The reader is requested to note the following:

During the review of the revised Draft Environmental Impact Report (version 1) the National Department of Environmental Affairs had requested the EAP to create site specific Environmental Management Plans (EMP) for each site considered for the proposed Nuclear Power Station. Thus this EMP has been created for the proposed Thyspunt Site.

Readers are reminded that the information contained in this EMP is drawn from the specialist studies conducted, as well as the previous version of the EMP. This information has been synthesised and adapted into site specific conditions.

ESKOM PROPOSED NUCLEAR-1 POWER STATION AND ASSOCIATED INFRASTRUCTURE AT THYSPUNT

DRAFT ENVIRONMENTAL MANAGEMENT PLAN – REVISION 2

BRIEF PROJECT SYNOPSIS

Eskom proposes to construct a 4 000 MW Nuclear Power Station and associated infrastructure, known as Nuclear-1 at Thyspunt which falls within the Eastern Cape Province. This new nuclear power station would diversify South Africa's power sources and allow power generation closer to the demand centres that are far away from the coal mines.

Eskom therefore commissioned a study to find the most suitable sites for potential nuclear power stations in South Africa. An initial five coastal sites were identified. Eskom then commissioned an Environmental Impact Assessment (EIA) process, in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as part of their application for environmental authorisation for Nuclear-1. Two of the initial five sites were carried forward to the EIA phase as site alternatives in the EIA Process. This EMP is applicable to the Thyspunt site.

This document forms part of a set of documents that were produced as a deliverable of the EIA for Nuclear-1. Note that these volumes may be in draft or various stages of revision. Refer to http://www.eskom.co.za for the latest version of the reports.

ESKOM PROPOSED NUCLEAR-1 POWER STATION
AND ASSOCIATED INFRASTRUCTURE AT THYSPUNT

DRAFT ENVIRONMENTAL MANAGEMENT PLAN – REVISION 2

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ABBREVIATIONS

ASGISA	Accelerated and Shared Growth Initiative for South Africa
CEMP	Construction Environmental Management Plan
CESA	Consulting Engineers South Africa
DEA	Department of Environmental Affairs (formerly known as DEAT)
DEAT	Department of Environmental Affairs and Tourism (now DEA)
DMR	Department of Mineral Resources
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMC	Environmental Monitoring Committee
EMP	Environmental Management Programme
EMS	Environmental Management System
EN	Endangered red data species
EOP	Environmental Operating Procedure
CECO	Contractor Environmental Control Officer (also known/referred to as the Environmental Officer (EO))
CSES	Contract Specific Environmental Specification
Eskom	Eskom Holdings Limited
FIDIC	International Federation of Consulting Engineers
FIDIC CCC	FIDIC Conditions of Contract for Construction
GIBB	GIBB (Pty) Ltd
GHG	Greenhouse gas
HV	High Voltage
I&APs	Interested and Affected Parties
IDP	Integrated Development Plant
ISO	International Organisation for Standardisation
ITP	Integrated Transport Plan
IUCN SSC	International Union for Conservation of Nature Species Survival Commission
km	kilometre
KNPS	Koeberg Nuclear Power Station

kV	Kilo Volt
MWe	Mega Watt (electrical)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NERSA	National Energy Regulator of South Africa
NSIP	Nuclear Site Investigation Programme
NNR	National Nuclear Regulator
NT	Near threatened red data species
OEMP	Operational Environmental Management Plan
OHS	Occupational Health and Safety
PD	Project Director
PLA	Project Labour Agreement
PM	Project Manager
PPE	Personal Protective Equipment
PSM	Power Station Manager
PWR	Pressurised Water Reactor (technology)
WMP	Radioactive Waste Management Programme
SDF	Spatial Development Framework
SES	Standard Environmental Specification
SHE	Safety, Health and Environment
SM	Site Manager
SSC	Structures, Systems and Components
UN	United Nations
VU	Vulnerable red data species
WHO	World Health Organisation
WSDP	Water Services Development Plan

DEFINITIONS

DIRTY WATER	Water that is directly or indirectly contaminated as a result of project activities to such an extent that it does not meet the applicable discharge standards; and where contaminants may include suspended or dissolved construction material, sewage, litter, eroded soil, etc;
CLEAN WATER	Water that has either not been contaminated directly / indirectly as a result of project activities; or that has been treated to a quality that meets the applicable discharge standards.
SOIL	Excavated natural soil and crushed rock which is uncontaminated with any 'man-made' material such as concrete, cement, packaging, oils, fuel, etc.
PRACTICABLY	Something that is capable of being implemented successfully, effectively and efficiently. The cost of implementation (vs) the risk on non-implementation is balanced.
CETACEANS	The infraorder Cetacea includes the marine mammals commonly known as whales, dolphins, and porpoises.

1 INTRODUCTION

1.1 Background

Eskom generates approximately 95% of the electricity used in South Africa and approximately 45% of the electricity used in Africa. Eskom generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and redistributors. In an effort to meet the rising demand for electricity in South Africa, Eskom has embarked on a new build programme, currently already in the implementation phase. As part of this programme, Eskom proposes to also construct a 4 000 megawatt electrical (MWe) nuclear power station and associated infrastructure, known as Nuclear-1, as the first of an anticipated fleet of nuclear power station projects. This is in line with government's commitment, articulated in the Integrated Resource Plan (IRP), to provide 9,600 MW of new nuclear generation, in addition to a number of other sources of new electricity generation capacity.

The new nuclear power stations would diversify South Africa's power sources and allow power generation closer to the demand centres that are located far away from coal mines.

Over a period of about 10 years, Eskom undertook a comprehensive study, the Nuclear Sites Investigation Programme, to find the most suitable sites for potential nuclear power stations in South Africa. The results of this study indicated likely feasibility of five coastal sites. These sites are Brazil (Northern Cape), Schulpfontein (Northern Cape), Duynefontein (Western Cape), Bantamsklip (Western Cape, near Pearly Beach) and Thyspunt (Eastern Cape, near Cape St. Francis).

As a next step Eskom commissioned an Environmental Impact Assessment (EIA) process, in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as part of its application for environmental authorisation for Nuclear-1. Eskom appointed GIBB (Pty) Ltd (hereafter referred to as GIBB) as independent Environmental Assessment Practitioners (EAP) to undertake the EIA process. After the scoping study found the Northern Cape sites to be the least preferred alternatives, the remaining three sites (Duynefontein, Bantamsklip and Thyspunt) were assessed as alternatives in EIA phase of the EIA process. . The EIA process commenced in May 2007, whereafter it proceeded through various draft and final scoping phases and draft Environmental Impact Report phases and associated public participation processes (refer to **Section 2.3.1** for a brief overview of the EIA process).

In accordance with the requirements of the NEMA EIA Regulations (Government Notice Numbers R 385, 386 and 387 of 2006), GIBB developed a draft Environmental Management Programme (EMP) as part of the EIA process for Nuclear-1. The EMPs, customised for each site are attached as appendices to the Environmental Impact Report (EIR), which documents the findings of the EIA process. Once the Department of Environmental Affairs (DEA) makes its decision on the authorisation of a particular site, that particular EMP will become legally binding on Eskom and its agents.

The EIR contains a number of mitigation measures that must be implemented in order to ensure that the environmental impacts of the proposed power station are adequately mitigated. These mitigation measures form the basis of the EMP.

A Draft EMP was appended to the Draft EIR issued for comment in March 2010 and in the Revised Draft EIR in 2011. The current EMP represents the Revised Draft EMP Version 2 that will be provided for a second round of public comments on the Revised Draft EIR Version 2.

NOTES:

- Please note that the format of the EMP has been substantially revised since 2011 in order to make the EMP more enforceable on site. The change in format is based largely on Eskom's experience with other large construction projects for power stations.
- The EIA Regulations requires an EMP to be developed as part of the EIA Process in the form of a 'draft EMP'. Should the project receive Environmental Authorisation, the final 'draft EMP' is effectively also authorised and as such becomes legally binding.
- The reason for authorising a 'draft EMP', opposed to a 'final EMP', is to allow for the EMP to be amended and finalised after the Environmental Authorisation. This mostly allows for the incorporation of any conditions of the Environmental Authorisation that may be necessary. At the same time certain information contained in the EMP might require to be updated by the time the project construction starts. Environmental Authorities generally requires that a 'final EMP' be submitted for their approval prior to any construction activities commencing.
- It is accepted that an EMP must be a dynamic document that is subject to change, as the circumstances surrounding the project change. Following the authorisation, several updates of the EMP may be necessary. Such updates, if they are substantive, would have to be approved by the environmental authority.
- The EMP is thus at this stage presented as a revised draft for public comment and may thus require amendment as the project unfolds. An EMP is, by definition, a dynamic document that must be updated as circumstances change.
- Two site-specific EMPs have been prepared rather than a single EMP for both sites.
- While the EIA for the Nuclear-1 project covers the transmission lines within the power station site and between the power station and the High Voltage (HV) yard as; the EMP does not apply to the transmission lines beyond the lead from the HV yard outside the boundary of the power station site, as the transmission lines are covered in a separate EIA. The HV yard itself is however covered in this EMP.

1.2 Purpose and application of this document

The purpose of the EMP is to ensure that the environment is properly considered during the life-cycle (pre-construction, design and planning, construction, operation, and decommissioning phases) of Nuclear-1, that negative impacts are minimised or prevented and positive impacts enhanced.

Whilst the definition of an EMP in NEMA and the accompanying EIA legislation is the legally binding definition applicable in this instance, the definition of an EMP by European Environment Agency (2006) is useful as it provides a succinct summary of the general purpose of an EMP:

"*An action plan or system which addresses the how, when, who, where and what of integrating environmental mitigation and monitoring measures throughout an existing or proposed operation or activity*"[1]

As mentioned above, this draft EMP follows on from the EIR, in as much as all the measures for mitigation of impacts that were identified during the EIA were incorporated. This therefore ensures that recommendations flowing from the EIA are implemented, and that the project does not deviate from the environmental profile that formed the basis of the assessment and its associated stakeholder and public consultation processes. In a similar vein the draft EMP with all its components will be updated to serve as the final EMP, assuming an Environmental Authorisation is issued, to ensure that the conditions of the authorisation are incorporated. The final EMP will therefore provide a sound basis for environmental management for the life cycle of the project, as it ensures that requirements of the environmental authorisation are met. It also serves to provide a clear and auditable indication as to how those requirements should be implemented during project execution.

Since the EMP represents an extension of the Nuclear-1 EIA process, it must be read and understood in conjunction with and in the context of the EIR and the Environmental Authorisation. However, the EMP is also considered a 'living' document, as it may require further amendments as the project unfolds and/or as environmental requirements (e.g. legislation) change. In addition to being fully accountable for the implementation of the EMP, Eskom must take full responsibility to ensure that the EMP remains current. Any significant amendments to the EMP will require DEA approval before being implemented, with the understanding that DEA has the right to determine what constitutes significant amendments and what does not. DEA must therefore be consulted prior to making any amendments that could potentially be regarded as significant.

The EMP has been developed as a set of environmental specifications (and guidelines) that apply to the Nuclear-1 Project and all associated activities (includes site investigation and surveying activities). As such the EMP must be:

- Considered during pre-construction planning and design;
- Integrated and form part of tender and contractual document for Eskom's appointment of contractors prior to commencement of any construction activities;
- Integrated and form part of all commissioning procedures, bearing in mind that various commissioning activities could form part of the construction phase, a dedicated commissioning phase and/or the operational phase of the project;
- Provide guidance for the Environmental Management System (EMS) during the construction and operational phases of the power station; and
- Serve as guidance for decommissioning and final site remediation procedures.

While it is assumed that most activities will take place on the proposed nuclear power station site. The following definitions of "site" will apply at different phases of development:

- During the construction phase "site" refers to the construction "footprint" within which construction activities will take place, as well as entire Eskom-owned area. The construction footprint includes all land-based and sea-based areas that will be affected by construction, including the area that is fenced as a construction site (the actual footprint of the power station) and its associated infrastructure, such as the HV yard, access roads, cooling water extraction and discharge

[1] http://glossary.eea.eu.int/EEAGlossary/E/environmental_management_plan

structures, pipelines for release of brine from the desalination plant, pipelines for marine spoil disposal, lay down areas, etc[2]. However, where relevant, the EMP will also apply to off-site activities such as transport outside the Eskom owner-controlled boundary.

- During the commissioning and operational phases "site" refers to the footprint of the power station, including the sites for service infrastructure such as the access roads, cooling water extraction and discharge structures, the discharge pipeline for brine from the desalination plant, etc., but excludes the power lines that transmit power from the HV yard, as these are covered by a separate EIA and associated EMP[3]; and
- During the decommissioning and site rehabilitation plan "site" would refer to all areas affected by decommissioning and rehabilitation activities associated with the decommissioning of the Nuclear-1 Project.

NOTES:

- The EMP does not cover Occupational Health and Safety (OHS) and associated Regulations requirements, although some OHS and environmental requirements might overlap and link. Eskom will make separate provision for OHS issues and may decide to have an integrated environmental, health and safety management plan, or keep these aspects separate.
- The EMP does not cover any activity associated with sources of radioactivity. For such activities, Eskom will develop and implement a separate Safe Operating Procedure (SOP) in accordance with the requirements of the National Nuclear Regulator (NNR).
- The EMP does not address seismic activity. For such issues, Eskom will develop and implement a separate Site Seismic Hazard Analysis Report (SSHAR), which reports into the Site Safety Report (SSR) in accordance with the requirements of the National Nuclear Regulator (NNR).

1.3 Detail of the environmental assessment practitioners

GIBB undertook the EIA and compiled the EMP on behalf of Eskom.

GIBB is an integrated group of professional scientists, project managers and engineers providing cost-effective solutions and specialist services within a wide range of disciplines. The multi-disciplinary consulting, management and design approach allows for the development of projects in a holistic manner, as this is believed to be the best environment to fully meet the needs of our clients.

Specific to environmental management, GIBB has a team of specialists comprising environmental scientists, environmental engineers, geologists and geohydrologists that form a national environmental team. These specialists have broad experience of working on a range of environmental projects within the public and private sector. The Environmental Services Division has a formidable track record and exemplary reputation in southern Africa. The Division comprises a number of highly qualified and experienced technical staff with over 450 years of combined consulting experience.

[2] Referring to the activities covered in the EIA process.
[3] However, it is recommended that the mitigation measures specified in the EMPs for the power station and transmission lines should be integrated, as far as possible, specifically for the area around the HV Yard.

The Environmental Services Division is based throughout South Africa. The team has been purposely set up to mobilise and co-ordinate any given range of environmental services wherever these may be geographically required.

The details of the Senior Environmental Assessment Practitioner for the proposed development are provided in **Table 1.1**.

Table 1.1: Details of the Environmental Assessment Practitioner

Environmental Consultant	GIBB (Pty) Ltd
Contact Persons	Ms Elisabeth Nortje
Postal address	P.O. Box 2700, Rivonia
Postal code	2128
Professional affiliation(s): Ms E Nortje	Member of the International Association for Impact Assessment : South African Branch, Membership No: 3407
Expertise to carry out the EIA Process: **Ms E Nortje** **BSc (Geology and Advanced Earth Science) BSc Hons (Geology)**	Elisabeth Nortje is an Environmental Science and an Environmental Manager with 16 years' experience. During this time she has been responsible for the project (Technical, Financial and Quality) and environmental management of a number of projects including those associated with large infrastructure, industrial, mixed use residential as well as urban renewal developments. As such she has worked on EIA's related to the construction of linear features such as national roads and pipelines, EIA's related the distribution power lines and power generation amongst others.

1.4 Structure of this document

The EMP has been divided into twelve sections, each of which addresses a different aspect:

Section 1 Provides a brief **introduction** to the project and explains the purpose of the EMP document.

Section 2 Sets the **context** for the EMP in terms of the project; the processes and measures that direct, guide and define environmental management requirements during the project life cycle; and the overall EMP objectives. This section provides an overview of how mitigation measures that were described in the EIA to address identified issues have been incorporated in environmental specifications in the EMP. Residual environmental issues, which resulted from inadequate technical information; and dealing with unexpected environmental issues are also discussed.

Section 3 Defines specific **organisational arrangements** for the different project phases.

Section 4 Assigns **responsibilities** to different **role players** for the construction, operational and decommissioning phases.

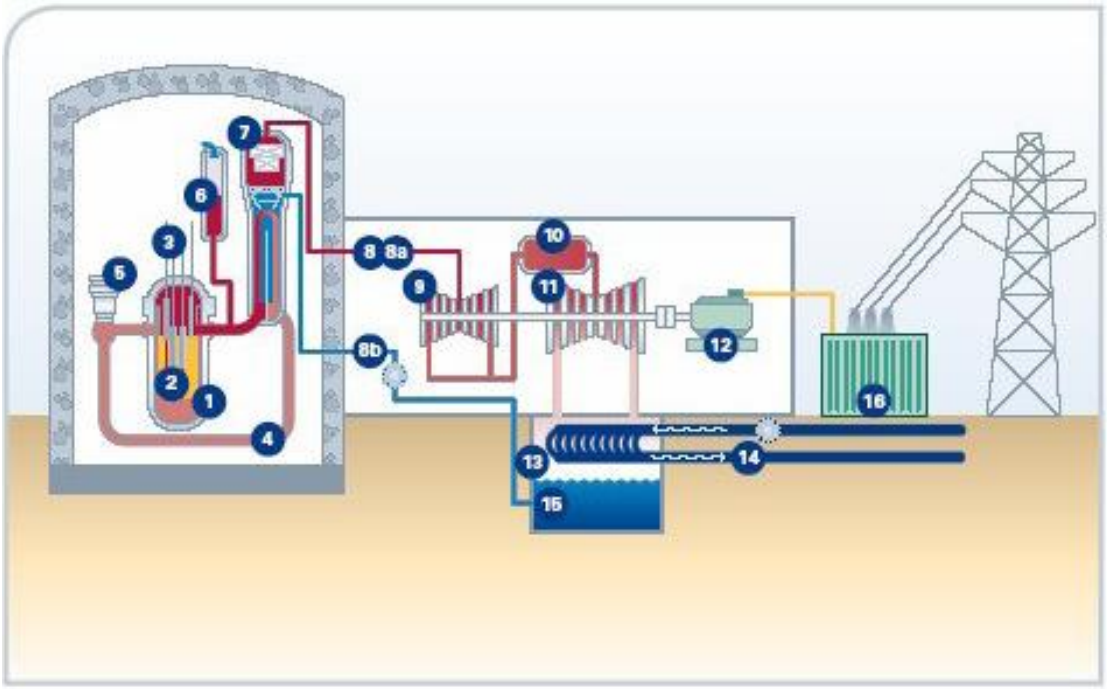
Section 5	Defines what environmental **training and awareness** raising activities must take place to ensure that construction personnel have the necessary environmental competence to understand their potential impacts on the environment and to avoid and mitigate these impacts.
Section 6	Defines how **communication** about the environmental consequences and performance of the project must take place between Eskom, the environmental authorities, other stakeholder and the broader public.
Section 7	Provides a library of **environmental specifications** to which Eskom and the Contractors must comply. The specifications contain specific instructions or objectives to ensure that potential environmental impacts are mitigated.
Section 8	Contains requirements for the development of **method statements** and **standard operating procedures** by the contractors to specify in detail how they will ensure compliance with the EMP.
Section 9	Defines **monitoring** requirements for different environmental media, to determine what the actual impacts are on the environment during construction and operation.
Section 10	Defines how **non-compliance** with the EMP and/or environmental authorisation must be addressed and what corrective action needs to be taken to ensure that the consequences of incidents are minimised and that recurrence of incidents is prevented.
Section 11	Provides a **conclusion** to the EMP.
Section 12	Provides a number of **references** that were consulted during the preparation of this EMP.

2 SETTING THE CONTEXT

2.1 Overview of the proposed project

2.1.1 Brief technical description

For the Nuclear-1 Project Eskom's proposed nuclear power station would have a power generation capacity of up to 4,000 MWe, using the Pressurised Water Reactor (PWR) technology. Refer to **Figure 2.1** for an illustration of the basic process. Eskom anticipates that after a construction period of approximately nine years, the nuclear power station will have an operational life span of approximately 60 years before being decommissioned.



(1) Reactor (2) Core (3) Control rods (4) Primary circuit (water circuit) (5) Main reactor coolant pump
(6) Pressuriser (7) Steam generator (8) Secondary circuit (steam) (8a) Steam for the turbine (8b) Water for steam generators
(9) High pressure turbine (10) Reheater (11) Low pressure turbine (12) Generator (13) Condenser
(14) Cooling circuit (15) Condensation water (16) Transformer

Figure 2.1: Key features of a Pressurised Water Reactor

The proposed power station complex will include *inter alia*:

- Containment/Reactor building;
- Nuclear auxiliary building;
- Turbine halls;
- Spent fuel and nuclear fuel storage building/facilities;
- Diesel buildings;
- Diesel storage tanks;
- Waste water treatment works;

- Waste handling and storage facilities;
- Intake and outfall structures into the ocean required to obtain/release water used to cool the process;
- Desalination plant;
- Water tanks and water pump houses;
- 132kV and 400kV transmission and distribution lines from the power station to the high voltage yard;
- Roads (including on-site and two new access roads);
- 400kV and 132 kV high voltage yard;
- Transmission lines between the power station and the HV yard (only at the Thyspunt site); and
- Other auxiliary service infrastructure (administration and emergency control and support buildings, warehouses and stores, sewage pump and treatment, etc.).

2.1.2 Site description

The two sites considered as alternatives in the EIA phase are indicated in **Figure 2.2.** A brief description of the Thyspunt site follows. A similar description of Duynefontein is provided in the site-specific EMP.

