the role of any appointed external Contractor will be to:

- Implement, manage and maintain the EMP for the duration of the Contract.
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the EMP.
- Assign appropriate authority, accountability and responsibility for these personnel to carry out their duties.
- Ensure that all subcontractors and other workers appointed by the Contractor are aware of their environmental responsibilities while on site or during the provision of their services off site.
- Ensure that all subcontractors and other workers appointed by the Contractor are complying with and implementing the EMP during the duration of their specific contracts.
- Provide appropriate resources including budgets, equipment, personnel and training for the effective control and management of the environmental risks associated with the work it is appointed for.

2.5.2 Responsibilities

The Contractor will have the following responsibilities:

- Be familiar with the contents of the EMP, and his role and responsibilities as defined therein.
- Comply with the Environmental Specifications contained in the EMP and subsequent revisions.
- Confirm legislative requirements for the construction works, and to ensure that appropriate permissions and permits have been obtained before commencing activities.
- Prepare Method Statements, programme of activities and site plans for submission to the PM (and SHEW).
- Method Statements must be submitted to the SHEW for approval at least 10 working days in advance before construction activities may commence.
- Review the site inspection reports and take cognisance of the information and implement recommendations contained therein.
- Notify the SHEW and PM, verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken.
- Notify the SHEW and PM, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.

- Ensure environmental awareness among employees, subcontractors and workforce so that they are fully aware of, and understand the ESs and the need for them.
- Maintain a register of environmental training for site staff and sub-contractor's staff for the duration of the contract.
- Undertake the required works within the designated working areas.
- Rehabilitating services, utilities, private/public property and other areas adversely affected by construction activities outside of demarcated areas in accordance with the PM's instructions.
- Communicate and liaise frequently and openly with the PM and the SHEW to ensure effective, proactive environmental management with the overall objective of preventing or reducing negative environmental impacts while enhancing positive environmental impacts.

2.5.3 Reporting Structure

The Contractor will report to and receive instructions from the PM.

2.6 Subcontractors

The Contractor may from time to time appoint sub-contractors.

2.6.1 Role

On behalf of the Contractor, the appointed Sub-contractors perform certain services and/or provide certain products. The Sub-contractors are contractually required to undertake their activities in an environmentally responsible manner, as described in the EMP.

2.6.2 Responsibilities

The Sub-contractors will have the following responsibilities:

- Be familiar with the contents of the EMP, and his role and responsibilities as defined therein.
- Sub-contractors shall comply with the Environmental Specifications in the EMP and associated instructions issued by the Contractor to ensure compliance.
- Notify the Contractor verbally and in writing, immediately in the event of any accidental infringements of the ESs and ensure appropriate remedial action is taken.
- Notify the Contractor, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.
- Ensure environmental awareness among employees so that they are fully aware of, and understand the ESs and the need for them.

2.6.3 Reporting Structure

Sub-contractors will report to and receive instructions from the Main Contractor.

2.7 Site Documentation and Record Keeping

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 SHEW assigned to the Aussenkehr Substation, shall submit a written Environmental Compliance Report at regular intervals, as specified in this EMP, to the PM. These Reports shall include a description of all activities on site, problems identified, non-conformances noted and remedial action implemented.

Records relating to compliance monitoring shall be kept on site and will be made available for inspection by relevant competent authority, the MET. Matters shall also be discussed during site meetings and project meetings.

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.

The following documents must be kept on site in an accessible place, and maintained:

- Site Locality Plan (**Annexure B**) and Facility Illustrations (**Annexure D**)
- Physical access plans
- Site instructions
- SHEW induction training records, as well as other training records for specific training
- Audit/ Site Inspection/ Monitoring Reports, including photographic record
- Complaints register
- Records of all remediation / rehabilitation activities
- Records of the quantities of general and hazardous waste generated on site and disposal certificates or details of volumes of waste recycled
- Water consumption
- Electricity consumption
- Copy of this EMP and that for the construction phase
- Copy of the Scoping Report and the Environmental Clearance Certificate (if and when granted)
- Monthly Environmental Compliance Report
- Emergency Response Plan

Responsibilities must be assigned by the PM/ 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.