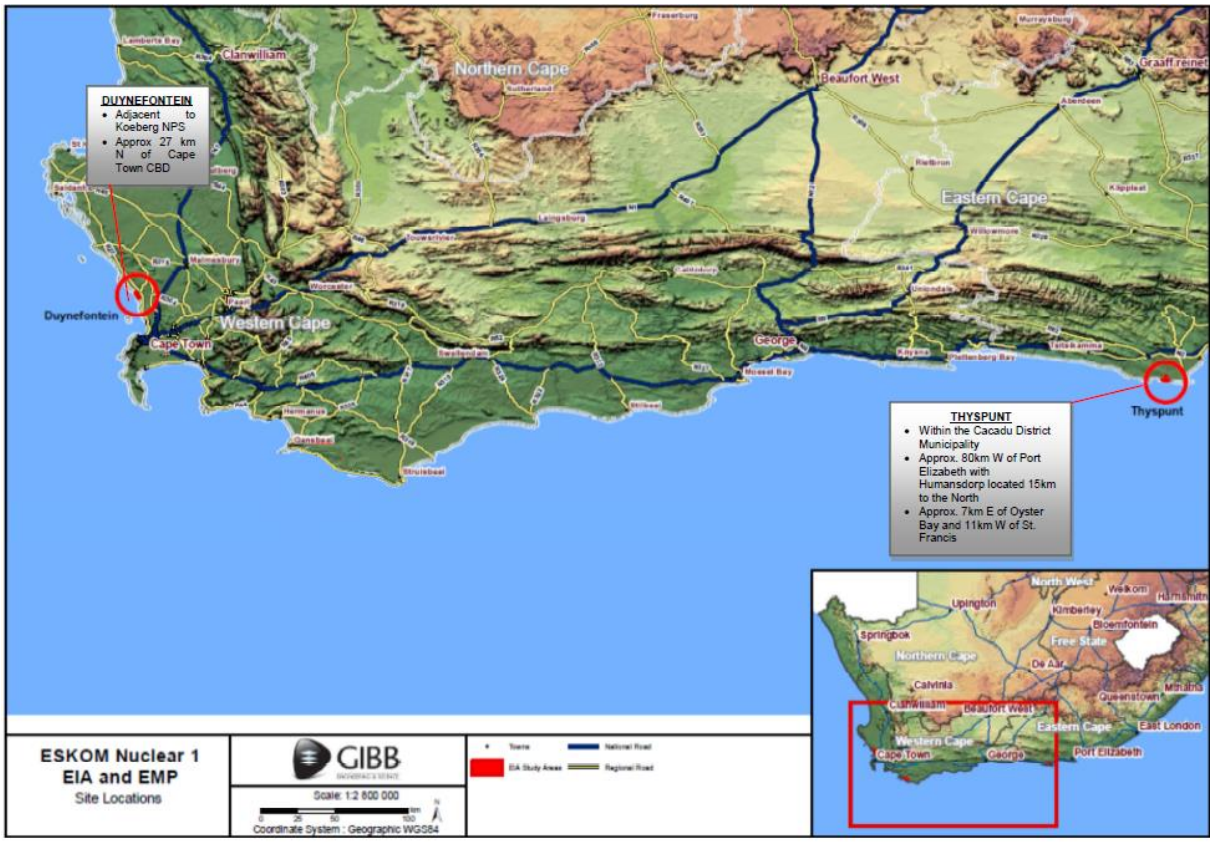


Figure 2.2: Three sites considered in the Assessment Phase of the EIA process

Thyspunt is situated in the Eastern Cape on the coast between the towns of Oyster Bay in the west and St. Francis Bay in the east (Refer to Error! Reference source not found.**)**. The site for Nuclear-1 power station is currently vacant, although there are a number of houses that were built on the coastal portions of the site prior to Eskom buying the land. There are also a number of houses on the adjacent properties, but

these are far outside the proposed Proactive Action Zone (PAZ) of 800 m from the power station. To the north of the sand dunes of the Oyster Bay Mobile Dune System, which span the northern portion of the site, the dominant land use is dairy farming. General views of the site are provided in **Figure 2.4** and **Figure 2.5**.

It is estimated that the total area required for the nuclear power station at the Thyspunt site is approximately 250 ha out of a total area of 1708 ha. (at the time of writing – Eskom is trying to acquire more land). The proposed position of the power station is within the vegetated dunes on the southern-most portion of the property, within what is environmentally the least sensitive portion of the property (**Figure 2.6**). The HV yard is proposed to be located in a small portion of land north of the mobile dunes.

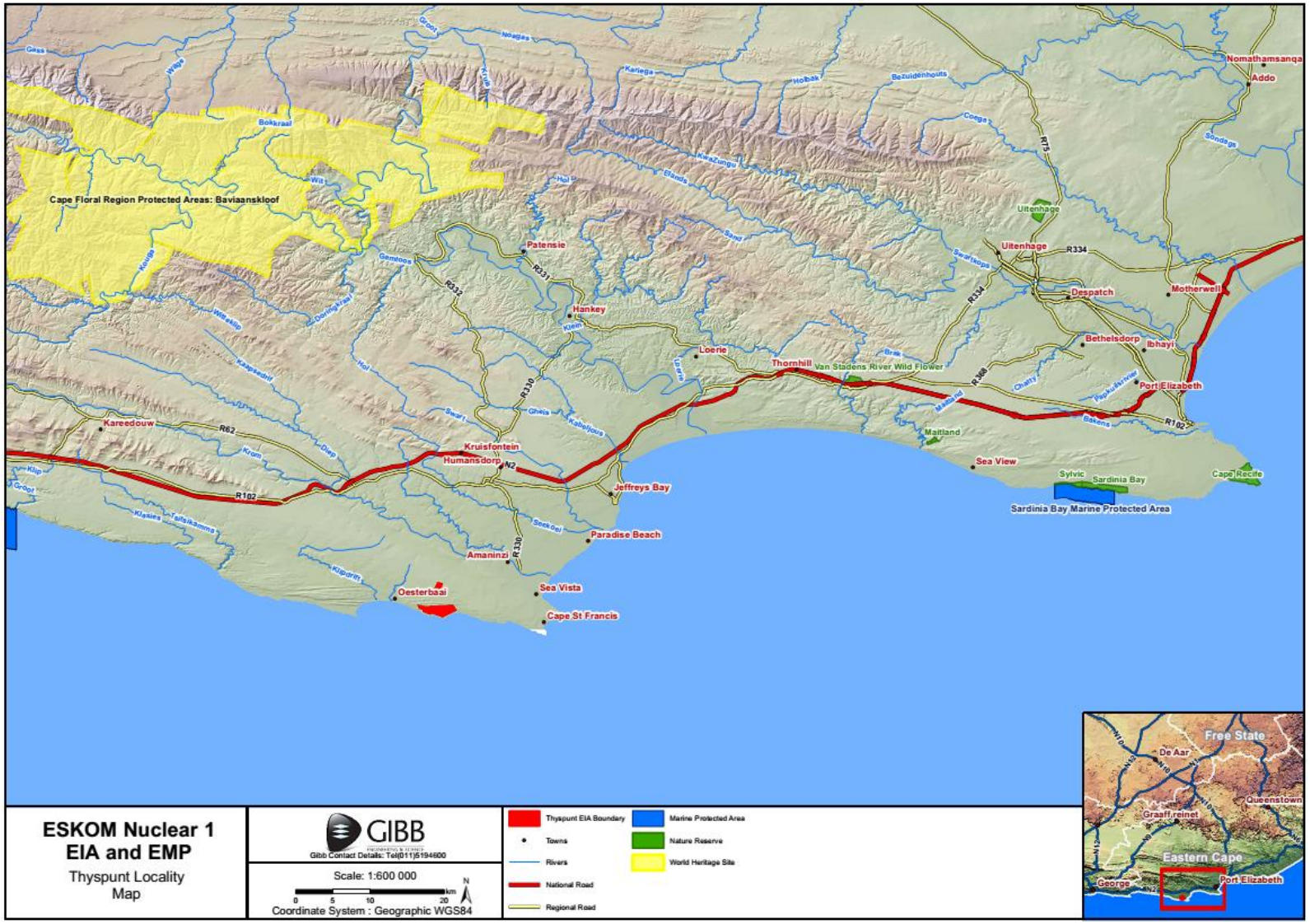


Figure 2.3: Thyspunt regional locality map

Figure 2.4 View of the proposed power station footprint in vegetated dunes at Thyspunt, looking east

Figure 2.5 View from the highest vegetated dune over the Langefonteinvlei wetland, looking southwest towards the proposed power station position at Thyspunt

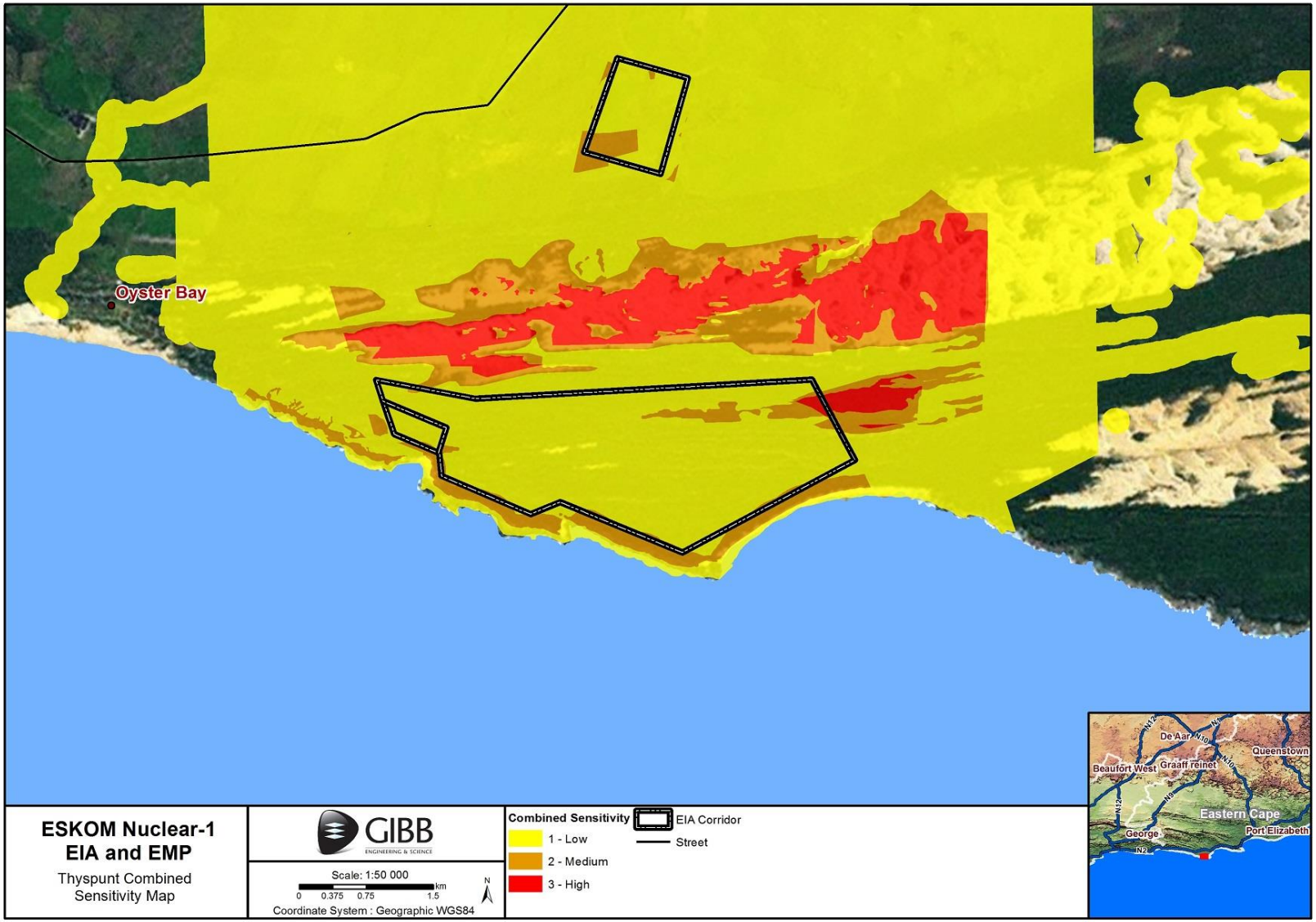


Figure 2.6: Thyspunt environmental sensitivity map

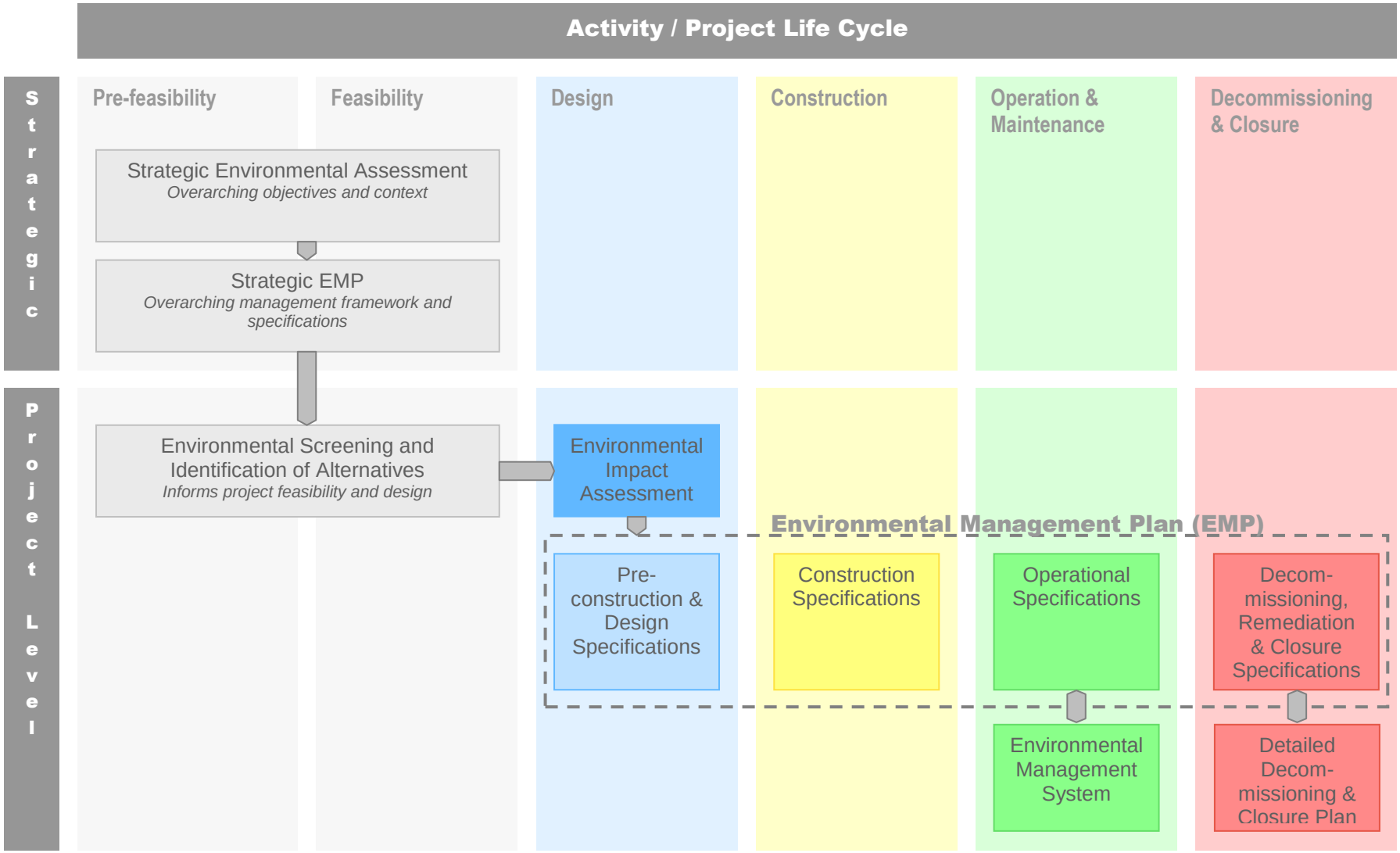
2.2 Objectives of the EMP

It is imperative that the remedial and mitigation requirements identified during the EIA process are effectively realised during construction, operation through to the final decommissioning of the project. Accordingly, the EMP plays a key role in the implementation of consistent and continued environmental management for the duration of the project life cycle. **Figure 2.6** contextualises EMPs within the broader environmental assessment and management processes. It also illustrates the links between the various activity life cycles, processes and mechanisms specific to the development of Nuclear-1.

The EMP structure captures the requirements of the Environmental Authorisation through incorporating environmental specifications applicable to the project, against which the effectiveness of management of each impact will be measured.

Specifically, this Nuclear-1 Project EMP aims to:

- Draw attention to all the key environmental management requirements applicable to the project;
- Organise environmental management requirements for the various life-cycle phases, as were determined through the EIA process, in a meaningful and structured way;
- Provide an environmental management planning document for incorporation into construction tender and contract documents, commissioning procedures, operational EMS, and decommissioning and final site remediation procedures;
- Provide information to be included as part of the vendor tender pack, with the understanding that the selected vendor(s) will provide for compliance to the EMP in his/her/their tender submission(s);
- Define and outline the functions, roles and responsibility of accountable persons for effective environmental management;
- State key legal standards and guidelines that are required to be achieved;
- Outline mitigation measures and environmental specifications required to be implemented during all phases from pre-construction, to decommissioning and closure phases of the project, in order to mitigate environmental impacts and to manage environmental impacts associated with the project;
- Identify requirements for detailed Method Statements (construction phase) and Safe Operating Procedures (operational and decommissioning phases) for relevant aspects or activities;
- Prevent long-term or permanent environmental degradation;
- Define requirements and procedures for monitoring; and
- Outline procedures for environmental management and control, in the event of pollution or similar incidents.



Source: Adapted from Lochner, 2005

Figure 2.7: Environmental Management Plan context in environmental planning and management processes

2.3 Scope of the EMP

2.3.1 Environmental impact assessment and report

As mentioned, the EIR forms the basis for the EMP. Also, since the EIA was undertaken in terms of environmental legislation, the EMP becomes legally binding for all activities undertaken for the Nuclear-1 Project, once endorsed by an environmental authorisation.

Comprehensive specialist studies undertaken during EIA process provide an in-depth understanding of the potential positive and negative impacts of the proposed development on the social, biophysical and economic facets of the environment. Specialists were required to assess potential environmental impacts and to recommend appropriate mitigation measures. The specialist study findings have been integrated in the EIR and EMP.

Specialists in the following fields were involved in the EIA:

- Technical specialists, including geological, seismic hazards, geotechnical, hydrological, geo-hydrological assessments and nuclear waste;
- Biophysical specialists, including flora, invertebrate fauna, vertebrate fauna, air quality, marine, dune geomorphology and wetlands assessments;
- Social specialists, including social impact assessment, tourism, human health risk, heritage, noise, and visual impact assessments; and
- Economic specialists.

The EIA identified the following key issues:

- Geological, seismic and geotechnical suitability;
- Depth of the water table, the potential impact on wetlands due to dewatering of the power station excavation as well as the implications for surrounding water users;
- Source of water supply for construction and operation of the nuclear power station;
- Disturbance and disruption of terrestrial ecological processes such as loss of habitat and associated flora and fauna;
- Potential disruption of movement of the Oyster Bay mobile dune system;
- Disturbance of the marine ecology (especially chokka squid) through release of warmed water into the ocean, release of brine from the desalination plant and offshore disposal of sediment;
- Health, safety and security of the site as well as limitations on surrounding land use;
- Changes to community structures through the influx of workers and associated infrastructural requirements;
- Change in tourism activities;
- Visual disturbance;
- Impacts on tangible heritage resources and on sense of place and on the “cultural landscape”;
- Dust generation;

- Construction of required facilities and infrastructure associated with accessibility to the site, transport and integration of the generated power into the networks;
- Security; and
- Transport of low-level and intermediate-level waste from the site and storage of high level waste on site.

Potential positive impacts identified during the process included:

- Improved generation capacity in the Cape region and South Africa as a whole, which could stimulate local and regional economic growth, prevent future electricity shortages and provide greater security of supply by improving the current reserve margin;
- Establishment of conservation areas on Eskom-owned land;
- Significantly lower Green House Gas (GHG) emissions when compared with that of coal-fired power stations and greenhouse gas footprint similar to renewable technologies; and
- Direct economic injection into the local economies.

2.3.2 EMP revisions and authorisation

In accordance with NEMA and the EIA Regulations, a draft EMP must be published in conjunction with the draft EIR for public comment. Therefore both a Draft EIR and Draft EMP had been distributed for public review. The current Revised Draft EMP has been amended and improved based on comments received from various stakeholders and based on the revised draft EIR and associated specialist reports.

While every effort was made to render the EMP comprehensive, as indicated in **Section 1.1**, the EMP may need to be revised after the receipt of public comments and finalised after the issue of an authorisation by the DEA. It is therefore important to incorporate any additional specifications required in terms of the Environmental Authorisation and any additional requirements the applicant may find necessary at the time of finalisation.

Once the EMP has been finalised it may again be necessary to amend the EMP as the project unfolds. Any significant amendments may require approval from the Department of Environmental Affairs.

Thus the EMP and its associated environmental specifications may be amended at various stages of the Nuclear-1 project. Anticipated events that would 'trigger' the need for update and amendment of the EMP are as follows:

- Receipt of the Environmental Authorisation;
- Significant change in applicable environmental legislation;
- Instructions from DEA to do so;
- Requests from the Environmental Monitoring Committee (EMC) to do so;
- Changing circumstances;
- Changes in the project scope (which have been approved by the DEA); and
- Amendment of the Environmental Authorisation at the discretion of the DEA.

The EMP may also need to be amended should relevant authorities or key EMP role-players consider it necessary. Eskom may consult with the EMC, the ECO and/or other suitably experienced parties to assist with and/or accept the amendment of the EMP; and/or assist with the application for approval of the amendments.

2.3.3 Environmental authorisation

(*This section will be inserted once the Environmental Authorisation has been issued. It will provide a brief overview of the requirements and conditions of the authorisation and how these have been incorporated in the EMP.)*

2.4 Eskom's environmental management policies and commitments

2.4.1 Vision and policy

In terms of Eskom's Safety, Health and Environmental (SHE) Policy (Refer to **Appendix B**), Eskom's vision is to build the power base for sustainable growth and development, thereby generating a sustainable foundation for growth and creating value for stakeholders and society, while reducing the safety, health, and environmental impact of its operations. This policy provides the framework within which all other commitments, including this EMP, are given effect. Through this policy, Eskom commits to excellence in safety, health, and the environment and confirms to all employees, contractors, visitors, stakeholders, and the public that it will conduct its business in a caring, responsible manner. Eskom pledges to implement sustainable strategies to develop and manage the entire electricity value chain so as to deliver high-quality, affordable electricity in a changing business, social, natural, and political environment, without compromising future sustainability. Furthermore, Eskom pledges to continuously advance its business practices in line with international best practice (e.g. United Nations (UN) Global Compact), legal requirements, and corporate best practice innovations. Eskom undertakes to measure the implementation of this policy progressively to ensure sustainable excellence in SHE management. Accountability for safety, occupational health, and environmental management rests with the Board of Directors, including the Chief Executive. Compliance with the SHE Policy and applicable regulations shall be the responsibility of every employee and contractor (Eskom, 2010).