2.7.1 Environmental Inspections and Audits

Environmental audits should be conducted according to the table below:

Table 1: Environmental audit details

Place	Inspector/ Auditor	Auditee	Inspection/ audit frequency
Work places at Substation	NamPower Manager on Site	NamPower employees	Daily inspection
Work places at Substation	Contractor's Manager on Site	Contractor's employees	Daily inspection
Substation site	SHEW	NamPower employees/ Contractor	Fortnightly audit

The monthly Environmental Compliance Report shall include:

- Complaints received from affected parties and details of the actions taken.
- Environmental incidents, spills of hazardous substances, etc.
- Environmental damage which requires rehabilitation.
- Damages of private property such as roads, paths, boundary fences, security installations, buildings, structures etc.
- Consultation with persons working on site.
- Document checks.

3 ENVIRONMENTAL SPECIFICATIONS DURING OPERATION

The section below details management actions/ mitigation measures to ensure that operational phase activities are managed sustainably at the Aussenkehr Substation.

The following project specific mitigation measures shall be applicable to the operations at the Aussenkehr Substation:

3.1 Principles, Compliance and Method Statements

3.1.1 Environmental Principles for the Operation Works

1. The environment is considered to be composed of both biophysical and social components.
2. Operations (including maintenance activities) can be a disruptive activity and all due consideration must be given to the environment, including the social environment during the execution of operational activities to minimise the impact on affected parties, especially neighbouring landowners, who need to continue with their farming activities, and other users of access roads.
3. Minimisation of areas disturbed by operational activities (i.e. the 'footprint' area) should minimise many of the operational related environmental impacts of the expansion project and reduce rehabilitation requirements and costs.
4. Every effort shall be made to minimise, reclaim and/or recycle waste materials.
5. Every effort shall be made to minimise energy and water use.

3.1.2 Compliance with Environmental Legislation and permit application

1. The PM (with assistance from the SHEW) shall maintain a database of all pertinent legislation, regulations and guidelines pertinent to the environmental management of the activities being undertaken.
2. The PM shall ensure that all pertinent legislation concerning the protection of the environment is adhered to and that prevention of pollution is strictly enforced.
3. The PM shall ensure that all relevant permits, certificates and permissions have been obtained prior to any activities commencing on site and are strictly enforced.

3.1.3 Method Statements

1. The NamPower Site Manager/ any appointed Contractor shall submit written Method Statements to the PM and SHEW for the activities identified by the PM and/or the SHEW, that may have an adverse impact on the environment or farming activities of NamPower's neighbours.
2. Method Statements indicate what will be done to comply with relevant Environmental Specification as set out in the EMP.
3. Method Statements shall be submitted at least 10 working days prior to the proposed commencement of work on an activity to allow the PM and SHEW time to study and approve the method statements.

4. Work shall not commence work on any activity until such time as the Method Statement has been approved in writing by the SHEW and/or PM.
5. The SHEW may require changes to a Method Statement if it does not comply with the specification or if, in the reasonable opinion of the SHEW, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the EMP or any legislation.
6. The operational activities shall be carried out in accordance with the approved Method Statement.
7. Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel.
8. Approval of the Method Statement shall not absolve any NamPower employee or any appointed Contractor from any of his obligations or responsibilities in terms of their individual employment contract and/ or Contract to undertake the work.
9. No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a Method Statement.