In accordance with this policy, Eskom will:

- Establish appropriate management systems to address safety, occupational health, and environmental issues with a view to minimising risk and ensuring duty of care and the management of pollution and environmental degradation, performance monitoring, and continuous improvement;
- Comply with all legislative and policy requirements and, in the absence of appropriate principles, set standards to meet the objectives of this policy;
- Promote open communication on SHE issues with employees and all stakeholders;
- Educate, train, motivate, and develop its employees in terms of occupational health, safety, and environmental issues;
- Provide and maintain a safe and healthy work environment and protect individuals against risk associated with occupational health and safety arising out of Eskom's business; and
- Contribute towards sustainable development through cost-effective resource use and efficient production, distribution, and use of energy (Eskom, 2010).

2.4.2 Environmental Management System

Environmental performance is managed as an integral part of Eskom's governance structure, from the board sustainability committee, to the executive management committee (Exco) sustainability and safety subcommittee. Eskom commits to ensure the effective implementation of Environmental Management Systems (EMSs) throughout its business through holding its environmental managers and environmental practitioners accountable.

Through this commitment, Eskom's objective remains to ensure continual improvement in its environmental performance by setting appropriate indicators and controlling its activities through EMSs and ensuring that Eskom's decision-making processes are based on balanced criteria. These commitments are set out in Eskom's SHE Policy (refer to **Section 2.4.1**).

Eskom's environmental commitment is based on the principles of efficient use of natural resources through controlling its activities that impact on the environment. Through its EMSs Eskom puts oversight and control measures in place to achieve its 'environmental duty of care' commitments. The EMSs also highlight the environmental impacts of Eskom's varied activities and checks that effective controls are in place.

In terms of its EMS Policy Eskom undertakes the following:

- We are committed to SHE excellence and will conduct business with respect and care for people and the environment and, in so doing, will ensure that adequate resources are available for SHE management;
- We believe that all injuries and occupational illnesses, as well as safety and environmental incidents, are preventable, and our goal for all is zero. We will also promote off-the-job safety for all our employees;
- We will engage key stakeholders, including employees and organised labour, on all elements of SHE issues;
- We will continuously evaluate our SHE performance with the objective of continual sustainable improvement;
- We will ensure that SHE is an integral part of our operations and that no operating condition, or urgency of service, can justify endangering the life of anyone or causing injury or damage to the environment;
- Management in each division will be responsible for educating, training, and motivating employees and contractors in relation to SHE issues;
- We will work with suppliers and customers to integrate SHE issues into their operations, and contractors working under our supervision or on Eskom premises will comply with this policy;
- This policy will apply wherever Eskom operations exist or Eskom operates, including subsidiaries;
- This policy will apply during the evaluation of all contracts, projects, and proposals; and
- While many parts of Eskom's business have received ISO 14001 standard certification, the rest of the group undertakes audits and management reviews to ensure that the standards are adhered to.

It is Eskom's objective that all currently operational power stations must have certified Environmental Management Systems by March 2010. Koeberg Nuclear Power

Station was, at the time of writing this EMP, in the final stages of certification. It is anticipated that the same will be required of the proposed Nuclear-1 Power Station.

To give specific effect to certain EMP specifications, Eskom will be required to develop, implement and maintain Environmental Operating Procedures (EOPs), which will form part of the EMS, once these have been approved by the Power Station Manager.

2.4.3 Thyspunt Management Plan

A plan is being developed to provide the primary strategic tool for biodiversity management of Eskom owned property at the Thyspunt site, informing the need for specific land management programmes and operational procedures. The plan will provide for capacity building, future thinking and continuity of management, enabling Eskom to develop and manage the Thyspunt land in such a way that its biodiversity values are secured.

The management plan will address the following key performance areas at Thyspunt:

Key performance area	**Issue that must be addressed**
Compliance to legislation and Standards	Undertake and maintain ISO:14001 certification and associated processes to monitor legal compliance
Security and Law enforcement	Remoteness of site / accessibility
	Poaching impacts
	Medicinal plant collection from within Eskom boundary
	Inadequate fencing
Safety	Ensure safe operation of land management practices
	Safety of people involved in the operational management of any Eskom Power Station
	Adherence to Eskom “Life Saving” rules
Grazing	Management of livestock numbers (illegal grazing) – excessive numbers
	Livestock and natural game grazing on rehabilitation sites
Fire Management	Arson fires
	Inappropriate timing of burning
	Infrastructure requiring protection from fire, in a fire-climax system
Fynbos management	Inappropriate fire management, too frequent, wrong time of year
	Unmanaged grazing
	Does not rehabilitate very well
	Muti plant harvesting
	Alien plant infestations
Wetland	Inappropriate grazing
	Fires

management	Siltation from erosion
Priority Species	Implement specific management activities to conserve and enhance any threatened species as identified
Wildlife Management	Poaching
	Road mortalities
	Disease
	Power line mortalities
Rehabilitation (incl. Erosion)	Existing old erosion (previous management)
	Extent of the existing erosion
	Construction-related impacts causing erosion
	Maintaining and/or rehabilitating degraded systems
Invasive alien species	Infestations of alien plant species
Strategic Management Systems	Alignment with Eskom Strategic objectives
	Alignment with operation needs of the Power Station
	Strategic engagement with neighbours and surrounding communities
Monitoring and Research	Effective monitoring to ensure adaptive management
	Understanding the key requirements of the priority species that occur on the Thyspunt property
	Guidance on the use of grazing by game and livestock in managing the ecology of the fynbos and wetland habitats

2.4.4 United Nations Global Compact

Eskom is a signatory to the United Nations (UN) Global Compact and as such strives to implement the principles of the compact through sustainable practices. The compact requests companies to embrace, support and enact the following nine universal principles in the areas of human rights, labour standards and the environment:

Human rights

Principle 1 — Businesses should support and respect the protection of internationally proclaimed human rights within their sphere of influence.

Principle 2 — Ensure there is no complicity in human rights abuses

Labour standards

Principle 3 — Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.

Principle 4 — The elimination of all forms of forced and compulsory labour

Principle 5 — The effective abolition of child labour

Principle 6	Eliminate discrimination in respect of employment and occupation.

Environment

Principle 7	Businesses should support a precautionary approach to environmental challenges.
Principle 8	Undertake initiatives to promote greater environmental responsibility.
Principle 9	Encourage the development and diffusion of environmentally friendly technologies.

Eskom has engaged in several activities to implement these principles and thus expects all its contractors and their sub-contractors to uphold these principles. Eskom will therefore include these principles as criteria in its contracts with the contractors on this project.

2.5 Environmental specification structure and application

As mentioned, environmental specifications for the Nuclear-1 Project are based on sets of mitigation measures, which the Environmental Assessment Practitioner and specialists had specified in the EIR, to address a range of environmental aspects and potential impacts, and associated issues and concerns identified during the EIA process (refer to **Section 2.3.1** for an overview and the EIR for details).

The EMP was developed by transferring and translating the mitigation measures into:

- Overall organisational requirements for the various phases: i.e. **Sections 3 – 6** and **Sections 8 and 10** of the EMP.
- Specific and relatively detailed environmental specifications to address specific issues raised during the EIA; i.e. the Library of Environmental Specifications (**Section 7**) and additional requirements for Monitoring Programmes (**Section 9)**.

2.6 Residual and unexpected environmental issues

While every effort was made to identify and assess all potential activities and associated significant environmental impacts during the EIA process, a number of residual environmental issues remain and unexpected environmental issues and impacts may well arise which have not been, or not been adequately considered and addressed during the EIA.

Residual environmental issues are issues that have been identified during the EIA, but are considered unresolved at the time of compilation of this EMP. These issues are as such therefore not yet addressed or not yet fully addressed by the mitigation measures derived in the EIA. The reasons for residual issues vary, but are generally

associated with the lack of information at the time, e.g. lack of project design details, environmental authorisation conditions, contractor-specific designs, etc.

Eskom must resolve residual environmental issues as the Nuclear-1 project unfolds; most notably during the pre-construction planning and design phase. This will be done through e.g. additional specialist studies followed by appropriate amendments to the EMP amendments to the EMP (and associated environmental specifications) and/or through Method Statements or EOPs. There were no known residual environmental issues at the time of preparing this EMP.

Unexpected environmental issues may arise for a number of reasons; e.g. substantial designs and associated activities changes, use of unusual materials or procedures, site footprint changes, findings of archaeological or palaeontological features during site clearance and excavation, etc.

During the construction phase an unexpected environmental impact or potential impact may be identified by the Environmental Control Officer (ECO) or brought to his/her attention. The ECO should then establish whether such an impact is potentially significant, and if so, bring such impact to the attention of the Project Manager (PM) and the Department of Environmental Affairs (DEA). In his submission the ECO may include recommendation on additional assessment (e.g. specialist study) and/or mitigation of such impacts. The PM should liaise with the DEA to agree on a way forward with regard to any recommended action.

2.7 Compliance with other policies and legislation

Eskom and the Contractor shall commit to complying with the relevant provisions of the applicable environmental legislation and associated regulations promulgated in terms of these laws, through all phases of the project. In order to achieve this, these parties need to acquaint themselves with relevant environmental legislation and/or seek advice from the relevant authorities and/or a suitably qualified legal specialist.

In addition to the environmental authorisation in terms of NEMA, the proposed power station requires a number of other authorisations from various departments, such as the Department of Mineral Resources (DMR), the Department of Water Affairs (DWA), the Department of Environment Affairs (DEA), as well as the regulatory authorities such as the National Nuclear Regulator (NNR) and the National Energy Regulator of South Africa (NERSA). The processes associated with the legal requirements are documented in **Chapter 6** of the EIR.

A list of identified legislation applicable to Nuclear-1 is contained in **Annexure C** to this EMP.

3 SPECIFIC ORGANISATIONAL ARRANGEMENTS FOR PROJECT PHASES

While the project might well be divided into many more phases and sub-phases, for ease of reference, this EMP covers the following phases:

- Preconstruction planning and design;
- Construction;
- Operation; and
- Decommissioning and site closure.

Refer to the definition for phases as included in the introduction of the Library of Specifications (**Section 7**)[4].

3.1 Pre-construction planning and design

Due to the sensitivity of the environment, the complexity of the environmental requirements for the Nuclear-1 project and the fact that a number of Residual Environmental Issues remain (refer to **Section 2.6** for the latter), it is important for Eskom to consider environmental management requirements during the Pre-construction Planning and Design Phase of the project. It is for this reason that such a phase is specifically covered in this EMP and associated environmental specifications.

The key activities undertaken during this phase involve:

- Undertaking additional specialist studies and/or investigations to address any residual environmental issues;
- Final planning and design of the site layout/ footprint and nuclear power station;
- Development of a set of site management master plans, e.g. for stormwater, water supply, facilities, waste, remediation, etc. (as indicated in **Section 7**).
- Tendering, adjudication and induction of Contractor/s; and
- Addressing certain environmental requirements, concerns, roles and responsibilities in preparation for the construction phase; e.g. through contract negotiations.

3.1.1 Walk-down assessment

After authorisation and once the vendor has provided more detailed layout plans than are available in the EIR, a team of specialists must perform a detailed “walk-down” assessment of the site. This assessment must investigate, in detail, the recommended footprint for the power station (in accordance with the recommendations of the Final EIR) and associated infrastructure. The walk-down assessment must focus on confirming that the proposed layout does not deviate significantly from that recommended in the EIR (i.e. the footprint must not be substantially larger) and on ensuring that alignments of roads and power lines are such that environmental impacts are minimised. .

[4] The definitions were included in the Library of Specifications section, to ensure that they are read and understood as part of the specifications.

In addition to the Eskom project representatives, the walk-down team must consist of appropriately qualified and experienced specialists from the following fields:

- Archaeology / Heritage
- Wetlands;
- Vertebrate Fauna;
- Vegetation;
- Dune Geomorphology; and
- Invertebrates.

Should the ECO be appointed at this stage he/she should also form part of the walk-down team.

Based on the findings of the walk-down assessment, the layout of the power station and elements of construction infrastructure must be finalised and placed on site to ensure that environmental impacts are minimised. The layout plan produced at the end of this process must be regarded as binding on Eskom and the contractor and may not be changed without their approval.

3.1.2 Integration of environmental considerations into project design

The Library of Specifications in accordance with **Section 7** includes several specifications that must already be considered during pre-construction planning and project design in order to prepare for effective and consistent environmental management. These include, for example, specifications relevant to siting of the nuclear power station and associated facilities and infrastructure; access route planning; development of various master plans (e.g. stormwater management, rehabilitation, emergency procedures); community sensitisation, etc.).

3.1.3 Integration of the EMP into contracts

(a) Eskom policy requirements

In line with the Eskom environmental policies and commitments, the EMP shall form an integral part of all construction tender, contract, work orders and job description documents of Nuclear-1. It is assumed that for a project of this size and complexity, Eskom may well enter into various contracts for construction sub-projects at various stages of the construction phase. Thus, whether appointments are for activities such as surveying, civil works, mechanical, electrical, remediation etc., the EMP shall be incorporated as part of the contractual arrangements.

The EMP and all its associated environmental specifications and requirements that are relevant to the work the contractor and his subcontractors would be appointed for, therefore shall be fully considered by the tenderer in his bid submissions and by Eskom as an important component during tender evaluation and adjudication. To render a bid submission responsive, due consideration of environmental requirements must be reflected in the tenderer's proposed staffing and organisational structure, experience and expertise, approach, methodology and cost and programme schedules. In addition, a tenderer shall in his/her bid submission *inter alia*:

- Include a copy of their company environmental policy statement;
- Identify which senior staff member would have overall responsibility for ensuring the Contractor's compliance with the EMP and associated environmental specifications;
- Identify a suitably qualified and competent staff member (or subcontractor) proposed to act as the Contractor's Environmental Officer (EO) (refer to **Section 4.5.2**) for the associated roles and responsibilities); and
- Provide sufficient allowance in his/her tender price for implementing full compliance with the EMP and associated environmental specification. Failure to do so will not qualify the Contractor to claim for compensation events / variation orders.

In evaluating and adjudicating construction tenderers' bid submissions, as part of covering evaluation and adjudication of compliance with the EMP, Eskom shall allocate an environmental competency score as part of the tender process. The Eskom evaluation and adjudication team shall include a person qualified and competent in environmental issues/costing.

The EMP shall be endorsed contractually for all Eskom's appointments of contractors for Nuclear-1 for the duration of construction and will as such become legally binding. All contractors to the project shall thus take full responsibility for implementing the environmental specifications in accordance with the requirements of the EMP. Equally, contractors shall ensure that this responsibility is effectively incorporated and transferred in their contractual arrangements with their sub-contractors and shall make adequate provision for effective management and control of all the sub-contractors they chose to appoint to the project, with regard to full implementation of the EMP.

Eskom and its contractors shall therefore carefully consider and evaluate/re-evaluate all the requirements and specifications of the EMP at the tendering stage and regularly during the contract period to ensure that the plan remains current and applicable in terms of the latest legislation as well as specific activities on site.

Should Eskom and/or a contractor require any amendments to the EMP, due process must be followed (refer to **Section 2.3.2**), where after Eskom will formally confirm any EMP revision or amendments to the contractor(s) in writing (e.g. by means of a variation order).

(b) Requirement for method statements

In compliance with this EMP, Eskom will require contractors to develop and submit Method Statements for a range of work aspects and impact mitigation relevant to environmental management during the construction phase; and shall cover such requirements in their contractual arrangements with contractors. These Method Statements are required to indicate and describe in detail how contractors will implement and achieve environmental compliance (Refer to **Section 8.1** for further details).

By way of including this EMP (or relevant components thereof) in the tender and contract documents, contractors are required to consider, provide for and incorporate the Method Statement requirements into their tender submissions (e.g. costing and programme). While a preliminary list of required Method Statements is included in this EMP, it should be noted that the list could be expanded or requirements amended as the project unfolds.

3.2 Construction phase

Environmental management addresses not only the operation of the power station but also how the construction is carried out. Hence it is a requirement that the Contractor shall comply with the environmental requirements of the EMP on an ongoing basis.

The Contractor shall take full responsibility for protecting the natural environment and, where possible, mitigating all negative impacts on the environment while carrying out all his/her construction activities. The Contractor shall prevent or limit the possibility of incidents that may cause damage to the environment and, if any damage does occur, shall rehabilitate the environment to a state as close as possible to its condition prior to any such disturbance occurring.

The requirements of this specification apply to the entire construction footprint and those areas under the Contractor's control, including but not limited to the construction areas, all borrow pits, the construction camp and offices, all access/ haul routes and all labour accommodation areas.

One of the key challenges in managing the environment on a development project is ensuring that there is a clear connection between the environmental assessment and the project implementation processes. It is therefore important to identify and use the mechanisms that are in place for project implementation as the mechanisms for ensuring implementation of the environmental management requirements. The objectives for the EMP thus also apply to the construction phase of the project.

As such, the environmental specifications apply to the following typical activities:

- Site surveying and related investigations;
- Borehole drilling and groundwater monitoring;
- Construction of temporary access roads;
- Fencing and erection of the construction camp;
- Provision of power supply to construction site;
- Site clearing and terrace construction (e.g., dewatering, levelling, excavations);
- Sourcing of resources;
- Transportation of equipment and material;
- Infrastructure construction and installation of plant; and
- Site remediation.

3.2.1 Organisational structure

In order to ensure sound development and effective implementation of the EMP, it is necessary to clearly identify and define the responsibilities and authority of the various individuals and organisations that will be involved in the construction phase of the project. The organisational structure presented in **Figure 3.1** identifies and defines the responsibilities and authority of the various key role-players (individuals and organisations) involved in the project's construction. This organisational structure was developed to ensure that there are clear channels of communication and an explicit organisational hierarchy so that potential conflicting or contradictory instructions are avoided. Therefore, all instructions and official communications regarding environmental matters shall follow this organisational structure. The structure may require revision as the project unfolds; however, any such revision must be agreed with and communicated in writing to all the key role-players.

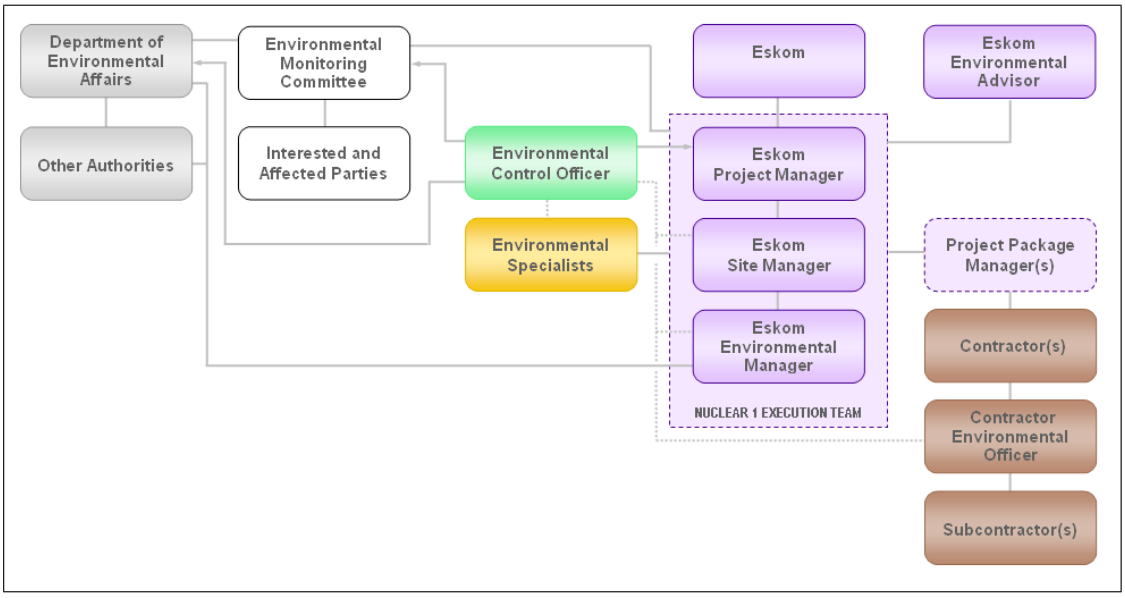


Figure 3.1: Organisational structure for environmental management during construction

In accordance with this organisational structure, key role-players that hold environmental roles and responsibilities are thus:

- Department of Environmental Affairs (DEA);
- Environmental Monitoring Committee (EMC);

- Interested and Affected Parties (I&APs);
- Eskom Project Manager (PM);
- Eskom Site Manager (SM);
- Eskom Environmental Advisor;
- Eskom Environmental Monitoring Committee (EMC);
- Eskom Environmental Manager (EM);
- Environmental Control Officer (ECO);
- Contractor;
- Contractor Environmental Officer (EO); and
- Subcontractors.

In terms of the defined organisational structure reflected in **Figure 3.1**, all instructions that relate to environmental matters associated with construction activities will be communicated to the Contractor by the Site Manager (SM). The exception to this rule would be in an emergency, in which case instructions may be given directly to the Contractor. The ECO must inform the SM as soon as possible and in writing of the instructions given to the contractor. An emergency is defined as a situation requiring immediate action and where failure to intervene timeously would, in the reasonable opinion of the relevant Environmental Authority or the ECO, result in unacceptable environmental degradation. The detailed roles and responsibilities of the various role-players identified in the organisational structure are outlined in **Section 4**.

In addition to this structure that will ultimately guide the day-to-day operation of the construction of Nuclear-1 and in terms of Eskom's public and social obligation, Eskom shall set up an Environmental Monitoring Committee (EMC) and appoint a Community Liaison Officer (also known as Communications Practitioner / Stakeholder Manager) that will facilitate liaison with the public.

3.2.2 Method statements implementation

While Method Statements defined in this EMP require the necessary attention and consideration during the contractor tendering stage; some Method Statements may require additional information or time to compile and may thus only become available after the tendering stage. The timeframe in which the Contractor shall submit and/or implement such Method Statements are to be agreed before the start of construction.[5]

Method statements included in the EMP may be replaced by alternate but equivalent method statements that are based on additional information and data collected after the issue of the EMP. These alternate method statements must be demonstrated to provide the same performance criteria as the method statements that they replace.