3.1.4 Content of Method Statements

The Method Statement shall state clearly:

- Timing of activities
- Materials to be used
- Storage of materials
- Transportation of equipment to and from site
- The containment (or action to be taken if containment is not possible) of leaks or spills or any liquid or material that may occur
- Equipment and staffing requirements
- Proposed procedure designed to implement the relevant environmental specifications
- The system to be implemented to ensure compliance with the above
- Other information deemed necessary by the PM/ SHEW

The following Method Statements shall be prepared by the Contractor for approval:

10. Safety, Health and Environment (SHE) Representative and Fire Officer

The name and letter of appointment of the SHE Representative and Fire Officer must be given to the SHEW and the terms of reference for the work to be undertaken must be detailed including time on site, roles and responsibility, etc.

11. Site Plan

The graphical representation with detailed notes of the location, layout and method of work must be provided and must including the following:

- Office
- Laydown areas
- Vehicle and plant storage areas
- Fuel storage and dispensing areas, if required and approved by SHEW
- Cement/concrete batching areas, if required and approved by SHEW (including the methods employed for the mixing of concrete and particularly the containment of runoff water from such areas and the method of transportation of concrete)
- Other infrastructure required for the running of the particular operational activity

Any workshop for plant and machinery or Contractor's Camp will be off-site.

It is anticipated that the Substation will be operated 24 hours a day although maintenance work will be undertaken during week days, Monday to Friday from 07h00 to 18h00.

12. Access Routes and Security

Access to the site is proposed via the current gravel access road to the Aussenkehr Substation, from the main tar road that runs between the towns of Aussenkehr and Noordoewer. This access road is also used by the NGC that farms grapes on the land that surrounds the Substation, namely Portion 7 of Farm Aussenkjer No. 147, which is owned by the NYS.

It is anticipated that access to the site during the construction phase would be required mainly during normal working hours (07h00 to 18h00) on weekdays only. Various machinery may from time to time be needed to be brought onto site. NamPower staff would need to access the site to undertake operational activities on a daily basis.

This access road will need to be upgraded and maintained by NamPower, as per its agreement with the NYS and the NGC. There shall be no interaction with farm labourers carrying out their work on the neighbouring farmlands no disturbance or interruption to the farming activities.

Details of the negotiated security arrangements with the NYS/ NGC must be included in the Access and Security Plan for the Aussenkehr Substation.

13. Pollution Control

Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites must be identified and documented for inspection by the SHEW. It shall include methods of minimising, controlling, collecting and disposing of contaminated water, and details of any hazardous substances/materials to be used during operations, together with the transport, storage, handling and disposal procedures for the substances.

14. Safety Considerations

The NamPower Manager of the Substation shall provide details identifying what safety precautions will be implemented to ensure the safety of all staff, and the general public at large, at the Substation during its operational life. This will include protective clothing requirements for all types of construction activities on site, including protection against dust, noise, falling objects, work associated with electricity and work at heights, if required.

15. Emergency Procedures

The NamPower Manager of the Substation shall provide details regarding all relevant emergency procedures that will be implemented for fire control and accidental leaks and spillages of hazardous substances (including fuel and oil). He shall further include details of risk reduction measures to be implemented including flood control, firefighting equipment, fire prevention procedures and spill kits.

16. Waste Management Control

The NamPower Manager of the Substation shall provide details regarding how solid and liquid waste generated on the construction site and site office will be collected, stored, transported and disposed of. Details of any service provider(s) appointed to manage this task must also be provided.

17. Stormwater and Erosion Control

The NamPower Manager of the Substation shall provide details of how stormwater emanating within or adjacent to the site may impact on operational activities. Details on how stormwater runoff and potential erosion within the operational footprint and the greater area must be provided.

3.2 Environmental Awareness

Before any person enters and starts work on the Substation site they shall have received adequate environmental awareness training. It is important that all NamPower employees (or those of any appointed Contractor) receive an induction presentation on the importance and implications of the EMP. The NamPower employee (or Contractor)

shall liaise with the PM prior to his/ her commencement date to fix a date and venue for the induction and to agree on the content.