As mentioned, additional Method Statements or amendments to some that are already in place may also be required at different stages of construction as the project unfolds. Once Method Statements have been approved, these need to be fully implemented and adhered to for the duration of construction. (Refer to **Section 8.1** for further details).

[5] EMP-specific method statements must typically be submitted one month prior to construction commencing for acceptance by the ECO and approval by the SM or his delegate. These should be reviewed two months after relevant construction activities commence to ensure that the process takes account of site-specific issues and mitigation measures.

3.2.3 General and legal obligations

The Contractor shall commit to comply with the relevant provisions of the applicable environmental legislation and associated regulations promulgated in terms of these legal requirements through all phases of the project and ensure that construction activities are undertaken in a manner that will minimise impacts on the environment.

The Contractor shall implement all the necessary environmental protection measures in the construction footprint in accordance with this EMP and associated Enviromental Specifications, prior to the commencement of any construction activities. The SM may, at his / her discretion, suspend work at any time or issue penalties to the Contractor, should the Contractor fail to implement any of the environmental protection measures adequately. The Eskom Environmental Manager (EM), ECO, EMC and/or Eskom Environmental Advisor may advise the SM on such work suspensions and penalties.

3.2.4 Communication and liaison with stakeholders

The Contractor shall ensure that the public and surrounding communities are informed and updated on all information regarding construction activities that may affect or interest them throughout the construction phase. In doing so, however, the Contractor shall follow the following procedures:

- Submit any notices, notice boards, warning signs, displays and the like to Eskom for approval prior to them being erected.
- Strictly direct any other communication with the public (whether written or verbal) through Eskom (i.e. through the SM and/or EM), who in turn may direct such communication through Community Liaison Officer or the EMC.

3.3 Operational phase

The operational phase includes, in addition to all activities associated with the day-to-day operation of the nuclear power station, activities relating to the commissioning of the power station (with the exception of those undertaken as part of the construction phase), maintenance of the nuclear power station and long-term implementation of required environmental management and monitoring systems.

It is assumed for the purposes of this EMP that Eskom will implement a formal Environmental Management System (EMS), based in ISO 14001, during the operational phase. The relevant provisions of the EMP must be integrated and incorporated into the EMS.

3.3.1 Organisational structure

The proposed organisational structure is indicated in **Figure 3.2.** Similar to the construction phase, this organisational structure has been developed to ensure that there are clear channels of communication and an explicit organisational hierarchy so that potential conflicting or contradictory instructions are avoided. The detailed roles and responsibilities of the various role-players identified in the organisational structure are outlined in **Section 4**.

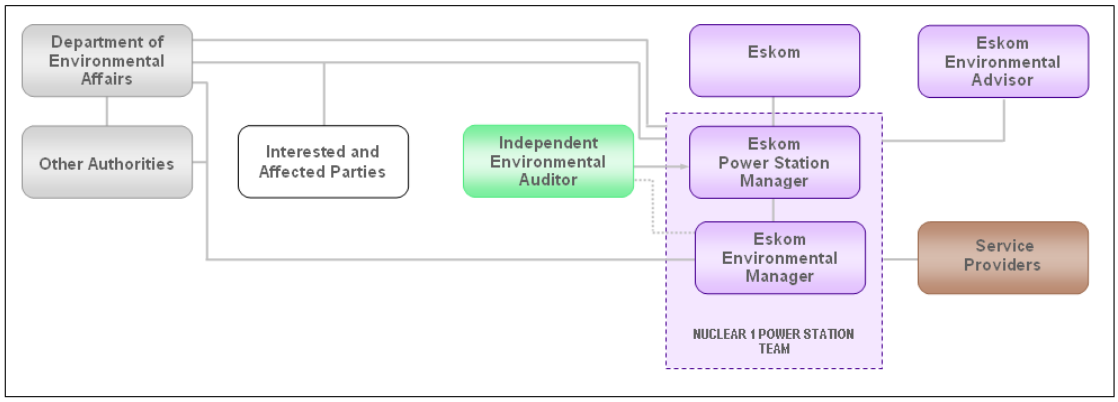


Figure 3.2: Organisational structure – operational phase

In line with this organisational structure, key role-players that hold environmental roles and responsibilities during the operational phase are:

- Department of Environmental Affairs (DEA);
- Interested and Affected Parties (I&APs)
- Power Station Manager (PSM);
- Eskom Environmental Advisor; and
- Eskom Environmental Manager (EM).

The detailed roles and responsibilities of the various role-players identified in the organisational structure are outlined in **Section 4**.

3.3.2 Environmental management system

Eskom shall develop and implement an EMS in line with the requirements of ISO 14001: 2004 (or any update thereof) for the operational phase of the nuclear power station, prior to any operational activities commencing. This EMS shall incorporate and give effect to the relevant requirements of the EMP, and as such include relevant EOPs. It is recommended that the implementation of the EMS should be subjected to internal and external audits.

3.4 Decommissioning and site closure phase

Once the power station has reached the end of its viable lifetime, it will be decommissioned. According to the South African National Nuclear Regulator (NNR), decommissioning is defined as administrative and technical actions taken to allow the removal of all of the regulatory controls from a facility (except for a repository which is closed and not decommissioned). They add that decommissioning options may range from dismantling to redevelopment and reuse.

Sound environmental remediation and closure to enable future re-use of the site will be essential. While remediation to a ‘green’ site, while not impossible, is probably unlikely; re-use would likely be for an upgraded power station or an alternative industrial use.

For this reason a detailed Remediation and Closure Plan must be compiled towards the end of the project's operational life cycle, assuming that the plant will not be refurbished. Such a plan must incorporate all the relevant remediation, rehabilitation and closure requirements of the EMP, as well as any requirements the environmental authorities may have at the time. The plan must take any potential future re-use into consideration.

3.4.1 Organisational structure

A suitable organisational structure would need to be developed and implemented specifically for the decommissioning and site closure phase(s) to facilitate effective environmental management during this phase; and to meet the requirements the environmental authorities, the applicant and/or stakeholders may have at the time.

4 DEFINITION AND ASSIGNMENT OF ENVIRONMENTAL ROLES AND RESPONSIBILITIES

Roles and responsibilities in relation to the implementation and compliance with this EMP throughout the project life cycle can effectively be defined for the following main groups:

- Environmental authorities;
- Public and community representatives;
- Applicant (Eskom);
- Independent Environmental Control Officer or Auditor; and
- Contractors and service providers.

4.1 Environmental authorities

4.1.1 Department of Environmental Affairs

The Department of Environmental Affairs (DEA) as the competent environmental authority has, in addition to its responsibility of considering the Environmental Authorisation of the project and prescribing legally binding conditions to the authorisation (should it be issued), the role of ensure that Eskom complies with these conditions and enforcing compliance, if necessary. As such, the DEA is the authority that shall hold Eskom responsible and accountable for compliance with environmental legislation on behalf of the public. To achieve this DEA shall monitor compliance with the conditions of Environmental Authorisation and issue notices and/ or directives to Eskom as it deems fit. At its discretion, the DEA may also direct and advise Eskom on requirements in terms of pertinent and relevant framework or other environmental legislation and any amendments thereto, with the understanding that Eskom will remain fully accountable for legal compliance.

The DEA may, at its discretion:

- Make a decision in terms of the Environmental Authorisation and specify the conditions of the authorisation;
- Give directives in terms of specific requirements for EMP specifications;
- Review draft, final and revised EMPs;
- Undertake spot inspections of the site at its own discretion;
- Review Environmental Control Officer (ECO) Audit Reports;
- Request and view Environmental Incident Reports;
- Request and view the Complaints Register;
- Give instructions for temporary or permanent cassation of construction, based on serious non-conformance with the authorisation or EMP requirements;
- Suspend or cancel the authorisation; and
- Issue directives, notices and/or fines for significant transgressions with the EMP or environmental legislation.

4.1.2 Other authorities

While the DEA is ultimately the authority responsible for ensuring compliance with the EMP, various other authorities play a critically important role in directing and advising on matters relating to environmental compliance.

These include *inter alia* the following:

- The relevant provincial environmental authorities (the Eastern Cape Department of Economic Affairs Environment and Tourism and the Western Cape Department of Environmental Affairs and Development Planning). Although the provincial departments do not have a direct decision-making role with respect to the environmental authorisation, they do provide the DEA with advice and input through the principle of co-operative governance. It may also report transgressions of concerns to the DEA as its personnel are likely to be "on the ground" in the affected area more often than the DEA's personnel.
- The South African Heritage Resource Agency (SAHRA) has legal competence over the management of heritage resources. In spite of the DEA's authorisation (assuming it is granted, SAHRA may issue authorisations for the excavation and curation of heritage features and in general for the mitigation of heritage impacts.
- The Department of Water Affairs (DWA) has legal competence with respect to water-related issues and compliance with Water Use Licenses in terms of the National Water Act. It will also need to license the sewage treatment works that will be constructed and operated on the Nuclear-1 site and monitoring compliance with the conditions of approval during its operation.
- The National Nuclear Regulator, with respect to issues of radiation safety.
- The local authority (has competence with respect to zoning and land use, as well as health–related issues, noise and other nuisance bylaws.
- The Department of Labour has competence over labour conditions and occupational health and safety, and may conduct inspections of investigations in the event of disabling injuries. Although this is not strictly environmentally-related, there are a number of overlaps between environmental and occupational health issues where the Department may have an input.

4.2 Public and community representatives

4.2.1 Interested and affected parties

While Interested and Affected Parties (I&APs) were given ample opportunity to participate during the EIA process, I&APs will be encouraged to continue participating as 'watch-dogs'. Eskom shall support public and community liaison through arrangements as described in **Section 6**.

4.2.2 Environmental Monitoring Committee

Environmental Monitoring Committees[6] (EMCs) are structures made up of representatives from stakeholders affected by a development activity. Their constitution and function differs from case to case as a result of the specific circumstances and needs determined by the specific development project. This basic function is to monitor the implementation of the environmental management plan (EMP), but they also fulfil an important communication function. The EMC will have an advisory, monitoring and "watch-dog" role that should extend at least for the duration of the construction of Nuclear-1. An EMC function, in one form or another, should also be retained for subsequent phases; i.e. commissioning, operation, etc.

With regards to decision-making, EMCs have no decision-making powers. It is generally recognised that EMCs can submit advice and information, while environmental authorities retain the power of decision-making for environmental management aspects of the project. The EMC has the power to make decisions relating to their own administration activities.

One of the key purposes of the EMC will be to ensure that environmental management does not end with the conclusion of the EIA process and the production of the final document (i.e. the Environmental Impact Report or the EMP). Instead, EMCs aim to ensure an on-going process of monitoring to assist in minimising negative impacts and maximising the benefits of development.

It is strongly recommended that the EMC be established well before construction commences; preferably at least six (6) months prior to construction.

In conclusion the key functions the EMC are to:

- Regularly monitor and review the progress towards adhering to the EMP and meeting the requirements contained in the Environmental Authorisation;
- Consider any modification or additions to the original version of the EMP that was approved by the DEA;
- Inform the DEA when there is non-compliance with conditions of authorisation; and
- Promote the participation of key stakeholders in a structured forum that provides exchange of information and insights.

The EMC should include experienced and respected members of the scientific community (preferably local residents, if possible) who have specific expertise in environmental matters related to the local environment (e.g. fauna and flora). As such the function of the EMC would include assisting the ECO in achieving his objectives and specifically to provide assistance in:

- Interpretation of the results of environmental monitoring;
- Formulating action plans for specific problems;
- Communicating environmental information and recommendations to senior managers in Eskom; and
- Communicating relevant information to the public through the CLO.

[6] See DEA Guideline Document on Environmental Monitoring Committees

4.3 Applicant

Eskom, as the applicant for environmental authorisation, will be responsible for effective implementation of all environmental requirements, whether this is in terms of EMP, legal or good management practice compliance. As such Eskom shall ensure that the organisational structure, the assignment of roles and responsibilities and the availability of appropriate resources remain appropriate, adequate and effective throughout implementation of the Nuclear-1 project.

4.3.1 Environmental advisor

The Eskom Environmental Advisor, Eskom Head Office, shall advise the PM and SM on environmental compliance matters – throughout project life cycle.

The advisor shall be responsible for:

- Auditing compliance with the requirements of the EMP during spot checks and regular scheduled audits;
- Provide an assurance and reporting function to Eskom governance;
- Provide overall assurance that environmental issues are appropriately addressed and managed and that conditions of the Environmental Authorisation and EMP are adhered to at the site;
- Ensure that appropriate reporting on environmental performance/issues takes place to all the relevant key stakeholders;
- Advise the PM, SM and ECO regarding applicable legal and EMP requirements and compliance with these requirements;
- Recommend procedures to be followed and ways to improve environmental compliance and address non-compliances; and
- Advise on appropriate environmental lessons that have been learnt on similar Eskom construction projects, particularly with respect to the handling of incidents and the content and structure of the Environmental Management System for the Nuclear-1 site.
- Where necessary, liaise on a strategic level with environmental authorities on Environmental Authorisation and EMP-related issues and non-compliances.

4.3.2 Eskom Project Manager – pre-construction and construction phases

The Eskom Project Manager (PM) is responsible for the overall management of the project and implementation, administration and enforcement of the EMP, and as such the EMP. The PM must:

- Be fully conversant with the EIA and EMP for the project, the conditions of the Environmental Authorisation, and all relevant environmental legislation;
- Is accountable for the implementation of the EMP;
- Address residual or unexpected issues appropriately, e.g. by way of project design or defining additional environmental specifications for incorporation into the final or revised EMP (if required shall solicit the assistance from suitably qualified specialists); and submit any associated documentations and applications for approval to the EMC and DEA;
- Ensure that site master plans are developed, including those specified in the EMP;

- Review the EMP in comparison with the final EIA, EMP, conditions of Environmental Authorisation and project design / procedures to check whether all identified environmental requirements are adequately addressed; and where this is not the case follow the procedure for EMP amendment (Refer to **Section 2.3.2**). If required the PM shall solicit the assistance from the ECO and/or suitably qualified environmental specialist. (Note, that the PM may delegate this function to the Environmental Manager {EM});
- Ensure that the 'amended' EMP and associated environmental specifications are made available to potential tenderers and thereafter incorporated as part of all construction contractor contracts;
- Ensure that Eskom and the Contractor are aware of all specifications, legal constraints and Eskom standards and procedures pertaining to the project specifically with regards to the environment;
- Ensure that all stipulations within the EMP are communicated and adhered to by Eskom and its Contractor(s);
- Ensure that the SM, EM and Contractors are made aware of all applicable DEA-approved changes to the EMP.
- Appoint an ECO to monitor implementation of and compliance with the EMP for the duration of the works and ensure that the ECO conducts audits and submits audits reports regularly to ensure compliance to the EMP;
- Authorise all Method Statements in accordance with a formal ISO-type document quality management system, and provide approved and signed controlled copies to the Site Manager (SM), ECO, Contractor and, if required relevant environmental authorities;
- Monitor the implementation of the EMP throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes; and
- Be accountable, to the relevant authority, DEA, for any contravention/ non-compliance, whether by Eskom or any Contractor under their supervision.

4.3.3 Site Manager – construction phase

The Eskom Site Manager (SM) is responsible for overseeing all site works, liaison with the Contractor, PM and Environmental Control Officer. The SM is responsible for coordinating, monitoring, reviewing and verifying compliance with the EMP of all construction activities by Eskom site staff and Contractors. Eskom may choose to appoint more than one SM for different portions of the overall construction site.

The SM's duties in terms of the EMP include the following:

- Be fully conversant with the EIA; i.e. Environmental Impact Report (EIR) and Specialist Reports;
- Be fully conversant with the conditions of the Environmental Authorisation;
- Be fully conversant with the latest version of the EMP and its associated environmental specifications;
- Be fully conversant with all relevant environmental legislation and Eskom environmental policies and procedures, and ensure compliance with these;
- Have overall responsibility for the implementation of the EMP on site;
- Ensure that all required and relevant environmental roles are identified and filled with adequately suitable and qualified personnel;
- Review all master plans (throughout the construction phase), make recommendations to the PM on any required amendments and ensure effective implementation / adherence to these on site;

- Advise the PM and ECO on any Unexpected Environmental Issue (refer to **Section 2.6**);
- Oversee all site works and ensure implementation of all relevant aspects and specifications of the EMP and approved Method Statements before activities commence;
- Designate and manage the working and "No-go" areas (including sensitive environments) in accordance with approved construction site layout, including sensitive environments;
- Confine activities to the demarcated working area of the construction site;
- Ensure full compliance with the requirements of the EMP and environmental legislation and associated regulations and standards, by everyone working on or visiting the site;
- Ensure the undertaking of environmental awareness (induction) training of all new personnel and visitors coming on to site;
- Review construction Method Statements in conjunction with the ECO and send Method Statements to the PM for authorisation ;
- Discuss implementation of and compliance with the EMP and Method Statement with Contractors at routine site meetings as a fixed agenda item;
- Enforce, oversee, monitor and verify Contractors' compliance with environmental legislation, the EMP and specifications and the approved Method Statements;
- Assist Contractors in finding environmentally responsible solutions to problems with input from the Contractor's Environmental Officer (EO);
- Inspect the site and surrounding areas on a regular basis with regard to compliance with the EMP;
- Monitor and verify that environmental impacts are kept to a minimum at all times;
- Ensure that audits are conducted to ensure compliance to the EMP;
- Assist and cooperate with the ECO, EMC and any authority on any audits they undertake and avail relevant documentation for their review;
- Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution on the site;
- Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment;
- Inform the PM and ECO of problems arising when implementing the EMP or a Method Statements and recommend ways of improving it;
- Take appropriate action to address all EMP, Method Statement and/or environmental legislation non-compliances;
- Issue written early warnings to Contractors failing to comply with the requirements of the EMP;
- Issue penalties/fines or stop work orders for contravention of the EMP and issue instructions regarding corrective action.
- Notify the PM and ECO of all incidents, accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMP version and approved Method Statements; and, if necessary, seek advice from the PM and/or ECO for required corrective actions and/or site remediation;
- Instruct the Contractor on the requirements and procedures in terms of environmental non-compliance 'near misses', incidents and public complaints recording, investigation and reporting;
- Report all major (definition to be defined and agreed with PM and ECO) 'near miss' incidents, actual incidents and public complaints of environmental legislation and/or EMP non-compliances immediately to the PM and ECO;

- Keep and maintain a register and record all ‘near miss’ incidents, actual incidents and public complaints, along with the consequent corrective actions/remedial action taken in associated reports and submit these within one week of the occurrence to the PM and ECO for signing off;
- Report progress towards implementation of and non-conformances with the latest EMP version and approved Method Statements at site meetings with the PM and ECO;
- Prepare compliance status/feedback reports and submit these to the PM and ECO and keep copies thereof on record for the duration of the contract and at least three years after the contract expired;
- Ensure that suitable records are kept of all compliance status/feedback reports, incident reports and complaints register and that these documents are available for auditing by the environmental authorities, PM and ECO at all times: and
- Notify the ECO of any area that has been rehabilitated in order for the ECO to inspect the area and advise on his acceptance or additional requirements.

4.3.4 Power Station Manager – operational and decommissioning phases

The Power Station Manager (PSM) will be responsible for monitoring, reviewing and verifying compliance with the EMP. The duties of the PSM shall include:

- Ensure that all required and relevant environmental roles are identified and filled with adequately suitable and qualified personnel;
- Ensure that the latest version of the EMP is reviewed and if necessary revised and that any revision is approved by the DEA; to ensure that it remains current;
- Implementation the EMP through the development of an Environmental Management System (EMS) and associated Standard Operating Procedures (EOPs), ensuring compliance with the contents of this document and any other environmental policies and procedures which may be applicable to the project;
- Ensure that the EMP specifications are included in all future tender documents issued for activities on site, and that the prospective tenderers/ contractors abide by the provisions thereof;
- Monitor and verify that the EMP is adhered to at all times and take action if the specifications are not followed;
- Monitor and verify that environmental impacts are kept to a minimum;
- Review and approve operational EOPs;
- Monitor the undertaking of environmental awareness training by all new personnel coming onto site;
- Inspect the site and surrounding areas regularly with regard to compliance with the EMP;
- Ensure that the necessary environmental authorisations and permits have been obtained; and
- Ensure the undertaking of environmental awareness training of all new personnel coming on to site.

4.3.5 Environmental Manager – construction, operation and decommissioning phases

The PM (or SM) and PSM will appoint an EM with responsibility for the overall implementation, administration and enforcement of the EMP for the construction phase and operational/ decommissioning phase. This includes interaction, environmental control of site actions, re-mediation and rehabilitation work.

In particular, the EM will be responsible to:

- Be fully conversant with the EIA; i.e. Environmental Impact Report (EIR) and specialist reports;
- Be fully conversant with the conditions of the Environmental Authorisation;
- Be fully conversant with the latest version of the EMP and its associated environmental specifications;
- Be fully conversant with all relevant environmental legislation and Eskom environmental policies and procedures, and ensure compliance with these;
- Assist Eskom in ensuring necessary environmental authorisations, permits and licenses have been obtained;
- Assist the PM (and/or SM) / PSM with ensuring that all required and relevant environmental roles are identified and filled with adequately suitable and qualified personnel;

- Assist and support the ECO / independent environmental auditor, the EMC and any environmental authority that may wish to do so in carrying out any EMP compliance monitoring tasks they require efficiently;
- Promote a holistic view of the environmental impacts of the project activities and ensure that environmental impacts are kept to a minimum as far as practically possible;
- Provide guidance, assistance and input to the project team with regards to environmental management on a strategic level;
- Review all master plans (throughout the construction phase), make recommendations to the SM on any required amendments and ensure effective implementation / adherence to these on site;
- Ensure that activities on site comply with all the relevant environmental legislation;
- Develop and manage the implementation of an EMS;
- Review the EMP and EMS continually and submit reports to the PM / PSM on the status of and compliance therewith;
- Make recommendations on any requirements in terms of EMP / EMS revision and updates to the PM / PSM and ECO;
- Assist the PM (or SM) / PSM in ensuring that the EMP specifications are included in all future tender documents issued for activities on site, and that the prospective tenderers/ contractors abide by the provisions thereof;
- Ensure all environmental aspects and impacts are identified for all activities taking place and for all major plant and equipment and advise the PM and ECO on any Unexpected Environmental Issue (refer to **Section 2.6**);
- Review and make recommendations to the SM, PM and/or PSM on the acceptance of Method Statements / EOPs;
- Inspect the site and surrounding areas regularly with regard to compliance with the EMP;
- Monitor and verify that the EMP / EMS is adhered to at all times;
- Take action against contraventions of the EMP and give instruction regarding mitigation and corrective action;
- Advise on the removal of person(s) and/or equipment not complying with the specifications;
- Assist the PM / PSM, SM and/or Contractor in finding environmentally responsible solutions to problems;
- Maintain records of all activities/ incidents concerning the environment and how they were addressed;
- Maintain a register of public complaints received and how they were addressed;
- Maintain a non-compliance register;
- Maintain a register of audits;
- Provide material/ manuals and assistance for environmental awareness raising and training;
- Monitor the undertaking by Eskom and Contractors of environmental awareness training for all new personnel coming onto site;
- Complete checklists as necessary;
- Compile progress reports on a regular basis on environmental management for submission to PM / PSM, SM and the ECO / Independent Environmental Auditor; and
- Inform the relevant authority, DEA, of any <u>significant</u> contravention/ non-compliance by any contractor.