1. SHEW induction and awareness training is an important aspect of the implementation of the EMP.
2. An initial SHEW training session for all NamPower staff operating the Substation, as well as any Contractor's (and sub-contractor's) staff is required prior entry and commencement of work by that employee at the Substation.
3. The SHEW will provide any new employees of NamPower and any appointed Contractor with the appropriate SHEW awareness training course.
4. The training session shall be delivered in the home languages of the employees attending.
5. The emphasis should be on any (potential) environmental risks and impacts relating to the operational activities to be undertaken at the Aussenkehr Substation and the related environmental precautions, which need to be taken to avoid or mitigate these impacts.
6. Training shall cover, as a minimum:
 - The legal status and importance of the Environmental Clearance Certificate, and where to locate copies thereof
 - Specific details of the EMP and the employees' role in compliance with the EMP
 - Training targeted at specific personnel for example operators of dangerous or heavy machinery
 - The environmental impacts, actual or potential, of their work activities and the neighbouring farmers/ landowners
 - The environmental benefits of improved personal performance
 - Their roles and responsibilities in achieving conformance with the environmental policy and procedures (this must be specific to the employees attending the training)
 - Emergency preparedness and response requirements
 - The potential consequences of departure from specified operating procedures
 - The mitigation measures required to be implemented when carrying out their work activities
 - Environmental legal requirements and obligations
 - Details regarding plant and animal species, and farm lands, and the procedures to be followed to protect these areas
 - The consequences of poaching of animals (including birds) or removal of indigenous vegetation
 - The importance of not littering
 - The importance of using the toilet facilities supplied
 - The need to use water and electricity sparingly
 - Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible

- Details regarding archaeological and/or historical sites which may be unearthed during operations and the procedures to be followed should such be encountered
7. Records of training session including attendance, nature of training and date of training shall be kept to ensure all staff members have received the necessary training.

3.3 Site Demarcation

3.3.1 Site Identification and demarcation

1. A demarcated area at the site must be provided for the storage of machinery and trucks as necessary.
2. A Site Layout Plan illustrating the location and layout of the proposed working areas. Where necessary, the 'no-go' areas shall be identified and indicated on the site Plan. This plan must be approved by the PM in consultation with the SHEW.
3. The Contractor shall produce a photographic record of the area. This will serve as the benchmark against which rehabilitation will be measured and shall be kept in the site environmental file.
4. The site shall be reinstated to its original condition once the project has been completed.
5. The working areas shall be kept to a minimum to reduce the total physical 'footprint' of the works thereby reducing environmental damage.
6. No damage shall be made to the security fencing around the Substation.
7. No person, plant equipment or material will enter the no-go areas at any time.

3.4 Traffic Management

1. The movement of vehicles to and from the Substation must be well coordinated by the PM, together with the NamPower employees/ Contractor.
2. Large trucks and other heavy machinery may not be left unattended.
3. The existing and agreed upon access roads to the Substation must be used.

3.5 Biodiversity Management

3.5.1 Vegetation Clearance

1. No grape vines/ trees/ flora shall be removed, damaged or disturbed nor shall any vegetation be planted on the Substation Site or its surrounding area, without the permission of the PM and SHEW.
 2. The site is currently cleared of all vegetation but it may become overgrown with weedy species over time and it may become necessary over the course of operations to clear the site of vegetation.
1. The NamPower employee or appointed Contractor must ensure that seeds from alien vegetation collected during site clearance are not dispersed so as to counter

the spread of this vegetation type. Removed invasive vegetation shall not be stockpiled on site for more than 3 days.

2. Bare soil around the expanded Aussenkehr Substation must be kept planted with appropriate plant species to prevent the establishment of invasive species and erosion and excess dust.

3.5.2 Wild Animal Management

1. Trapping, poisoning and/or shooting of animals (including birds) is strictly forbidden.
2. Any animals rescued or recovered will be relocated to suitable habitat away from the Substation.
3. No domestic pets or livestock are permitted on site.