4.3.6 Community Liaison Officer

A Community Liaison Officer (communications practitioner) from Eskom shall:

- Deal with community needs and complaints;
- Develop and open liaison channels with nearby residents and I&APs, to facilitate communication and field concerns or complaints;
- Publish public notices that provides information on the progress with the Nuclear-1 Project and associated environmental management planning and implementation regularly; and
- Pro-actively inform I&APs through the Environmental Monitoring Committee (EMC) and appropriate media notices of any future construction activities that could affect them.

4.3.7 Eskom Conservation Officer

The Eskom Conservation Officer will act as the custodian of the conservation and declared "no-go" areas on behalf of Eskom. As such he/she shall advise the project team on all matters related to safe-guarding and protection of these areas and remediation and rehabilitation of any impacted areas.

4.4 Independent Environmental Control Officer and Auditor

4.4.1 Environmental Control Officer – construction phase

Eskom shall appoint a suitably qualified person or consultancy, approved by the DEA and preferably also the EMC, to act as an Environmental Control Officer (ECO) for the duration of the construction phase. The ECO must be independent from Eskom and the Contractors; and DEA and Eskom with the assistance from the EMC must ensure that this independence is not compromised in any way. The main role of the ECO shall be to frequently monitor, review and verify the implementation and compliance with environmental legislation, the Environmental Authorisation and the EMP; and secondly, to liaise with the environmental authorities, PM, SM, Contractor and EMC to provide advice and support in terms of the implementation of the EMP.

Eskom shall appoint the ECO at least one (1) month, but preferably more than three (3) months before the start of construction. Eskom must then immediately notify the DEA; other relevant authorities and the EMC of such an appointment for communication purposes. Eskom shall bear the costs of the ECO.

It must be noted that on a project as complex as this, the ECO may in fact consist of a team, with a chief ECO assisted by various deputy ECOs.

The ECO must:

- Be accountable to and report to the DEA and EMC;
- Be fully conversant with the EIA; i.e. Environmental Impact Report (EIR) and Specialist Reports;
- Be fully conversant with the conditions of the Environmental Authorisation;
- Be fully conversant with the latest version of the EMP and its associated environmental specifications;

- Be fully conversant with all relevant environmental legislation and Eskom environmental policies and procedures, and ensure compliance with these;
- Be responsible for inspecting and approving all rehabilitation works (except where such rehabilitation involves small scale rehabilitation, e.g. removal of small spills, gardening);
- Establish whether any Unexpected Environmental Issues (refer to **Section 2.6**) exist, which may relate to any significant environmental impacts; and bring such issues to the attention of the Project Manager (PM) and the Department of Environmental Affairs (DEA) along with any recommendations for additional assessment (e.g. specialist study) and/or mitigation of such impacts;
- Revise and update the EMP as and when necessary and submit such updates to the PM for review and approval procedures;
- Submit copies of revised EMP to all relevant stakeholders for their information and review;
- Convey the contents of this document to the site staff and discuss the contents in detail with the PM, SM, EM and Contractor;
- Advise the PM on necessary environmental authorisations and permits that would be required;
- Prepare EMP introduction and environmental awareness training course material/manual and present this course to the PM, SM, Contractor and possibly sub-contractors, including any employee member they deem necessary, prior to them starting any work on site;
- Monitor the Contractors' undertaking of environmental awareness training (induction and refresher) for contractor personnel;
- Review and comment on <u>all</u> Method Statements relevant to environmental management and make recommendations to the PM (or SM) on whether or not to accept the Method Statement and/or any amendments or revisions required;
- Make recommendations on any additional Method Statements or Method Statement Amendments that may be required as the construction process progresses;
- Develop a strategy and system (e.g. checklist) for site inspections and EMP compliance monitoring and audits;
- Undertake regular (frequency to be determined) site inspections and liaison with the SM and/or Contractor (meetings) to monitor, audit and verify that all works comply with environmental legislation and the EMP compliance; that environmental impacts are kept to a minimum; and ascertain the level of such compliance and impact minimisation;
- Make recommendations for corrective action on non-conformances / non-compliances to the project team;
- Keep record of EMP implementation, monitoring and audits;
- Prepare regular monitoring/audit reports which reflect the EMP compliance status, findings, issues and recommended actions for addressing non-compliances and submit these to the relevant members of the project team (most notably the PM), the relevant environmental authorities (including the DEA, provincial and local authorities) and the EMC;
- Review 'near miss' reports, incident reports and complaints register and recommend corrective actions;
- Report any serious environmental incidents or environmental impacts immediately to the PM, SM, EM, relevant environmental authorities and the EMC;
- Advise the SM on required work stoppages and on the removal of person(s) and/or equipment not complying with the specifications as and when necessary;

- Issue instructions directly to the Contractor (strictly only in an emergency) and inform the SM as soon as possible and in writing of the instructions given to the contractor.
- Keep records of all activities/incidents concerning the environment on site;
- Maintain a photographic record of the site before, during and after construction; and
- Make recommendations to the PM and SM on the issuing of fines for transgressions of site rules and penalties for contravention.

Depending on Eskom's requirements, the ECO may:

- Assist the PM to ensure that necessary environmental authorisations, permits and licenses have been obtained and updated if necessary.

4.4.2 Independent environmental auditor – operation and decommissioning phases

Eskom shall appoint a suitably qualified and experienced independent environmental auditor ('the Auditor') to undertake regular (e.g. annual) EMP and EMS compliance audits. The details of the roles and responsibilities will be determined and agreed with the relevant stakeholders prior to commencement of the operational and decommissioning phases.

4.5 Contractors, subcontractors, service providers and vendors

The Contractor(s) and his/her subcontractors are responsible for the implementation and compliance with recommendations and conditions of the EMP during the construction. During operation and decommissioning Eskom may also appoint contractors and other service providers or vendors that would need to consider Eskom's environmental management requirements.

All contractors (including subcontractors and staff), service providers and vendors are ultimately responsible for complying with Eskom's environmental management specifications (including this EMP) where applicable.

4.5.1 Contractor – construction phase

The Contractor shall:

- Be fully conversant with the latest version of the EMP and its associated environmental specifications;
- Appoint a dedicated person (Contractor Environmental Officer - EO) to work with the EM and ECO before commencement of any construction work on site;
- Appoint a team of Environmental Officers to assist the EO (as detailed in **Section 4.5.2**);
- Ensure that a copy of the Environmental Authorisation and latest version of the EMP are available on site at all times;
- Advise the SM, EM and ECO on any Unexpected Environmental Issue (refer to **Section 2.6**) that the Contractor may be aware of;
- Implement the EMP and any associated relevant environmental specifications (including any revisions, additions or amendments) effectively before a

construction activity commences; which includes the on-site implementation of steps to mitigate environmental impacts;

- Be responsible for his/her sub-contractors;
- Adhere to any environmental instructions issued by the Site Director/Project Manager on the advice of the ECO;
- Arrange and ensure the effective undertaking of environmental awareness training of all the Contractor and his Sub-contractors personnel coming on to site (Note that training must be appropriate for the level of the tasks and functions undertaken);
- Maintain a training register of all training modules, staff that had received training, dates that training had occurred; and ensure that staff sign a training register on completion of a training session;
- Ensure that compliance to the Environmental Authorisation and EMP is contractually binding on all sub-contractors, suppliers and service providers;
- Ensure that all employees and Sub-contractors employed comply with the requirements and provisions of the EMP;
- Prepare required Method Statements (refer to **Section 8.1**) for submission to the PM, SM, EM and ECO within the time period agreed with the PM (or SM);
- Implement all relevant approved Method Statements effectively before a construction activity commences;
- Ensure that all contract staff are provided with, trained on and make use of the relevant and latest version of the EMP specifications and Method Statements all the time;
- Ensure that emergency procedures are in place and effectively communicated to personnel;
- Monitor environmental performance and conformance with all the EMP specifications relative to the Contractor's and his Sub-contractor's construction activities continually (i.e. at least daily site inspections);
- Discuss implementation of and compliance with the EMP with staff at routine site meetings (preferably daily, but at least weekly) as a fixed agenda item;
- Attend regular (typically fortnightly to monthly) project site meetings with the SM / EM and ECO and report progress towards implementation of and non-conformances with this EMP at the meetings;
- Prepare and submit or table written monthly EMP progress and compliance reports to the SM/EM and ECO; and avail these reports to the Environmental Monitoring Committee (EMC), should they request to see them;
- Notify the SM and ECO of the anticipated programme of works and fully disclose all details of activities involved;
- Notify the SM as well as the ECO of all incidents, accidents and transgressions on site with respect to environmental management as well as requirements of the EMP and corrective actions/ remedial action taken;
- Report all 'near miss' and actual environmental incidents (spills, impacts, legal transgressions, etc.) and public complaints received immediately to the SM and ECO;
- Investigate all 'near misses and actual environmental incidents and public complaints received immediately and implement appropriate preventative and corrective action as soon as possible.
- Maintain a record of all 'near miss' and actual environmental incidents in the required report formats and all public complaints in a complaints register; including a report on the associated investigation undertaken and corrective actions taken to address the issue;

- Submit the 'near miss' and actual environmental incident reports/registers to the SM, EM and ECO within a week of the incident for review and signing of; and keep records available on site all the time for the ECO for inspection and review;
- Retain abovementioned records for at least 3 years after the completion of the contract;
- Inform the ECO of problems arising when implementing the EMP and recommend ways of improving it;
- Inform the SM as well as the ECO of any complaints received:
- Assist and cooperate with the ECO, EMC and any authority on any audits they undertake and avail relevant documentation for their review: and
- Notify the SM of any area that has been rehabilitated in order for the SM to arrange ECO inspection of the area and advise on approval or additional requirements.

4.5.2 Contractor Environmental Officer

The Contractor shall appoint a suitably qualified senior staff member with adequate environmental knowledge and experience as Contractor Environmental Officer (EO) to assist with the effective implementation of the EMP and to render environmental control of site actions, re-mediation and rehabilitation work. This Environmental Officer shall be supported by a team of suitably qualified Environmental Officers to a minimum one (1) Environmental Officer (including the EO) per 500 Contractor personnel on site at any particular time[7] at the discretion of the site manager this may be adjusted to 1 Environmental Officer per 1000 Contractor personnel. As such, the Contractor shall provide for and ensure that this ratio of Environmental Officers is maintained until the end of construction and until all rehabilitation measures, as required for implementation due to construction, are completed and the Contractor has handed the site over to Eskom. The EOs must be full-time employees. Furthermore, the Contractor shall ensure that the EO (or, where applicable, team of Environmental Officers) focuses exclusively on matters related to environmental management, compliance and enhancement.

The EO shall:

- Be fully conversant with the latest version of the EMP and its associated environmental specifications, as well as all the environmental Method Statements;
- Assist with the implementation and addressing all the requirements of the EMP;
- Keep register and a library of all the latest Method Statements up-to-date;
- Assist the Contractor with issuing staff with the latest version of the EMP Specifications and Method Statements and ensuring that these are accurately and fully implemented / used;
- Assist the Contractor in the drafting of environmental Method Statements, verifying whether these remain up-to-date / effective and making recommendations for amendments / improvements to Method Statements and EMP specifications;
- Assist with arrangement of environmental training of personnel and associated record keeping;
- Attend regular site meetings (scheduled and ad hoc);

[7] The number of personnel on the site will vary through the construction process, thus the number of EOs will vary accordingly.

- Conduct regular internal inspections and audits to monitor, verify and ensure that all relevant environmental specifications and procedures are adhered to effectively at all times;
- Be available to investigate all environmental problems arising on the work sites;
- Advise the Contractor on the rectification of any pollution, contamination or damage to the project site, rights of way and adjacent land in line with the EMP specifications, Method Statements and or instructions received from the SM.
- Assist the ECO and EM with identifying and/or assessing any actual or potential impacts of construction activities on the environment, including Unexpected Environmental Issue (refer to **Section 2.6**);
- Assist with the Contractors environmental record keeping; and
- Provide the EM and ECO with weekly and monthly reports detailing environmental management, performance and compliance in their respective areas of control in a format to be decided and/or agreed upon by the EM and ECO.

The Contractor may task the EO to:
- Assist with the development of Method Statements;
- Present environmental awareness training courses to contractor staff; and
- Assist with the contractor's environmental reporting and recording obligations.

4.5.3 Sub-contractors

Compliance to the relevant Environmental Authorisations and EMPs shall be contractually binding on all sub-contractors, suppliers and service providers. It is the Sub-contractor's responsibility to implement and comply with recommendations and conditions of the EMP at all times.

Subcontractors shall:
- Study all relevant EMP sections, specifications and approved Method Statements carefully and gain a full understanding of the implications thereof;
- Prepare and provide Method Statement(s) in accordance with the Contractor's (or SM's) instructions;
- Implement and comply with all relevant EMP sections, specifications and approved Method Statements;
- Notify the Contractor of the anticipated programme of works and fully disclose all details of activities involved;
- Avail him/her, as well as any employee he/she may identify, for induction training on the environmental requirements in accordance with the Contractor's (or SM's) instructions;
- Implement on-site steps to mitigate environmental impacts;
- Be responsible for the actions of employees in as far as they may impact on the environment;
- Report progress towards implementation of and non-conformances with the relevant sections of the latest EMP version and approved Method Statements to the Contractor;
- Inform the Contractor and ECO of problems arising when implementing the EMP and recommend ways of improving it;
- Notify the Contractor of all 'near misses', incidents, accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMP version and approved Method Statements and seek advice from the Contractor for required corrective actions and/or site remediation;

- Record all incidents and the corrective actions/remedial action taken in incident report and submit these to the Contractor for signing off; and
- Record all complaints received and immediately inform the Contractor thereof.

5 INDUCTION AND AWARENESS OF SITE STAFF AND VISITORS

It is important to ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. To achieve effective environmental management, it is necessary that Eskom employees, service providers, Contractors and Sub-contractors and visitors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP.

Environmental training to all personnel must include at least the following:

- A basic understanding of the key environmental features of the site and the surrounding environment;
- The requirements of the EMP and associated environmental specifications as they apply to the Nuclear-1 project;
- A basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated;
- The identification of archaeological artefacts, and rare and endangered flora and fauna that may be encountered on the site;
- The requirements in terms of procedures and conduct when dealing with the public and/or using or impacting public or private places, services or infrastructure; and
- Awareness of any other environmental matters, which the Project Manager (PM), Power Station Manager (PSM), Site Manager (SM) and/or ECO deems to be necessary.

It must be ensured that any new staff, at all levels of responsibility, that are to work on site undergo an ECO-accepted initial / induction environmental awareness training session on the following topics; prior to any work commencing on-site: Records must be kept of those that have completed the relevant training for at least 5 years.

- Key potential impacts and mitigation measures;
- The high conservation status of the fauna and flora around the site;
- Conservation-related fauna habitat corridors and “no-go” areas;
- Archaeological issues and procedures;
- Emergency response;
- Responsibilities towards the public;
- Linkages between environmental and occupational health and safety protection and management (taken that a separate Occupational Health and Safety Programme will be introduced);
- Roles and responsibilities of key staff on the site;
- defacing landscape elements of site e.g. painting rocks and removal of vegetation without permission; and
- The benefits of achieving conformance with, and consequences of transgressions of environmental specifications or requirements of the EMP.

The training must include a system of certification and/ or accreditation, to ensure all the workers have proof of work performed for future job applications.

Induction training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Where induction training has been

done verbally, persons having received training must indicate in writing that they have attended a training session and have been notified in detail of the contents and requirements of the EMP.

Induction training is compulsory for all Eskom and Contractor staff members prior to commencing with any survey, inspection, construction, operation and/or decommissioning activity on site. Thereafter training must be repeated and enhanced regularly to ensure ongoing awareness of everyone working at the site for the duration of their work on-site. Special induction training arrangements may be required for project activities taking place at the site during the pre-construction phase.

Appropriate induction training on relevant topics must also be provided to all service providers and visitors to the site, including for example, delivery services, transporters, surveyors, caterers and inspectors, to name but a few.

Apart from general induction, the following specific training needs to be provided to the indicated categories of staff:

- Staff that will be involved in site clearing and excavations must attend a short "heritage course" to enable them to assist in the recognition of potential fossil and other archaeological material; and
- Delivery drivers, especially those transporting hazardous goods, must be informed of all procedures and restrictions (including "no-go" areas along access roads) required to comply with the EMP.

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6 COMMUNICATION AND LIAISON WITH STAKEHOLDERS AND THE PUBLIC

Eskom must ensure that the public and surrounding communities are informed and updated on the project and EMP compliance status throughout the project life cycle.

6.1 Information dissemination

Information dissemination shall be aligned with and form part of the Eskom emergency planning procedures and system.

Sufficient signage must be erected around the site, informing the public of the construction, operational and/or commissioning activities taking place that could potentially affect or inconvenience them. The signboards should include the following information:

- The project activity and phase;
- The applicant, i.e. Eskom;
- The name of the organisation and/or person appointed as Environmental Control Officer (ECO) to monitor EMP compliance;
- The name of the lead Contractor (during construction); and
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

Eskom will develop an Emergency Management Plan that will include mechanisms for communicating potential risk, health and safety information to affected communities. Effective signage must thus also be erected and information disseminated (leaflets drops, broadcasts, community meetings, etc.) where necessary, to inform the public of any hazards or safety risk associated with any project related activity or operation; e.g. road works, blasting, heavy loads, etc.

Eskom will develop and implement a campaign to keep Interested and Affected Parties (I&APs) effectively informed of the Nuclear-1 project and its progress.

6.2 Environmental Monitoring Committee

As mentioned in **Section 3.2.1** and **Section 4.2.2**, Eskom shall establish an Environmental Monitoring Committee (EMC) to ensure that relevant information can be reported to DEA as well as I&APs during the Construction Phase, and possibly subsequent phases of the project.

The objectives of an EMC include to:

- Facilitate proper communication and co-operation between Eskom, the surrounding community, and other interested and affected parties;

- Facilitate discussion on various issues pertaining to labour, safety, health environmental, social and other community related issues and concerns;
- Serve as an advisory forum to the Site Manager during the construction phases of the nuclear power station;
- Provide a platform where day-to-day community concerns around the project can be raised and addressed;
- Ensure that the community and other stakeholders understand the various legal obligations imposed on the project, and Eskom's strategy to meet these obligations; and
- Provide a platform where Eskom's performance on issues relating to environment can be discussed.

6.3 Community Liaison Officer

In addition and as mentioned in **Section 4.3.6** Eskom's Community Liaison Officer will deal with community needs and complaints and open liaison channels with nearby residents and I&APs, to facilitate communication and field concerns or complaints. I&APs will be informed of any construction and operation activities that could affect them.

6.4 Day-to-day social responsibility and management

In terms of day-to-day social responsibility and management, the following principles will apply:

- All public members will be treated with respect and will not be affected or inconvenienced unnecessarily;
- Access to the site must be controlled at all times;
- No casual employment or informal trading will be allowed to take place at the entrance to the site and on-site. Vendor/contractor recruitment may only take place at designated centres in the surrounding towns. Eskom operational recruitment will take place on site in a planned fitness for duty building.
- No untrained employees will be allowed to work on-site;
- Eskom and the Contractor must, as far as possible and practical, employ labour with appropriate qualifications and experience from the surrounding areas;
- All locally employed staff must be recruited through a labour office that is to be established in one or more of the local towns; The following restrictions will apply in principle to staff, including but not limited to:
  - No overnight accommodation on site (with the exception of security guards);
  - No movement outside of designated areas;
  - No indiscriminate disposal of rubbish or rubble;
  - No littering;
  - No collection of firewood;
  - No interference with any wildlife, fauna or flora;
  - No poaching of any description;
  - No use of facilities other than the toilets provided;

- No domestic pets on site unless for security purposes (i.e. horses and dogs); and
- No cooking on open fires.

- Eskom and the Contractor must commit to the requirements of relevant Eskom policies on supplier development and localisation. Relevant Eskom requirements in this regard include:
  - Procurement policy and procedure documents 32 1033 and 1034;
  - Code of Good practice for B-BBEE document 32-147; and
  - PCM for managing New Growth Path reporting on skills development 240-43399399.

7 LIBRARY OF ENVIRONMENTAL SPECIFICATIONS TO ADDRESS SPECIFIC ASPECTS AND IMPACTS

This section covers the requirements for managing and controlling various specific aspects and environmental impacts of project related activities associated with the Nuclear-1 development, to ensure that impacts on the environment are appropriately mitigated. The specifications are based on the mitigation measures identified through the EIA process.

The specifications are worded in the form of instructions, which indicate that such a specification **'must' / 'shall'** be followed or adhered to. This is unless the wording clearly indicates a specification to be conditional or a recommended option.

For ease of reference, the responsible party for each specification is included alongside individual specifications in the "Responsibility" column.

The following are considered responsible parties:

Applicant:	Eskom Project Manager, Site Manager, Resident Engineer and/or Power Station Manager, as the case may be.
Contractor:	All contractors and/or subcontractors working on the site to implement the nuclear power station project, with the lead contractor(s) fully responsible for compliance.
ECO or Auditor:	Environmental Control Officer or Independent Environmental Auditor (individual or company).
Specialist:	A variety of specialists that may be consulted or appointed during the role-out of the project.

Ultimately the applicant remains accountable for effective and complete implementation of the EMP throughout the nuclear power station life cycle. However, the Applicant may award lead responsibilities to a contractor or specialist by way of contractual arrangements in combination with this EMP.

The phases of the development include the following:

Planning & Design:	Spans the pre-construction phase; including master planning, contractor tendering and appointment, detail site surveys / investigations.
Construction:	Spans the period from site demarcation for construction purposes up to the handover of the site to the applicant for main commissioning.
Operation:	Spans the phase from the start of the main commissioning phase until operation of the facility finally ceases before full decommissioning.
Decommissioning:	Spans decommissioning, dismantling, demolition and clearing of nuclear power station facilities, structures and infrastructure; as well as the final site remediation.

There is an instruction table for each individual phase, except for Planning & Design this has been combined with Construction phase as part of the Construction Phase

table. The main commissioning of the plant is considered to form part of the operational phase. However, certain commissioning activities, e.g. commissioning of ancillary facilities, may for practical reasons form part of the construction phase. The exact handover phasing will be determined through contract negotiation.

Furthermore:

[ ]: While specifications should generally be considered an 'ongoing' responsibility; where applicable and appropriate, specific time or frequency requirements are flagged or shown in block brackets.

{Method Statement}: Indicates specifications that require an appropriate Method Statement to be developed, submitted for approval to the applicant (and accepted by the ECO) and thereafter implemented for effective implementation of the specification.

{EOP}: Indicates specifications that require an Environmental Operating Procedure (EOP) to be developed, endorsed by the Power Station Manager (PSM) and ECO, incorporated and implemented as part of the site's Operational and/or Decommissioning EMP.

For ease of reference, each table is divided up into aspects for consideration as well as the relevant mitigation measures which accompany it. The aspects have been grouped as follows:

- Air quality;
- Geology and soils;
- Water management;
- Sewerage management;
- Wetland management;
- Flora management;
- Site remediation, rehabilitation and re-vegetation;
- Fauna management;
- Marine management;
- Socio-economic environment management;
- Heritage management;
- Overall site management and site development plan;
- Hazardous materials management;
- Visual impacts and aesthetics;
- Noise management;
- Security, site access and access control; and
- Safety.

7.1 Planning, Design and Construction Phase

ASPECT	*MITIGATION MEASURE*	*RESPONSIBILITY*	*COMMENTS*
7.1.1 AIR QUALITY			
Legal Requirements National Environmental Management: Air Quality Act 2004 (Act No. 39 of 2004) National Environmental Management Act, 1998 (Act No. 107 of 1998)			
a) General air quality management	Develop, implement and maintain an Air Quality Management Master Plan, including but not limited to: i) An 'off site' Air Quality Monitoring Programme monitoring specific areas of concern as determined by the ECO; ii) Guidelines for on-site dust suppression; iii) Appropriate air emission and air quality targets / criteria (e.g. for dust levels, exhaust fumes / gasses, etc.); iv) Report on the air quality monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency of every 3 to 6 months]**; and v) Address any air pollution issues that are identified during the air quality monitoring. **{Method Statement} / {EOP}**	Applicant ECO Specialist Specialist Applicant Applicant	
b) Dust suppression	Develop, implement and maintain an 'on site' Air Quality and Dust Control and Monitoring Programme, to meet the requirements of the abovementioned Air Quality Management Master Plan; including but not limited to the following: i) Apply mitigation measures to effectively suppress airborne dust at construction sites and on all dirt roads that service the nuclear power station, e.g. o Pave or temporary stabilise surface of frequently used roads o Damp / wet down trafficked areas with freshwater, and where appropriate, apply suitable additives to reduce the application frequency and use of fresh water; o Implement and enforce appropriate speed limits on dusty roads. o Use of cloth or brush barrier fences; and	Applicant Applicant and contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ Stockpiles should be maintained at a natural angle of repose (where practical), and should be hydroseeded and a suitable stabilizer should be used while the seed's germinate (in consultation with the ECO) ii) No raw seawater will be used for dust suppression	Applicant and contractor	
7.1.2 GEOLOGY AND SOILS			
Legal Requirements National Environmental Management Act 1998 (Act No. 107 of 1998) Minerals and Petroleum Resources Development Act 2002 (Act No. 28 of 2002 Marine Pollution (Control and Civil Liability) Act 1981 (Act No. 6 of 1981)			
a) Dune management	i) Should any dunes be disturbed, they should be stabilised in some manner typically such as the use of drift fences, brushwood and with pioneer indigenous dune vegetation. ii) Repair dune blowouts by typically placing brushwood or using drift fences on the bare sand surfaces, and then re-vegetating the bare sand with suitable pioneer species. iii) Address any ad-hoc issues such as obstruction of moving dunes that are identified during the mobile dune monitoring. iv) Avoid the sensitive mobile and semi-mobile dunes, rare coastal wetlands and the Langefonteinvlei wetland, Avoid the embryonic dunes and semi-mobile parabolic dunes; particularly along the Thysbaai coastline, v) Define, design and include on the site master plan any necessary access tracks to the beach through the dunes in a way that minimises impact on dune and associated habitat (e.g. bird roosting sites), minimises the track footprint, prevents dune blow-out and allows for effective and complete dune rehabilitation. **{Method Statement}** vi) Demarcate, develop and maintain any access tracks/walkways through the dunes in accordance with the design specifications and the abovementioned site master plan. vii) Minimise the number of pylons for the 400kV and 132kV lines over the dune field as far as is practicably possible. viii) Provide and arrange for the construction of these pylons and the stringing of the conductors to be accomplished primarily by helicopters, with the assistance of 4x4 vehicles and quad bikes on designated tracks. **{Method Statement}** ix) Access to the pylons for inspection, testing and maintenance purposes	Applicant and contractor Applicant and contractor Applicant/ECO Applicant/ECO Applicant Applicant/ECO Applicant Applicant/ECO Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	must be achieved by 4x4 vehicles along tracks. x) Apart from constructing the power lines between the power station and the HV Yard, access to the mobile dune field should be strictly controlled. <u>Western Access Road</u>: xi) Steep dune slopes should be avoided as this may cause destabilisation of dunes and unnecessary management intervention in the form of costly revegetation. xii) Construct retaining walls where cuts are excessive and/or to optimise road vertical alignment to minimise the vertical extent of cuts.	Contractor Applicant and contractor Applicant and contractor	
b) Top soil management	i) Engineer proper management solutions (e.g. discharge rates, discharge quality, scouring minimisation) to the flow of surface runoff to minimise erosion of topsoil and contamination of streams and wetlands, most notably from hardened surfaces such as roads and buildings. ii) Provide for and implement the appropriate and effective stockpiling and safekeeping of top soil in accordance with Section 7.1.2. iii) Restrict the removal of topsoil to areas where excavation or preparation for coverage by hardstanding are imminent, and there is a high risk of imminent topsoil contamination (e.g. areas of heavy traffic, areas in proximity of cement batching facilities, etc.). iv) Remove the topsoil material (minimum 300 mm) from any areas to be excavated, covered by hardstanding or from which the topsoil needs to be stripped for topsoil protection. v) Store the topsoil separately (from general fill, rubble, etc.), effectively and securely in a designated area for later use in rehabilitation in stockpiles in a manner that would limit erosion and dust. **{Method Statement}** vi) Plan for and adhere to a minimum of topsoil handling (preferably handle stockpile only during initial stockpiling and for eventual removal for rehabilitation purposes). vii) Reseed topsoil stockpiles that are to be kept for extended periods, to prevent excessive dust or erosion.	Applicant, contractor Applicant Applicant, contractor Applicant, contractor Applicant contractor Applicant, contractor Applicant, contractor	
c) Erosion management	i) Stabilise and manage cleared areas to prevent and control erosion by applying a suitable method of stabilisation. **{Method Statement} / {EOP}** ii) Remediate any erosion channels which develop on open ground by suitably backfilling, compacting and restoring to a proper condition (i.e.	Applicant, contractor Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	landscaped, vegetated etc.). iii) Areas to be cleared should be restricted to a minimum, sequentially and when necessary to avoid having large portions of land void of vegetation for long periods of time in order to benefit from the stormwater absorption, erosion protection and dust control properties of the vegetation cover**.** **{Method Statement}**	Applicant, contractor	
d) Soil stockpiling and spoil management	i) Secure and treat soil stockpiles to reduce dust generation and erosion effectively ii) Remove all excess fill material from an area or site (e.g. the contractor's yard) that is no longer in use, once construction activities therein have been completed. iii) Refrain from and strictly prohibit deposition of fill on the transverse and associated dunes. iv) Locate all soil stockpiles (topsoil and fill) as follows: ○ Sufficiently away from seepage zones, flood lines, water courses and other ecological sensitive area; ○ Preferably in areas that were already disturbed before the nuclear power station project activities commenced on site; ○ In areas as indicated in the relevant approved and latest site utilisation and/or layout plans; and ○ Allow for soil from construction areas which are a distance away from the main site (e.g. such as from the inlet and outlet pipes) to be stockpiled locally at the 'away – area', provided that specifications above are adhered to. <u>Western Access Road</u>: v) Excess spoil from dune cuts should not be used to infill dune valleys and slacks, especially along the Western Access Road	Applicant, contractor Contractor Applicant, contractor Applicant, contractor Applicant, contractor	
e) Marine spoil disposal	i) Dispose of 'non-hazardous' spoil in the ocean at a deep offshore site the distances from shore (6 km offshore) and at a medium pumping rate of no more than 2.06 m/s as recommended in the Oceanographic Assessment (Appendix E16 of the EIR) and the Marine Assessment (Appendix E15 of the EIR). **{Method Statement}** ii) It should be noted that a combination of spoil disposal at sea and on land may occur due to the fact that it may become uneconomical to dispose of	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	small quantities at sea (as construction works proceed). However spoil disposal at sea is the preferred method of disposal and the vast majority of the spoil will be disposed at sea. iii) Routing of marine spoil disposal pipelines must be subject to approval by the heritage, botanical and wetland specialists, as the pipeline(s) will traverse the sensitive coastal strip, which is otherwise off-limits to development due to its sensitive flora and heritage features.	Applicant	
7.1.3 WATER MANAGEMENT			
Legal Requirements National Environmental Management Act, 1998 (Act No. 107 of 1998 National Water Act, 1998 (Act No. 36 of 1998) Water Services Act, 1997 (Act No. 108 of 1997)			
a) Site Water Supply Master Plan	i) Develop and maintain an overall site Water Supply Master Plan for effective provision of freshwater for all on-site processes, operations, facilities and services for resident staff, contractors, subcontractors, based on best estimates of such requirements; and include such a plan in the contractor tendering and agreement process / operational EMS.	Applicant	
b) Water Use Licence (WUL)	i) In the case of a nuclear power station site the stormwater management system for the nuclear power island area itself needs to be designed in accordance with the standards specified in the Integrated Water Use License for the power station by the Department of Water Affairs. ii) Assess all project activities and associated water use requirements (e.g. treated wastewater discharge and water abstraction) well in advance in order to ensure the relevant Water Use License (WUL) is applied for where required; and ensure that such a WUL is in place and all associated conditions complied with prior to such use commencing. **{Method Statement} / {EOP}.** iii) Implement and adhere to all conditions of the Water Use Licence (WUL) and the relevant water use, stormwater, wastewater specifications and plans referred to in this EMP.	Applicant Applicant, Contractor, audited by ECO Applicant	
c) Surface water usage and quality	i) Ensure that no natural surface water sources (i.e. streams, rivers, wetlands) are used; e.g. in situ to wash / clean plant or equipment, and/or for any water abstraction (other than for emergency firefighting). ii) Minimise use of fresh water, prohibit water wastage, and train and encourage all staff to use water sparingly. iii) Minimise impacts on natural watercourse areas, by taking all necessary	Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	precautions to ensure that construction activities do not alter natural ground and surface water quality or flows in areas identified as sensitive.		
d) Supply abstraction and consumption	i) Install site services for water provision, as soon as possible before the main construction / operation activities commence but provided that the required approvals/licenses have been obtained, e.g.: o Connect to a water reticulation system, preferably tapping into a regional supply scheme rather than a local scheme; o Provide an on-site or local desalination plant and associated beach wells as soon as possible during early construction; o if groundwater abstractions wells are used during early construction, monitor groundwater levels to ensure that there is no impact on neighbouring water users, and/or o If water is temporarily brought in by tanker, ensure that it is provided by an appropriately licensed local water supplier. **{Method Statement} / {EOP}** ii) Design and maintain seawater cooling water intake in accordance with the requirements specified below: o Use exclusion screens and diversion of trapped debris for clearing of debris from intake water o Cooling water intake abstraction rate should be 1 m/s or less. iii) Refrain from making use of and/or collect water from any source other than those pointed out in the approved Method Statement / EOP. iv) Avoid abstraction from aquifers with direct links to freshwater ecosystems, by ensuring that the specific mechanisms such as the installation of a cut-off wall around the nuclear island excavation are implemented and applied. v) Should abstraction of groundwater from aquifers with direct links to fresh water ecosystems occur, the abstraction should take place >500 m from the nearest boundary of such a system.	Applicant, contractor Applicant Applicant Applicant Applicant	
e) Groundwater shortage, wastage and salinisation of fresh water	i) Engineer solutions to the flow of groundwater where construction interacts with the flow of groundwater, to ensure that such flow is redirected in such a way that downstream impacts are minimised. ii) Report on the groundwater monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by a statutory requirement]** iii) Address any issues, such as groundwater contamination, that are identified	Applicant, contractor with specialist guidance Applicant Applicant/ECO	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	during the abovementioned groundwater monitoring. iv) Develop effective groundwater remediation procedures, and make the arrangements and take preparations required to put these in place, to allow for immediate implementation prior to any potential impact on groundwater quality (with only minor, insignificant levels of contamination allowed to be mitigated with natural attenuation). **{Method Statement} / {EOP}** v) Implement the groundwater remediation procedures, should the results of groundwater monitoring indicate that contamination has occurred. **[Immediately]**	Applicant, contractor Applicant, contractor	
f) Groundwater contamination (most notably that of the primary aquifer)	i) Prevent soil and groundwater contamination by implementing and maintaining appropriate measures and procedures, including but not necessary limited to the following: ○ Record the water level in the monitoring boreholes weekly for at least one full hydrological cycle to establish the impact of the rainy and dry seasons on the water level. ii) Undertake a site assessment, once contamination has been detected (predominantly based on a deterioration of groundwater quality), as follows: ○ Identify the source of contamination and the scale of the problem; and ○ Investigate the extent of contamination by auguring a series of shallow, temporary exploration holes and collecting samples for analysis. iii) Apply appropriate waterproofing system to external walls below ground level to prevent the ingress of groundwater into the buildings, as well as the egress of radioactive substances out of the buildings.	Applicant/ECO Applicant, ECO Applicant, Contractor	
g) Water drawdown of groundwater, impact on wetlands and associated saline intrusion	i) As recommended in the Freshwater Ecology Assessment (Appendix E12 of the EIR) in order to secure currently poorly-conserved wetlands for conservation Eskom could increase the size of its property by acquiring adjacent properties. ii) Design, implement and maintain effective measures to limit the extent of drawdown of the water table in the immediate vicinity of the excavation, and to prevent saline intrusion from affecting the seasonal wetlands (as per Section 7.1.3). iii) Provide for the dewatering of the construction area and subsequent excavated areas by constructing a suitable a cut-off wall that effectively limits the radius of drawdown and minimises the impact on seasonal	Applicant with specialist guidance Applicant with specialist guidance Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	wetlands and/or groundwater quality. **{Method Statement} / {EOP}.** iv) The proposed drawdown mitigation design should meet the following design criteria as a minimum to mitigate loss or degradation of dune slack depressions and/or hillslope seep wetlands (e.g. Langefonteinvlei): o A cut off wall, or similar (dependent on what is considered best practice at the time of construction) should extend around all sides of the drawdown area, to limit the extent of impacts to coastal seep wetlands; o If necessary, more than one cut off wall (or other similarly functioning system) should be utilised, to control the extent of dewatering required across the nuclear power station site as a whole (e.g. dewatering of construction areas where groundwater may be exposed by site levelling, even though construction to bedrock as in the case of the Nuclear Island is not required; o The short-term drawdown effects and dune instability that would occur during installation of the proposed cut-off wall/ membrane / other appropriate device would need to be such that they too did not result in any drawdown of the Langefonteinvlei and its associated wetlands or the dune slack wetlands in the mobile dune; and o For mitigation against dewatering-related loss of coastal seep wetlands the following should be met in the design: ▪ The recommended cut-off wall/ semipermeable membrane / other appropriate structure (as mentioned above) should be extended to pass around the entire Nuclear Power Station construction area, to reduce the extent of draw-down; ▪ The proposed membrane / alternative structure would also need to facilitate the controlled passage of water to downstream coastal seeps, by allowing drainage of water through the cobble layer downstream of the Nuclear Power Station structure and cut-off walls **{Design}**; ▪ Given the risk of seawater intrusion during dewatering, and the fact that the impacts of seawater intrusion on wetland soils may be long-lasting, measures should be in place during construction to ensure that groundwater in the cobble layer is not interrupted even on a short term basis. Thus a system should be in place throughout the construction and operational phases of the	Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	development to facilitate the spread of dewatered or diverted flows from the terrace area, back into the lower levels (i.e. the cobble layer) of the aquifer; ▪ The approach taken should ensure that the downstream passage of groundwater along the cobble layer of the Algoa aquifer is not interrupted south of the terrace, by the Nuclear Power Station excavation to bedrock or by the shallower Nuclear Power Station terrace excavation. This means that provision should be made for the re-introduction and spread of diverted or dewatered groundwater flows into the cobble bed layer downstream of the excavation, such that the coastal seeps are neither starved of fresh water, nor exposed to concentrated flows that result in erosion of shallow surface soils at areas where discharge occurs. v) The detailed design of the proposed drawdown mitigation measure should be fine-tuned on the basis of the results of longer term surface and groundwater monitoring, being carried out at the Thyspunt site. **{Design}** vi) Provide for the installation of a series of well points drilled near the coastline for injecting of the water abstracted from the dewatering, that would effectively minimise seawater ingress into groundwater during dewatering (this is dependent on what is considered best practice at the time of construction). vii) Continue with the current groundwater monitoring programme to assess surface / groundwater / seawater interactions and the affect thereof on seasonal wetlands and groundwater quality. viii) Consider the abovementioned requirements for optimal siting (positioning) of the nuclear power station within the corridor considered during the EIA with the aid of geohydrological modelling / remodelling (by suitably qualified specialists) of the radius of the draw-down area. **{Method Statement} / {EOP}.** ix) Undertake credible geohydrological investigation (e.g. site investigations, numerical simulation, testing and analysis) of groundwater for abstraction as freshwater supply prior to such abstraction occurring; and follow specification for such abstraction as per Section 7.1.3.	Applicant Applicant with specialist guidance Applicant, contractor Applicant with specialist guidance Applicant with specialist guidance	
h) Degradation of coastal seep wetlands	i) The proposed drawdown mitigation design should meet the following design criteria as a minimum to mitigate degradation of coastal seep wetlands as a result of receipt of concentrated volumes of potentially	Applicant and contractor with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	sediment-rich water from dewatered areas: ○ Implementation of the recommended development setbacks should take place to distance wetlands from the sources of impact; ○ Sediment settlement ponds should be provided for water pumped from the excavation site during construction; ○ The location of such ponds should be decided on in collaboration with the botanical and wetland specialists; ○ The "Cleaned" water from sediment settlement areas should be passed back into the aquifer recharge system. Important components of the recharge system include the need for adequate redistribution of flows downstream of any groundwater diversion structures; and ○ Adequate space should be left between the coastal seeps and the edge of the power station terrace to allow for re-distribution of groundwater in the lower section of the aquifer. The coastal setback of 200 m should be strictly adhered to. ○ Provision should be made for adequate maintenance of the functions of sediment settlement ponds.		
i) Wetlands adjacent to the Western Access Road	i) Care should be taken to avoid any coastal seeps with a functional buffer established between seeps and road. ii) Buffers of no less than 50 m should be instituted around wetlands to the North-East of the proposed western access route. iii) No plant, construction or stockpiling of material should be permitted within 50 m of a wetland. No construction camps should be permitted in this area and should be situated well away from any wetland.	Applicant, contractor Applicant, contractor Applicant, contractor	
j) Waste water	i) Develop an overall site Wastewater Treatment Master Plan for effective and legal management and disposal of wastewater during the construction phase of the project, based on best estimates of wastewater generation; and include such a plan in the contractor tendering and agreement process / operational EMS. ii) Design and construct a waste water management system and associated facilities for the safe and effective containment (including emergency containment), processing, treatment, re-use and disposal of all construction and industrial wastewater (including contaminated stormwater) from various activities and operations that complies fully with all relevant legal requirements; and aligns suitably with the Wastewater Treatment Master Plan.	Applicant/ECO Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	{Design}		
	iii) Obtain all the relevant authorisations for discharge of treated wastewater and ensure that all the conditions of authorisation are effectively implemented and/or adhered to.	Applicant, contractor	
	iv) Provide for the effective treatment and legal disposal of any sludge generated at the wastewater treatment facilities.	Applicant	
	v) Remove (do not leave in-situ) all polluted water, including contaminated stormwater, immediately from an area or system where such polluted water could spill or wash into the surrounding water resources or onto open ground and transfer it to an impermeable tanker, sump or container for safekeeping before transportation for treatment and/or disposal to an appropriate wastewater treatment facility or alternatively to an appropriately licensed landfill site.	Applicant, contractor	
k) Stormwater management	i) Prevent and minimise as far as possible the impact of flood hazards	Applicant	
	ii) Develop, implement and maintain a Stormwater Management Plan and associated stormwater management system. The storm water management plan must be included in the relevant contractor tendering and agreement process / operational EMS.	Applicant, contractor	
	{Method Statement} / {EOP}		
	iii) Define specific hydrological (stormwater) monitoring points on site in accordance with the requirements detailed in Section 7.1.3.	Applicant with specialist guidance	
	iv) Report on the stormwater quality monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by an authority]**	Applicant/ECO	
	v) Address any issues identified during the abovementioned stormwater quality monitoring.	Applicant, contractor	
	vi) Design, implement and maintain all required stormwater control and mitigation measures so as to comply with applicable design standards thereby ensuring the safety of the plant as well as conserving the surrounding environment.	Applicant	
	vii) Design and construct storm water control berms (e.g. trench and/or earth barriers) to divert rainwater around and away from the construction impacted areas, operational areas and/or decommissioning impacted areas in a way that would retain such rainwater as uncontaminated.	Applicant, contractor	
	{Method Statement} / {EOP}		
	viii) Design, implement and maintain the permanent stormwater system for the	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	nuclear power island area, as follows; ○ Define any “dirty” stormwater run-off from the plant area and prevent this from leaving the plant area, achieving this by implementing “dirty” water collection channels at the perimeter of the plant area; ○ Allow for positioning and design of the channels to allow for a sufficient hydraulic gradient and flow velocity in the channels so as to effectively drain half the site. . ○ Provide for the stormwater drainage and containment system to handle up to the 1:100 year storm event:, Provide for the entire plant run-off to be contained in dirty water containment ponds. (This is currently a conservative approach as not all the plant run-off possibly needs to be classified as “dirty” run-off, thereby reducing the amount of storage required. Further details and refinements would be determined from a water quality control study. In addition to the above the average monthly operating volume accumulating from the plant area due to average monthly rainfall and run-off would also need to be taken into account). ix) Design, implement and maintain a stormwater system during construction and thereafter in all areas outside the nuclear power island area (temporary or permanent, central system or several separate systems) as follows: ○ Provide appropriate measures to reasonably protect the site from erosion by stormwater (these may need to be adjusted to ensure efficiency); e.g. provide for appropriate stormwater channelling and energy dissipation ; ○ Define any areas where “dirty” stormwater run-off may arise and prevent such “dirty” stormwater from leaving the site without appropriate treatment to render it “clean” prior to discharge; ○ Minimise the inflow of “clean” (virgin) stormwater run-off into impacted areas where the stormwater could potentially be contaminated; ○ Provide for effective containment (e.g. dam, sump) and treatment (e.g. sediment settling, oil traps/skimmers) of contaminated stormwater in order to render it ”clean” for discharge purposes; and ○ Ensure that the design of the stormwater system allows for containment of at least the 1:50 year run-off volume with an 800 mm freeboard from areas with a high contamination potential. This is a requirement in terms of Regulation 704 (June 1999) of the National Water Act, 1998 (Act No. 36 of 1998) [while this specification is fully	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	applicable to the Operational Phase, it is also recommended for construction areas where the risk of contamination with hazardous substances is high]. x) A temporary stormwater collection sump must be installed during foundation excavation activities to allow excess run-off to drain to a defined low area (collection system). Any transported sediment must be contained in this sump and clean stormwater pumped out. Depending on the nature and content of the sediment this could be pumped to a temporary holding facility and then transported to a waste disposal site. xi) Implement appropriate measures to prevent stormwater pollution. xii) Inspect and maintain all the storm water management system (drainage structures, silt / debris / oil traps, etc.) to retain it cleared of organic and inorganic debris in order to prevent storm water contamination. **[Regularly]** xiii) Design artificial wetlands or swales to accept potential point source contamination from access road run-off. **{Design}**	Contractor Contractor Contractor Applicant	
l) Brine management	i) Develop an overall site master plan for effective and legal management and disposal of brine during the construction and operational phases of the project, based on best estimates of brine generation; and where applicable include such a plan in the contractor tendering and agreement process / operational EMS.	Applicant	
m) Dewatering	i) Minimise dewatering requirements and prohibit any non-essential dewatering. ii) Place drip trays under pumps in order to contain fuel and/or oil spills and leaks, when dewatering. Also place suitable spill absorbent material in each tray to absorb such spills. iii) Take all reasonable precautions to prevent spillage during the re-fuelling of dewatering pumps. iv) Refrain from pumping / releasing any water from the dewatering activities into the environment without the necessary approvals.	Contractor Contractor Contractor Contractor	
Prohibitions	i) Use of natural surface water sources (i.e. streams, rivers, wetlands) for potable and other water use is prohibited ii) Only desalinated water may be used on site; with the exception of the period up to commissioning of the desalination plant during which borehole water, municipal water and/or trucked water from legal sources may be	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	used.		
7.1.4 SEWAGE MANAGEMENT			
Legal Requirements National Water Act, 1998 (Act No. 36 of 1998) Health Act, 1977 (Act No. 63 of 1977)			
a) Pollution contamination	i) Dispose of sewage in a sustainable manner that will fully prevent any raw or treated sewage to contaminate surface water, wetlands or groundwater; entailing the: ○ Design and construction of an appropriate on-site sewerage treatment plant, with the treated sewerage effluent (meeting all legal requirements for effluent quality) being pumped out to sea; ii) Appoint a service provider to remove sewage from the chemical toilets and/or sewage sludge from package plants on a regular basis; and provide and ensure for this sewage / sewage sludge to be disposed of at a municipal sewage treatment plant or alternatively on an appropriately designed on-site sewerage treatment plant. **{Method Statement}**	Applicant Contractor Contractor	
7.1.5 WETLAND MANAGEMENT			
Legal Requirements National Water Act, 1998 (Act No. 36 of 1998) Environmental Conservation Act, 1989 (Act No. 73 of 1989) National Environmental Management: Biodiversity Act 2004, (Act No. 10 of 2004)			
a) Damage to sensitive wetlands	An environmental programme for the site development should include detailed specifications around methods to protect wetlands (whether permanent or seasonal) from impacts associated with the siting of the power station, stockpiles for road materials, topsoil and fill, vehicle access routes, use of hazardous material, etc. See section 7.1.5 for no-go zones and access requirements i) Locate roads, cables, foundations, pipelines and other structure only as indicated on plans in the EIR, or as amended after walk down. No deviation from such placements such that infrastructure passes through/ intrudes in areas identified as important wetland areas is permissible[8].	 Applicant	