3.6 Soil Impacts

3.6.1 Erosion

1. The NamPower employees and any appointed Contractor must ensure that measures to limit erosion and improper drainage caused by vehicles and operational activities are in place.
2. The clearing of vegetation should be avoided as far as feasibly possible.
3. All existing disturbed areas will be revegetated and vegetation cover maintained to control erosion.
4. Erosion control measures should be inspected regularly and necessary repairs need to be carried out if any damage has occurred.

3.7 Plant, Material and Site Management

3.7.1 Equipment Maintenance and Storage

1. All vehicles and equipment shall be kept in good working order and shall be parked in the designated parking area.
2. All vehicles and plant will be inspected daily for leaks and spills. Maintenance checks shall be logged and signed off in a site maintenance file after each inspection.
3. Leaking equipment shall be repaired immediately or removed from the Substation site.
4. Stationary plant must be supplied with drip trays to prevent soil contamination after hours.

3.7.2 General Materials Handling, Use and Storage

1. Materials shall be appropriately secured to ensure safe passage between destinations. Loads shall have appropriate cover to prevent it from spilling over the side of the vehicle during transit.
2. The NamPower employee/ appointed Contractor shall be responsible for any clean-up resulting from the failure by his staff or supplier to properly secure materials to be transported.

3.7.3 Stockpiling of Material

1. Any stockpiling shall be in areas approved by the SHEW within the defined working area.
2. The Contractor shall ensure that stockpiled material is not lost due to exposure to the elements. If the stockpiled material is in danger of being washed or blown away, the Contractor shall cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil shall not be covered with plastic.

3.7.4 Workshop

1. No on-site workshop envisaged.
2. The Contractor shall ensure that there is no contamination of the soil or surface water from leaking machinery or plant, and those needing repair need to be removed immediately from site and repaired. Each contractor must have a spill control kit and staff appropriately trained to utilise it.

3.7.5 Work Stoppage and Temporary Site Closure

1. The PM, in consultation with the SHEW, shall have the right to close the Substation or prevent persons from entering it in the event of significant infringements of the ESs until the situation is rectified in compliance with the specifications.

3.8 Waste Management

3.8.1 Solid Waste Management

1. No burning, burying or dumping of any waste materials, vegetation, litter or refuse shall be permitted.
2. Solid waste shall be removed from site on a weekly or fortnightly basis.
3. Domestic waste must be collected and disposed of at the nearest registered solid waste disposal facility.
4. Solid waste shall be recycled where possible and the remainder disposed of at an approved municipal land fill site or waste disposal service provider.
5. Labelled recycling containers shall be provided.
6. Disposal certificates for each waste removal event shall be issued and kept in the site environmental file for auditing purposes.

7. No burning of cleared vegetation shall be allowed on site. Chipping or composting of vegetation shall be allowed where viable.

3.8.2 Wastewater Management

1. Contaminated water (or sediment laden water) needs to be identified and isolated.
2. No grey water runoff or uncontrolled discharges from the site/working areas shall be permitted.
3. Water containing environmental pollutants shall be collected and removed from site.
4. Potential pollutants of any kind and in any form shall be kept, stored and used in such a manner that any escape can be contained.
5. The PM and SHEW should be immediately notified of any pollution incidents on site.

3.8.3 Sanitation

6. Adequate toilet facilities are to be provided at the Substation site. These are to be kept in a clean sanitary condition to the satisfaction of the PM. Toilets are to be serviced regularly and toilet paper shall be provided.
7. nDischarge of waste from toilets into the environment and burial of toilet waste is strictly prohibited.