[8] The Eastern Access Road passes through one small and narrow wetland. This is allowable as the wetland specialist participated in route selection.

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ii) Provide for the wetlands to the north of the Oyster Bay mobile dune field to be formally delineated in accordance with the Department of Water Affairs requirements; and for the required setbacks to be defined.	Applicant with specialist guidance	
	iii) Include a 1:10 000 scale map on the Site Master Layout and Utilisation Plan and Detailed Construction Site Utilisation Plan (refer to Section 7.1.12 which clearly shows the proximity of site footprint and construction activities in relation to springs, wetlands and streams and associated buffer zones. Should any major deviation from the proposed site layout be necessary due to unforeseen circumstances, such deviations must be approved by an appropriate wetland specialist.	Applicant	
	iv) Take all necessary precautions to ensure that activities do not alter natural ground and surface water flows in to wetlands identified in the above mentioned plan.	Applicant, contractor	
	v) Locate roads, pipelines, cable routes or other structures as far as reasonably possible away from wetlands and at least such that they avoid passing through or intruding on wetland areas or affecting their water supply; unless the areas have been specifically included, covered and assessed in the EIA for such impact.	Contractor with Specialist guidance	
	vi) Develop, implement and maintain special protective measures during construction of roads and associated bridges or culverts in close proximity of wetlands / streams to prevent / minimise the impact on these resources. **{Method Statement}**	Applicant, ECO	
	vii) Report on the wetland monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed in Section 9.7]**	Contractor	
	viii) Address wetland impact issues that are identified during the abovementioned wetland monitoring.	Applicant, specialist	
b) Loss or degradation of coastal seep wetlands	i) The following design criteria should be adhered to as a minimum to mitigate loss or degradation of coastal seep wetlands as a result of interference with surface or groundwater flows during construction: ○ The proposed membrane / alternative structure (such as a cut off wall around the power station excavation) would also need to facilitate the controlled passage of water to downstream coastal seeps, by allowing drainage of water through the cobble layer. Given the risk of seawater intrusion during dewatering, and the fact that the impacts of seawater intrusion on wetland soils may be long-lasting, measures must be in place during construction to ensure that groundwater in the cobble	Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	layer is not interrupted even on a short-term basis. Thus a system should be in place throughout the construction and operational phases of the development to facilitate the spread of dewatered or diverted flows from the terrace area, back into the lower levels (i.e. the cobble layer) of the aquifer. ○ The approach taken should ensure that the downstream passage of groundwater along the cobble layer of the Algoa aquifer is not interrupted south of the Nuclear-1 terrace, by the power station excavation or by the shallower terrace excavation. This means that provision should be made for the re-introduction and spread of diverted or dewatered groundwater flows into the cobble bed layer downstream of the excavation, such that the coastal seeps are neither starved of fresh water, nor exposed to concentrated flows that result in erosion of shallow surface soils at areas where discharge occurs. ○ In this regard, drilling of recharge wells downstream of the dewatered area has been suggested (SRK 2009). ii) Whatever approach is taken should demonstrate in its detailed design how the multiple requirements of achieving groundwater recharge, lateral spread of groundwater flows and management of saltwater intrusion both now and as sea levels rise, can be achieved. Detailed design should include input by a team comprising the project design engineers, specialist geohydrologists and wetland ecologists. **{Design}**	Applicant	
c) Prohibitions	i) Vehicular traffic in or close to any wetland and its associated buffer zone is prohibited unless the road design assessed in the EIR allows for intrusion into this zone. ii) Limestone outcrops should also be avoided and a buffer of 50 m minimum set between these outcrops and the proposed Western Access Road.	Contractor Contractor	
7.1.6 FLORA MANAGEMENT			
Legal Requirements Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)			
a) Alien vegetation management	i) Identify and manage all declared aliens in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and eradicate alien invasive vegetation systematically and fully. **[Ongoing], {Method Statement} / {SOP}**	Applicant with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ii) Develop, implement, maintain and expand alien eradication and rehabilitation programmes.	Applicant	
b) Impact on Red data species on transverse dunes. (*Helichrysum cochleariforme duineteebossie* (NT), *Psoralea repens* duine-ertjie (NT), the succulent vygie *Ruschia indecora* (EN), and *Passerina ericoides* kusgonnabas (VU) (Red Data status in brackets)	i) Make every effort to minimise the impact where rare flora/ habitat stands to be lost. ii) Minimise areas to be cleared as much as reasonable, whether off-site or on-site; and rehabilitate affected areas, where possible and appropriate, as soon as reasonably possible after it had been impacted; for 'normal' indigenous (local) ecological function to be retained / restored. iii) Consult with an appropriately qualified specialist (e.g. botanist) well in advance of construction to undertake the planning and management for collection of scientific material and floral specimen search and rescue (and where appropriate establishment of and/or safe keeping of specimens in a nursery for rehabilitation purposes). iv) Facilitate collection of scientific material and information before and during site clearance for deposit in museums, herbaria, etc. by collecting specimens for the benefit of deriving biological material that will otherwise be totally lost during site clearance. v) Keep retained or re-established indigenous (local) vegetation low by regular mowing to provide habitat for small and fossorial animals and invertebrates, rather than clearing vegetation altogether, in such limited areas where this is necessary; e.g. within areas where high vegetation cannot be tolerated for security and safety reasons. vi) Undertake, for each phase of site clearing and construction within natural veld, a search and rescue operation to identify and safely rescue and relocate all plants which are either extremely rare (i.e. Endangered or Critically Endangered) or which could be used in site rehabilitation or released under controlled conditions for resource utilisation. vii) Monitor site clearing to ensure that where possible all Red Data species affected by development are relocated or successfully grown on in a nursery and returned to the wild. viii) Address all flora related issues identified during the abovementioned rehabilitation and flora monitoring.	Applicant with specialist guidance Applicant Applicant with specialist guidance Applicant with specialist guidance Applicant, contractor ECO , contractor Applicant ECO, contractor	
c) Prohibitions	i) Prohibit collection of fire wood by staff; unless it is wood from controlled alien vegetation and site clearance made available by Eskom at a specific outlet point for collection by staff and the public. ii) The sensitive primary dunes at the coast should be avoided.	Applicant, ECO Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
7.1.7 SITE REMEDIATION, REHABILITATION AND RE-VEGETATION			
Legal Requirements National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) National Environmental Management Act, 1998 (Act No. 107 of 1998)			
a) General and Rehabilitation Master plans	Although site remediation and rehabilitation are particularly important at the end of construction and for final preparation of change in use at the end of the project life cycle, it is important to consider, plan for and implement site remediation and rehabilitation systematically and continually through the life cycle of the project. i) All areas impacted outside the footprint of the nuclear power station and its associated infrastructure, whether off-site or on site must be suitably and effectively remediated and rehabilitated as soon as reasonably possible. Considering the very long construction phase, intermediate remediation may be necessary in certain areas which may again be disturbed later on, to minimise soil erosion. ii) Provide for adequate budget planning and funding specific for site remediation, rehabilitation and re-vegetation (include insurances, fund securing / retention, etc.); iii) Develop a Rehabilitation Master Plan that provides for effective, systematic and continual remediation and rehabilitation of the site and impacted areas outside the site to a high standard in accordance with all the relevant requirements of this EMP and the EIA specialist studies; including but not limited to the following: ○ Identification of suitable species, method of storage and/or propagation, methods of planting and maintenance and monitoring of rehabilitation success ○ collection of appropriate plant material prior to construction commencing, the storage of such material and/or the growing on of suitable material ○ Plants (such as trees and shrubs) would need to be at least two to three years old for use in rehabilitation and thus sampling should commence during the construction period, at least three years before commissioning of the plant. ○ An onsite nursery would be required to accommodate stored and grown on plants and would be an essential requirement for	Applicant, contractor Applicant with specialist guidance Applicant, with specialist assistance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	satisfactory rehabilitation. ○ Seed and/or cuttings should be removed from species that will not translocate easily and grown on in the on-site nursery. ○ consult a suitably qualified Landscape Architect to design the rehabilitation and stabilisation of all the significantly disturbed areas and to assist with the development of the Rehabilitation Master Plan; ○ Landscape exposed and/or destabilised areas to blend in with the surrounding area; ○ Provide for and arrange for the safe removal and legal disposal of any and all hazardous substances from the area to be rehabilitated; ○ Provide for all buildings and structures that are no longer required and have been fully decommission to be demolished ; ○ Provide for all areas disturbed during the development of the proposed facility; including areas outside the nuclear power station site footprint (e.g. access roads, borrow pits) and the natural areas inside the site boundaries, to be effectively rehabilitated with locally occurring indigenous species; ○ Provide for ultimate remediation of the nuclear power station plant footprint to be remediated effectively to allow for the relevant change in land use; and in doing so, follow all relevant planning requirements that would be applicable at the time; ○ Include the preparation of appropriate coastal set back lines and buffer zones, as well as the rehabilitation of primary dune systems, as part of activities on or nearby coastal dunes; and ○ Undertake carry rehabilitation out to a high standard so that stabilisation, aesthetic form and ecological sustainability are able to rapidly improve with time. iv) Develop and implement a Detailed Rehabilitation Plan, based on the abovementioned Rehabilitation Master Plan. **{Method Statement} / {SOP}** v) Re-use spoil appropriately based on a hierarchical approach for creation of visual barrier berms, landscaping, etc. Remove all 'waste' spoil regularly from the site to appropriately authorised / approved off-site disposal; or deposit it in a controlled manner and in accordance with Section 7.1.9 in the marine spoil disposal area.	Applicant, contractor Applicant, contractor Applicant, contractor	
b) Loss of faunal habitat compensation	i) Develop a Loss of Habitat Compensation Plan in accordance with the recommendations of Fauna Specialist Study of the EIA and that meets the	ECO with Specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	requirements of the relevant environmental authorities; and ensures that this plan addresses the areas that have been proposed to be added to the conserved Eskom property following the Construction Phase to secure the conservation of wetland habitats.		
	ii) Plan for and provide budget and resources for the implementation of the Loss of Habitat Compensation Plan.	Applicant	
	iii) Include relevant requirements from the Loss of Habitat Compensation Plan in contractor tendering and agreement processes / operating EMS / decommissioning and closure plan.	Applicant	
	iv) Implement the Loss of Habitat Compensation Plan.	Applicant, contractor	
	v) Continue to manage and maintain owner-controlled areas outside the Nuclear-1 power station footprint as a conservation area	Applicant	
	vi) Provide access for scientific research to nature conservation areas within the owner-controlled area.	Applicant	
	vii) Rehabilitate any damage caused to the environment by construction activities.	Applicant, contractor	
c) Rehabilitated terraces	i) Provide for the effectively planned and carefully controlled development and rehabilitation of the terraces in phases as the material becomes available;	Contractor	
	ii) Develop, implement and maintain a detailed design and rehabilitation plan in accordance with these specifications for the terraces showing the entire terrace form, stabilisation methods and a specification of planting type and species together with maintenance requirements; and do so with the engagement of a suitably qualified and experienced landscape architect and rehabilitation contractor who are experienced in rehabilitation of sand dumps in the relevant biome.	Contractor	
d) Disturbed areas	i) Provide for effective rehabilitation of all areas disturbed during the development of the proposed facility, outside the nuclear power station site footprint and natural areas inside the site boundaries, and provide for such rehabilitation to make use of locally occurring indigenous species (refer to Section 7.1.7.)	Contractor/Specialist	
	ii) Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive invertebrate species would be at a strong advantage and most easily able to establish;	Contractor	
	iii) Rehabilitate disturbed natural areas and new landforms effectively and as soon as reasonably possible to blend with the adjacent landform and	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	materials as per Section 7.1.7 and maintain such rehabilitation effectively. iv) Rehabilitate areas effectively where excavation and filling is completed as well as exposed areas where construction has been completed through Landscaping where necessary in accordance with the relevant rehabilitation plan. Methods for loosening of compacted soils, adding mulch or fertilizer and slope stabilisation must be included in the rehabilitation plan. v) Rehabilitate exposed areas (and areas stabilised by grass mix) with the surrounding indigenous vegetation. vi) Control exotic weeds and invaders that might establish on the re-vegetated areas, to allow the indigenous vegetation to properly establish. vii) Repair any damage to re-vegetated areas promptly. **{Method Statement} / {EOP}**	Contractor, audited by ECO Contractor, audited by ECO Contractor, audited by ECO Contractor, audited by ECO	
7.1.8 FAUNA MANAGEMENT			
Legal Requirements National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Animals Protection Act, 1962 (Act No. 71 of 1962)			
a) Problem animals	i) Compile a problem animal capture & release procedure that include contact details of people who can remove problem animals on the construction site, in order to protect the safety of the animals and people. ii) Eliminate feral cats and dogs from the site humanely but completely, through appointing suitably qualified eradication specialists (e.g. SPCA) to either catch for placement in the care of the SPCA or extermination; since such animals are a serious threat to wildlife.	Contractor Applicant with Specialist guidance	
b) Vertebrates	Fauna protection measures also include measures associated with good management and housekeeping of stormwater, various hazardous substances, etc. To avoid duplication these specifications are not repeated in this sub-section. i) Develop and implement a comprehensive vertebrate monitoring programme which includes monitoring sensitive faunal populations in accordance with the requirements detailed in **Section 9.8**. ii) Report on the vertebrate monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed in Section 9.8]** iii) Address vertebrate impact issues that are identified during the abovementioned vertebrate monitoring.	Applicant with specialist guidance Applicant and ECO Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
c) Invertebrates	i) Develop and institute an eradication/ control programme for early detection and intervention of invasive invertebrate species, so that their spread to surrounding natural ecosystems can be prevented. ii) Report on the invertebrate monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed in Section 9.9].** iii) Address invertebrate impact issues that are identified during the abovementioned invertebrate monitoring. iv) No invertebrates may killed, captured or trapped for any purpose whatsoever – fences and boundaries should be patrolled weekly in order to locate and remove traps; v) Dangerous invertebrates (specifically scorpions and spiders) should be handled by a competent person only; vi) Compile a graphic list of potentially dangerous invertebrates and present this to all workers as part of the site induction; vii) Sensitize all personnel to the presence, characteristics and behaviour of invertebrate on the site; viii) Include suitable procedures in the event of encountering potentially dangerous invertebrates on the site; ix) No domestic animals on site unless used for security purposes (e.g. dogs and horses); and x) Biodiversity monitoring should be conducted at least twice per year (summer and winter) in order to assess the status of the natural habitat and impact of the development on the natural environment.	Applicant with specialist guidance Contractor, ECO Contractor Contractor Specialist ECO Contractor and ECO Contractor with specialist guidance Contractor	
d) Loss of faunal biodiversity	i) Where rare fauna (vertebrate and invertebrate) stands to be lost, a tangible effort should be made to minimise the impact, bearing in mind that rescue and relocation of invertebrate species is generally not recommended as an option due to uncertainties and low success rate.	Applicant with specialist guidance	
e) Animal movement restriction	i) Define No domestic animals on site unless used for security purposes (e.g. dogs and horses) protected habitat corridors on the Site Master Layout and Utilisation Plan; ii) See Road Designs for minimisation of restriction of animal movement. iii) Make use of types of security and boundary fencing that allow for high permeability of boundaries for small animals (vertebrate and invertebrate); e.g. palisade fencing generally has a lower negative impact than mesh fencing.	Applicant with specialist guidance Contractor Applicant with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iv) Maintain the habitat corridors effectively as per the Site Master Layout and Utilisation Plan, e.g. by refraining from 'blocking' such corridors, incorporation in buffer zones and other "No-go" areas, demarcation and signage, etc.	Contractor	
	v) Restrict development to recommended areas, i.e. areas with low or medium faunal sensitivity (as per the Thyspunt environmental sensitivity map).	Contractor/ECO	
f) Species rescue and relocation	i) A qualified (e.g. zoologist) Species rescue and relocation specialist must be consulted prior construction to undertake the planning and management for collection of scientific material and faunal specimen search and rescue.	Applicant, specialist	
	ii) The collection of scientific material and information must be facilitate before and during site clearance for deposit in museums, zoos, etc. by collecting specimens for the benefit of deriving biological material that will otherwise be totally lost during site clearance.	Specialist	
	iii) Search-and-rescue operations must be facilitated before and during site clearance, by rescuing at least but not limited to individuals of threatened species and re-locating these in neighbouring protected areas.	Applicant, specialist	
	iv) Undertake, for each phase of site clearing and construction within natural veld, a search and rescue operation to identify and safely rescue and relocate all plants which are either extremely rare (i.e. Endangered or Critically Endangered) or which could be used in site rehabilitation or released under controlled conditions for resource utilisation.	Applicant, specialist	
g) Avifauna	i) Because virtually the entire coastline is sensitive, owing to breeding pairs of oyster catchers and plovers, all activities at the coast need to be kept to a minimum, especially the use of off-road vehicles. (Normal, low-impact recreational activities can be allowed to resume on the beaches during the operational phase). Note that such areas are usually also important roost sites and are therefore also sensitive in the non-breeding season.	Applicant, contractor	
	ii) Determine location and extent of sensitive bird areas and, where practicably possible, quarantine these areas, including areas that hold sensitive breeding colonies of threatened birds by incorporating and strictly maintaining these as "No-go" areas (out-of-bounds to all personnel, at all times) and by cordoning the sensitive areas off prior to commencement of construction activities. Sensitive bird areas along the coastline need to be mapped during the walk down assessment and the map must be provided	Applicant , contractor with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	to the contractor. iii) Fit standard devices that effectively improve the visibility of the overhead transmission lines (e.g. "flappers", reflectors or "balls") on all new transmission routes and cables to deter birds from flying into them. iv) Limit all air traffic associated with the construction and operation of the nuclear power station as far as possible. With the exception of using helicopters for power line pylon dressing and using helicopters for the placement of pylons in the mobile dunes as well as for emergency use and evacuations. Sensitive bird breeding areas must be mapped during the walk down assessment. v) Ensure, as far as reasonably feasible, that all openings in structures are closed off during the construction phase to prevent birds (especially owls) from nesting in the structures.	Applicant Applicant Contractor/ECO	
h) Prohibitions	i) Prohibit the exploitation of wildlife resources strictly, e.g. prohibit snaring, trapping, hunting and fishing; and inspect the site and surrounding area regular for any evidence of such activities. ii) Prohibit feeding of wild animals; unless it forms part of a conservation programme and is undertaken under the control of a zoologist. iii) Prohibit domestic animals or livestock from being brought on or entering the site. This applies to the entire site for the construction and operational phases of the development. iv) Prohibit all domestic animals on site unless used for security purposes (e.g. dogs and horses).	Applicant and contractor Contractor Contractor Contractor	
7.1.9 MARINE MANAGEMENT			
Legal Requirements Marine Living Resources Act, 1998 (Act No. 18 of 1998)			
a) Warmed cooling water released into the marine environment	The marine specialist informs that both near shore and offshore outfall are acceptable for the Thyspunt site. However, offshore is marginally favourable and the following is therefore applicable: Key mitigation measures for minimising the potential impacts of a thermal plume are already in place i.e. an offshore outfall for heated seawater to ensure that it is disposed beyond the shallow habitats where chokka squid spawns. The marine specialist recommends an approximate depth of 3.5 km and distance of 30 m for effective mixing of warmed water with cold sea water (Appendix E15 of EIR). i) The design of the warmed water released must comply to with the following criteria, as it was an assumption of the marine impact	Applicant with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	assessment that the following mitigation measures would be integrated into the design: o warmed cooling water must be released above the sea bottom to minimise thermal pollution of the benthic environment; and o there should be a very high velocity at the point of release to maximise mixing with cool surrounding water. ii) Ensure that results of any new engineering solutions for offshore outfall of heated seawater is either optimised or equivalent to the current design proposal; should the engineering solution be amended. **{Design}** iii) Use low-level chlorination to effectively control fouling of pipes.	Applicant, ECO Contractor, ECO	
b) Disruption of marine organisms	i) A marine mammal observer must be deployed during any construction activities that require drilling or pile driving. ii) In the case of any activities creating loud noises, such as use of explosives, pile driving, or seismic assessment of sediments the following mitigation strategies for cetaceans are required: o Use of the minimum source level to achieve the result. o Use of "soft starts" whereby power is increased gradually over periods of 20 minutes or more (e.g. pile driving, seismic). o Care should be taken with line lay outs to avoid restricting animals' ability to avoid the source. o Equipment should be shut down if cetaceans are observed within a distance of the source defined by the source power, directionality and propagation characteristics as guided by the specialist or ECO at the time of observation. o Care should be exercised to minimise impacts in inshore water where cetaceans are likely to occur as well as during the whale season. iii) If possible, dispose spoil in the marine environment during winter at Thyspunt, since spawning of squid is at a minimum at this time.	Contractor, specialist Contractor with specialist guidance Applicant, contractor	
c) Release of hypersaline effluent (brine)	i) During construction hypersaline effluent (brine) must be released into or beyond the surf zone via an angled diffuser, so as to ensure adequate and rapid mixing with surrounding seawater and minimal impact on the marine environment and to ensure compliance with the requirements of the applicable authorisations, including the Water Use and Waste Management Licenses.	Applicant, contractor	
d) Monitoring and	ii) Report on the marine system monitoring results to the ECO, Environmental	Applicant, ECO,	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
reporting	Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed in Section 9.10]** iii) Address marine system impact issues that are identified during the abovementioned marine system monitoring. iv) Report on the oceanographic monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency to be determined Section 9.11]**	specialist Applicant with specialist guidance Applicant, ECO	
7.1.10 SOCIO-ECONOMIC ENVIRONMENT MANAGEMENT			
Legal Requirements National Road Traffic Act, 1996 (Act No. 93 of 1996) Nuclear Energy Act, 1999 (Act No 46 of 1999) National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Promotion of Access to Information Act, 2000 (Act No.2 of 2000) Constitution Act, 1996 (Act No. 108 of 1996) Health Act, 1977 (Act No. 63 of 1977)			
a) Vehicles, traffic and transportation	Based on the Traffic Impact Assessment that was conducted as part of the EIA, significant traffic impacts will result from construction transport. In addition to strict compliance to the relevant road rules and regulations, upgrades with regard to public transport and access are required during the construction phases. The R330 is must to only be used for the transport of staff and a limited number of ultra-heavy loads. The Humansdorp - Oyster Bay Road must to be upgraded to a surfaced road to be used during the construction and operational phase for staff access, construction traffic and as a required emergency evacuation route for areas such as Oyster Bay. The following mitigation measures must be applied: i) Inform all people entering site that they need to adhere to all traffic rules and road safety regulations on public roads, including e.g. speed limits, vehicle registration, transport emergency card (tremcard) listing the hazards and emergency information for a material being transported; and follow all orders from traffic police and the Department of Transport. Eskom is to liaise with the relevant traffic authorities to ensure that they are adequately staffed to manage the increased traffic as a result of the project ii) Develop, implement and maintain a comprehensive Construction Traffic	Contractor, all site users	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93 ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	Management Plan, in conjunction with the authorities and based on the information from Traffic Impact Assessment; and ensure that this plan includes inter alia embargo times for large vehicles to ensure that the impact on local peak time traffic is minimised.	Contractor with Specialist guidance	
	iii) Ensure that construction workers are transported to and from the site in a way that reasonably minimises traffic impact; i.e. implement recommendations from the Traffic Impact Assessment, for example that the construction workers should be transported to and from the site by contracted buses. **{Method Statement}**	Contractor	
	iv) Exercise controls on heavy-vehicle traffic in order to mitigate negative impacts such as noise, night-time visual effects (vehicle lights), road damage and congestion;	Contractor	
	v) Ensure that all construction / operational vehicles using public roads are maintained in a roadworthy condition and refrain from using non-roadworthy vehicles on public roads. **{Method Statement}**	Contractor	
	vi) The transportation of abnormal loads must take place during off-peak times only (suggested as 21:00 – 05:00) during the week and in daytime during the weekends;	Contractor with specialist guidance	
	vii) Detailed traffic detours and logistics should be investigated in a comprehensive Construction Traffic Management Plan, which should include a specific plan for transporting at night. **[As necessary], {Method Statement}**	Contractor	
	viii) Notify affected road users two weeks in advance of any road closures or transport of abnormal/ heavy loads	Contractor	
	ix) Notify adjacent landowners within 500 m of roads to be used by exceptionally heavy vehicles of the approximate times when these vehicles will be using the roads.	Contractor	
	x) Keep the disruption of public roads as short as possible to minimise public inconvenience for both planned and unforeseen events.	Contractor	
	xi) Secure all loads for transport effectively and cover vehicles transporting materials such as sand, rock, scrap metal and pipes effectively, to prevent their contents falling or blowing off, causing traffic hazards.	Contractor	
	xii) Implement the following mitigation actions to provide for the daily construction phase transport and traffic of the Nuclear-1 Project: ○ Two access points, namely Western and Eastern Access, should be	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	provided for the construction period of the Thyspunt site. The Western Access will be used by heavy construction vehicles and light vehicles. The Eastern Access will be used for light vehicles, buses and the occasional abnormal loads; o The proposed Industrial and Southern Bypasses around Humansdorp must be constructed to avoid construction traffic using the Humansdorp Main Street travelling between the N2 and the Oyster Bay Road; o The Eastern Bypass must be constructed to avoid general traffic using the Humansdorp Main Street to travel between Voortrekker Road (R102) and the R330; o The Oyster Bay Road must be upgraded to a surfaced road for the construction period; o The DR1762 must be upgraded to a surfaced road to serve as link between the Oyster Bay Road and the R330. o It is recommended that the section of the R330 between Kromme River and the Thyspunt site should be upgraded to a Class 2 road with passing lanes and a surfaced shoulder; o Additional warning signage should be provided for the existing pedestrian crossing on the R330 for the construction period; o The temporary road improvements for the abnormal load route must be constructed as recommended in the Eskom Nuclear 1 Project: Thyspunt Site Abnormal Load Haul Road Investigation report; o Adequate parking bays should be provided on site for the construction period; o Public transport facilities may have to be constructed outside the security entrance to the site to facilitate the loading and off-loading of workers. Minibus taxis and buses/shuttles should be provided to shuttle construction workers from the entrance to the construction areas. o The social and environmental impact of the additional traffic on the Oyster Bay Road and R330 will require further investigation; o The cost of the external road upgrades should be included in the financial feasibility model of this site.		
b) Public safety	i) Implement a continuous education programme in all schools that may potentially be impacted, well before the commencement of construction, to sensitise school-going children about traffic safety and about the expected	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	increase in construction traffic in the area. ii) Inform the Department of Education and school governing bodies of the impact of construction activities on their establishments to ensure that they implement scholar patrols at all places where school-going children cross the road to and from school at schools that may potentially be impacted by an increase of construction traffic. iii) Implement all necessary and feasible measures to promote the safety of people using or crossing public roads that will be used by Nuclear-1 traffic.	Contractor Applicant	
c) Perceived risk associated with nuclear incidents	i) As a first step to mitigate the misinformation and the mythology that exists around nuclear a community-oriented and comprehensive public information campaign should be undertaken. This should be followed by regular updates. A community-focused exercise in the provision of such public information would offset the majority of concerns, especially environmental and biological issues. Most important, though, it should provide sufficient knowledge and time to the stakeholders and authorities to start adjusting their marketing strategies and brand focus, assisting to minimise the potential negative tourism impacts and optimise the benefits. ii) Undertake a community-oriented and comprehensive public information campaign that addresses the popular misconceptions regarding the Nuclear-1 programme, including but not limited to specifically the impacts (or lack thereof) of: o Nuclear power generation on marine life; o Nuclear power generation on the immediate environment; o The risks of radionuclide pollution, as well as naturally occurring radiation in the environment; and o Impact of the nuclear power station on the sense of place. iii) Disseminate information related to the nuclear power station regularly. **[Ongoing]**	Applicant Applicant Applicant	
d) Increased pressure on public infrastructure	i) A project of this magnitude will place a high demand on local and in some cases even regional and provincial public and social services, and would thus also impact on such services. Appropriate planning well in advance of such demands or impact is essential. ii) Negotiate with local authorities, well before construction, to determine what the needs are for upgrading of essential infrastructure such as sewage treatment plants and waste disposal sites that the project will utilise and/or impact on; including inter alia to what extent Eskom will, in co-operation	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	with the local authority, provide resources to assist with the upgrading of these facilities to ensure that they are capable of providing in the needs of the peak number of construction personnel.		
	iii) Liaise closely with the relevant municipal, provincial and other authorities on all matters related to potential use of or impact on public services or service infrastructure, e.g. roads, pipelines, telecommunication, waste facilities, health services, emergency services, law enforcement services, etc.; including development and mitigation plans.	Applicant	
	iv) Develop and implement a proper and detailed Social Services Plan for the project well in advance before any development process commences, and maintain such a plan for the duration of the project amending it as necessary.	Applicant with specialist guidance	
	v) Keep the disruption of essential services as short as possible to minimise public inconvenience for both planned and unforeseen events.	Contractor	
	vi) Negotiate with local authorities, well before construction, to determine what the needs are for adequate capacity of medical facilities: o Base planning for provision of medical facilities on the sustainable human settlement strategy; which implies that the provision of health facilities for all staff involved as proposed for the Staff Village ; and o Make the relevant Department of Health aware of the requirements.	Applicant	
	vii) Inform and negotiate with relevant authorities, (including the local municipality and the SAPS) well before construction, to ensure that adequate capacity for law enforcement is made available. Additional needs for law enforcement services to be based on the sustainable human settlement strategy.	Applicant	
	viii) Eskom must enter into negotiations with education authorities in order to allow these authorities to plan to ensure local schools have sufficient capacity. The following actions need to take place in this respect: o Make provision for schools for the children of all staff involved, as proposed for the staff village (and possible other areas); o Provide for schools to accommodate children (number to be confirmed) into the area of the nuclear power station, signifying that either existing schools should be enlarged, or a new schools should be built in the area where staff will be residing; and o Make the relevant Department of Education aware of the current schooling needs in the area as well as the potential impact that the proposed development will have on the status quo.	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ix) Provide for and ensure adequate capacity of sports facilities, as follows: o Eskom must enter into negotiations with local authorities in order to allow these authorities to plan to ensure that there are sufficient recreational facilities and sport facilities, in order to cater for the increase in population in specific areas. x) Ensure that all affected communities are kept well informed of the process and of all significant dates attached to the development process. **[Ongoing]** xi) Protect all public service infrastructures (e.g. pipelines) on the owner controlled property and site by clearly marking these or incorporating the relevant servitudes into "No-go" areas. xii) Ensure that all essential services are in place as soon as reasonably practicable after the start of the development and all that other facilities to be used are appropriately upgraded and equipped.as agreed and negotiated with the relevant authority. xiii) Ensure that the implementation process is carefully monitored and that any disruptions are immediately identified and appropriately managed.	Applicant Applicant, contractor Applicant, contractor Applicant, contractor Applicant, ECO	
e) Increased demand for housing	i) Conduct a detailed assessment for the new residential development, once the preferred nuclear power station location, as well as the location for residential and accommodation needs are finalised. ii) Establish the construction village, staff village and staff and vendor housing (if any) as follows (subject to the project-specific EIA for such developments, if required): o Draw up the development and location criteria/ conditions for the establishment of each; o Investigate possible locations for the provision of these according to the needs; and o Identify the suitable locations and include in the Site Development Plan and Environmental Management Programme in line with development planning legislation, policies and guidelines. iii) Locate the housing units for construction staff such that: o The houses can be integrated into the normal property market once construction is complete and houses become available, in order to ensure integration and sustainability; o The staff village, including all the buildings and facilities, can be utilised by the surrounding community after the construction period, in order to ensure sustainability of such infrastructure; and	Applicant Applicant Applicant	ESKOM housing strategy / Eskom Strategy for vendor accommodation