3.8.4 Fuels (Petrol and Diesel) and Oil

1. Fuel shall not be stored on site, but shall be transported to the site in small quantities as and when required, and vehicles to be fuelled off site.
2. Where fuel is to be stored on site in small quantities, all necessary approvals regarding storage and dispensing shall be obtained from the appropriate authorities.
3. The location of the fuel storage area shall be approved by the PM and SHEW.
4. Areas for the storage of fuel and other flammable materials shall comply with standard fire safety regulations.
5. A separate container must be made available for the biological treatment of soil polluted by oil.
6. The contractor shall provide details of the proposed fuel storage facility to the SHEW.
7. At least one person trained in first aid and the handling of fuels must be available to the construction team at all times.
8. Smoking may only be allowed in designated areas, which must contain a fire extinguisher.
9. There shall be adequate fire-fighting equipment at or close to the fuel storage area.

10. Fuel shall be kept under lock and key at all times.
11. The Contractor shall ensure that there is always an adequate supply of absorbent material readily available to absorb/break down any hydrocarbon spillage. This material must be approved by the PM.
12. In the case of a spill, contaminated material must be removed from the site immediately and disposed of at an appropriate hazardous waste facility.

3.8.5 Other Hazardous Substances

1. All potentially hazardous raw and waste materials are to be handled by trained staff and stored on site in accordance with manufacturer's instructions and legal requirements.
2. All hazardous waste must be disposed of in accordance with national, regional and local legislation.
3. Appropriate training for the handling and use of such materials is to be provided in the SHEW induction training. This includes providing for any spills and pollution threats that may occur.
4. Products shall be clearly labelled and symbolic safety/ hazard warning signs shall be provided.
5. If potentially hazardous substances are to be stored on site, a Method Statement detailing the substances/materials to be used together with the procedures for the storage, handling and disposal of the materials in a manner which will reduce the risk of pollution that may occur from day to day storage, handling, use and/or from accidental release of any hazardous substances used, must be provided.
6. Hazardous chemical substances used during construction shall be stored in secondary containers.
7. The relevant Material Safety Data Sheets (MSDs) shall be available on site. Procedures detailed in the MSDs shall be followed in the event of an emergency situation.
8. Where hazardous substances is removed from site for disposal, proof of disposal for auditing purposes shall be kept in the form of disposal certificates.

3.8.6 Emergency Procedures

1. NamPower Substation Manager and any appointed Contractor shall ensure that his employees on site are aware of the procedure for dealing with accidental spills and leaks.
2. All leaks of hydrocarbons or chemicals shall be repaired immediately.
3. Stormwater runoff must not be contaminated by leaking oil or chemicals.
4. Spills shall be contained using sand berms, sandbags, sawdust or absorbent materials, and the area shall be cordoned off and secured.
5. Contaminated material shall not be disposed of into any stormwater or sewer systems.

6. The NamPower Substation Manager and/ or any appointed Contractor shall notify the SHEW, PM and relevant authorities of any spills that occur.
7. The treatment and remediation of emergencies shall require Method Statements.
8. Relevant emergency telephone contact numbers shall be clearly displayed at the Substation and employees trained on the required procedures to deal with emergencies.
9. The treatment and remediation of areas affected by emergencies shall be undertaken to the satisfaction of the PM and SHEW.
10. Should any environmental damage be caused by an external Contractor he shall be liable for the costs related to environmental remediation.

3.9 Stormwater Management and Erosion

1. Although the Substation site is mostly flat, all reasonable measures to control stormwater and the erosive effects thereof shall be taken.
2. The erosion prevention measures must be implemented to the satisfaction of the PM and SHEW.
3. Where erosion does occur, the area shall reinstate to the satisfaction of the PM and SHEW.
4. Human and vehicular traffic and movement over stabilised areas and areas susceptible to erosion shall be restricted and controlled. Vehicles shall keep strictly to the access road to the Substation and the designated parking area.

3.10 Air Quality

3.10.1 Air Emissions

1. The Contractor will be required to ensure that all vehicles, equipment and plant used are maintained in good working order to help reduce air emissions.
2. The burning of substances that may emit foul smelling smoke or vapour, e.g. oil rags, tar paper etc., is not permitted.

3.10.2 Dust Control

1. The NamPower Substation Manager shall be responsible for the control of dust arising from his operations and activities.
2. Control measures shall include regular spraying of working/exposed areas with water at an application rate that will not result in soil erosion or runoff. The frequency of spraying will be agreed with the PM.
3. The excavation, handling and transport of erodable materials shall be avoided under high wind conditions.
4. Dust sources must be sprayed with water regularly at an application rate that will not result in soil erosion or runoff.

5. Operate vehicles within speeds limits, where no speed limit has been specified the limit shall be 40 km/h or less.
6. Vehicles heavily contaminated with dust to be washed before leaving the site to prevent the spread of dust.
7. Vehicles transporting materials which may generate dust shall be covered with a tarpaulin.

3.11 Noise Control

1. Noisy activities shall be restricted to 07h00 to 18h00 Monday to Friday and excluding public holidays.
2. Noise shall be kept within acceptable limits, as specified in relevant guidelines and regulations.
3. All vehicles and machinery shall be fitted with appropriate silencing technology that shall be properly maintained.
4. Reverse hooters of vehicles must be set at such a level that the beeping sound does not create a nuisance.

3.12 Community and labour relations

3.12.1 Community Relations

1. The PM shall inform the neighbouring landowners of the contact details for complaints in accordance with details provided by the SHEW.
2. The NamPower Substation Manager must keep a Complaints Register on Site. The Register shall contain contact details of complainants, the nature of the complaint, details on the complaint itself, as well as the date and time that the complaint was made and resolved.
3. The PM and/or SHEW shall be responsible for responding to queries or complaints.
4. Ensure that adequate lines of communication are established between the neighbouring landowners and the //Karas Regional Council, the Engineers, the Contractor, neighbouring farmers and the public at large to deal with any public grievances.
5. Train and raise awareness of staff to respect public property, needs and right of way and to minimise disturbance and treat neighbours and the public respectfully.
6. Deal with transgressions by staff severely.
7. Engage proactively with local authorities/ police to ensure that job seekers do not try and enter the Substation site and neighbouring farms.

3.12.2 Impact of Workers

1. There are limited employment of locals during the operation of the expanded Substation, as the work requires highly skilled employees.
2. HIV/AIDS awareness and life skills training must be provided to all employees.

3.12.3 Liaison with Neighbouring Landowners

1. An up to date list of neighbouring land owners/ farmers, their contact details needs to be kept on site and at the office of the PM.
2. All neighbouring land owners must be informed 10 working days in advance of the desired dates on which maintenance activities are to commence at the Substation.
3. Details of the maintenance activities to be undertaken, staff undertaking these activities and any potential damage to property are to be discussed with the landowners before work commences.

3.12.4 Prevention of Damage to Private Property

1. NamPower employees and any appointed Contractor must be extra vigilant, during the maintenance activities, to prevent damage from occurring to any private property including irrigation systems, pumps, buildings, fences, cultivated fields and roads.
2. If damage to private property occurs they must notify the PM immediately and take photographic evidence of the event.
3. Any complaints received from the public or landowners shall be investigated immediately by the PM.

3.13 Security and Crime

1. Contact with farm workers should be limited.
2. Any poaching or theft of plants/ farm produce must be immediately reported to the PM and SHEW who shall notify the relevant authorities.
3. Unsocial activities such as the consumption or illegal selling of alcohol or drugs on site are prohibited.
4. Any staff of NamPower or any appointed Contractor found to be engaged in prohibited activities shall have disciplinary and / or criminal action taken against them.
5. No person shall enter the site unless authorised to do so by the PM or SHEW.
6. Trespassing on properties adjoining the site is strictly forbidden.
7. The Substation site is secured in order to reduce the opportunity for criminal activity at the locality of the construction site.

3.14 Health and Safety

3.14.1 General Safety at the Construction Site

1. Comply with the Labour Act and all regulations related to occupational health and safety.
2. The Substation site shall be off limits to the general public at all times. Adequate signage and communication in this regard shall be implemented.

3. Safety precautions must be taken to ensure that labourers, management, residents of communities neighbouring the site come to no harm.
4. All potential danger areas must be clearly demarcated with hazard tape and/or be fenced as appropriate.
5. Emergency numbers for the local police, fire department, and other emergency services must be placed in a prominent clearly visible area at the Substation site.
6. Fire-fighting equipment (e.g. fire extinguishers, fire blanket etc.) must be placed in prominent positions at the Substation site, where it is easily accessible.
7. A speed limit of 40 km/h must be adhered to by all vehicles and plant.

3.14.2 Personal Protective Equipment

1. Personal Protective Equipment (PPE) must be made available to persons working at the site and the wearing and use of PPE must be compulsory.
2. No person is to enter the site without the necessary PPE.

3.14.3 Staff Safety Considerations

1. All safety measures, work procedures and first aid must be implemented on site.
2. A health and safety plan must be developed to govern staff safety while on site.
3. The PM must ensure that all equipment is maintained in safe operating condition.
4. A record of health and safety incidents must be kept on site.
5. Any health and safety incidents on site must be reported to the PM immediately.
6. First aid facilities must be available on site at all times.
7. Material stockpiles must be stable and well secured to avoid collapse and possible injury to site workers.

3.14.4 Eating Facilities

1. The Contractor shall designate an eating area, subject to the approval of the PM.
2. There shall be no open fires on site.
3. The eating areas must be kept tidy and clean at all times to prevent the luring of vermin, domesticated or wild animals.
4. Sufficient bins with vermin proof lids for waste disposal shall be present within a 5 m radius of the eating area at all times.

3.14.5 Fire Prevention and Control

5. All reasonable and precautionary steps shall be taken to ensure that fires are not started as a consequence of his activities on site.
6. Basic fire-fighting equipment shall available on site. Fire-fighting equipment must be in working order and serviced to date.

7. The PM shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed.
8. Flammable materials shall be stored under conditions that will limit the potential for ignition and the spread of fires.
9. Smoking shall only be permitted in designated areas with fire extinguishers.
10. Fire prevention shall be included in the SHEW induction training to create an awareness of the risks of fire.

3.15 Monitoring

Environmental monitoring must be conducted at least once every month during 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

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

3.15.1 Environmental Control Officer Audits

1. The PM shall appoint a qualified and experienced SHEW to ensure implementation of and adherence to the EMP.
2. The SHEW shall conduct audits to ensure that the system for implementation of the EMP is operating effectively. The audit programme shall consist of the following at a minimum:
 - First audit no later than 1 week after the expanded section of the Substation comes into operation
 - Thereafter audits at fortnightly intervals at a minimum.

The audit shall check that a procedure is in place to ensure that:

- The EMP and the Method Statements being used are the up to date versions.
- Variations to the EMP, Method Statements and non-compliances and corrective actions are documented.
- Emergency procedures are in place and effectively communicated to personnel.

3.15.2 Compliance with the EMP

NamPower and any appointed Contractor and/or his agents are deemed not to have complied with the EMP and remedial action if:

1. Within the boundaries of the site there is evidence of contravention of the EMP clauses.
1. Environmental damage ensues due to negligence.
2. NamPower employees and/ or any appointed Contractor fails to comply with corrective or other instructions issued by the PM, within a time period specified by the PM.

3.15.3 Tolerances

1. Environmental management is concerned not only with the final results of the operations, but also with the control of how those operations are carried out.
2. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operation.
3. It is thus required that the NamPower employees and any appointed Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the PM to commence appropriate action.

3.15.4 Specific monitoring

It is recommended that:

- Access roads be inspected on a fortnightly basis for signs of damage, erosion and dust creation.
- Frequent monitoring should consider possible sources of dust and erosion, and whether these are controlled and managed appropriately. Special attention should be given to the presence of any new erosion features.