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ The wholesale clearing of land for the construction of these houses is minimised to limit the need for rehabilitation.		
	iv) Service, manage and maintain the villages and associated structures effectively in accordance with appropriate social and 'clean' town standards; until its placement under local municipal control.	Applicant	
	v) Consider, plan for, adhere to and implement all the requirements of the Eskom Strategy for vendor accommodation (Eskom Strategy 238-99, or relevant update thereof).	Contractor	
	vi) Ensure that any temporary accommodation utilised to house construction workers, is completely dismantled and properly disposed of after use, unless a different alternative exist.	Applicant	
	vii) Ensure appropriate housing is available for key identified staff in accordance with Eskom housing strategy.	Applicant	
f) Economic impact	While the nuclear power station in itself is motivated by securing long-term economic sustainability as it provides for a reliable and strategically placed electricity source, the project would also stimulate local and regional economic growth during construction and operation. The latter should be enhanced while negative impacts on the socio-economic environment should be mitigated by introducing measures as specified in this section (Section 7.1.10). In addition an important mitigation measure for minimising the negative economic impacts on the local economy consists of measures to retain, protect and enhance as much of the natural environment as possible (as covered in much detail in Section 7.1.10). This subsection thus only covers and highlights some additional specifications and cross-references to minimise and mitigate negative economic impact.		
	i) Apply high-quality risk management and monitoring.	Applicant	
	ii) Introduce a public relations campaign as an avoidance measure directed at:	Applicant	
	○ The local community, involving the wide dissemination in easily understandable form of all the specialist studies in order to overcome public fears regarding, inter alia, loss of sense of place (visual impacts, pollution), impact on the marine environment (ocean temperatures, waves, fish), and social impacts (unemployment, squatter housing, crime) all of which could have an impact on the economy.		

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ International product markets (e.g. in the case of squid fishing) or international bodies (e.g., the International Association of Surfing Professionals) to counter negative perceptions and potential boycotts of local products and events.		
	iii) Establish a visitor information centres with informative l lectures and educational material.	Applicant	
	iv) Establish hiking and cycling trails, and promote eco-tourism and conservation education to further develop nature tourism.	Applicant	
	v) Work in unison with Conservation Authorities and, where possible, other nature reserves.	Applicant	
	vi) Consider the establishment of visitor information and educational centres in order to attract tourists to the area.	Applicant	
g) Potential conflict due to influx of job seekers	i) Follow a transparent public participation process with role-players and interested and affected parties.	Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)
	ii) Management and control of influx of job seekers is important to avoid social problems such as public unrest.	Applicant	
	iii) Attempt to minimise population influx by utilising local labour, where possible.	Contractor	
h) Employment	i) Eskom's declared policy is to transfer construction workers from Nuclear-1 to similar future developments. Such transfers might not always be possible, depending on the location of the future development, but should nevertheless be maximised, if possible, in order to mitigate the perceived adverse impacts of unemployment once the construction phase of Nuclear-1 is completed. Other opportunities and measures to enhance re-employability of employees and reduce the loss of employment, once the construction period closes, should also be actively sought, implemented and promoted.	Applicant	Eskom Policy: Eskom Procurement and Supply Management Procedure, ref 32-1034
	ii) Absorb as many construction staff / workers into the operational phase of the project as is feasible; and similarly operational staff into decommissioning phase.	Applicant, contractor	
	iii) Make use of local labour and local suppliers of material for the construction in accordance with Eskom's Supplier Development and Localisation (SD&L) policies.	Applicant, contractor	
	iv) Eskom's SD&L Department's strategy and planning process must develop the strategies and business plans that provide opportunities (and type) for skills development, job creation, local supplier development and	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	participation in this project. Once developed, these strategies / business plans will be approved by Eskom's shareholder and included in the commercial strategy to meet the government's requirements. This process encapsulates all relevant the B-BBEE sub-groups.		
	v) Eskom has an approved set of annual progressive targets (agreed with government) for the development of these aspects.	Applicant	
	vi) Eskom's Execution, Supplier Development and Monitoring & Reporting sections of SD&L will execute the strategies in a planned manner.	Applicant	
	vii) Ensure that all the relevant specifications in this EMP are provided to the parties (industry and trade unions) who will prepare Project Labour Agreements (PLAs) to consider relevant requirements for inclusion therein.	Contractor	
	viii) Cooperate with provincial and local authorities with regard to matters relating to the creation of employment opportunities.	Applicant	
	ix) Undertake salary reviews to ensure competitive employment packages and in order to attract and retain the requisite skills.	Applicant	
	x) Establish a labour policy to facilitate the employment and skills training of locals, where feasible and as far as possible, and the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority; as follows: o Set clear targets and criteria for local employment (in line with the SD&L policy), local employee skills training and population demographic representation; and state these clearly in all relevant publications, tender documents, etc.; o Create opportunities for the employment of women, where feasible; and o Use labour-intensive methods of construction, where reasonably practicable. **{Method Statement} / {SOP}**	Applicant	
	xi) Define a recruitment programme and specify the number of workers required, as well as the specific skills required in respect of each worker, as soon as possible before the commencement of the work.	Contractor	
	xii) Appoint or establish employment / skills registration agencies or 'labour desks', in consultation with the local community stakeholders in the local towns, to:	Contractor	
	xiii) Implement a formalised system to clarify, publish and distribute information on employment opportunities (e.g. time frames, vacancies, skills requirements, etc.) and deal with employment / skills registration in a	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	coordinated and organised manner, that avoids duplication, misrepresentation, confusion and unrealistic expectations amongst employment 'givers' and seekers; and		
	xiv) Establish a labour skills, grading and assessment centre in accordance with the PLA, to provide this specific and relevant information on available employment, including: o The number and type of jobs; o Skills requirements for the jobs; o Duration of the jobs; o Remuneration scales; o Hours of work; o Conditions of work; o Procedures for the application of jobs; o Procedures for selecting job applicants; and o Training and certification available on the job.	Contractor	
	xv) Determine the available skills in the area and the level of training required.	Applicant	
	xvi) Identify prospective candidates who would meet the job specifications in consultation with the relevant local authorities;	Applicant	
	xvii) Take responsibility for accurate information dissemination at community level.	Applicant	
	xviii) Follow open tender processes in accordance with Eskom's procurement policies and processes, which include improved communication of tender opportunities through advertising in local community media (including local radio stations).	Applicant	
	xix) Expedite the process of registering local service providers on Eskom's procurement database as an ongoing concern, to assist local suppliers of goods and services with registration on Eskom's database and with meeting compliance standards and understanding tender requirements.	Applicant	
	xx) Provide information regarding the types of business opportunities and economic spin-offs that may arise from the proposed development to the various structures and institutions actively involved in the formal and informal economy.	Applicant	
	xxi) Include basic business and entrepreneurial skills as part of a skills development component of the development to ensure social capital development and empowerment of the local entrepreneurs.	Applicant	
	xxii) Engage in participatory workshops in which interested members of local communities can be guided regarding types of business opportunities	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	that could arise. xxiii) Investigate ways of enabling potential sub-contractors from low-income areas to tender with the support of Red Door and other economic institutions. xxiv) Set up linkages for small business loans, as well as small business skills training. In this regard, the role of partnerships with other role-players who could assist in these matters, should be considered, (i.e. Red Door[9]). xxv) Interact closely with institutions that could assist with provision of support to small businesses, including the possible identification of agencies that could assist with the provision of seed finance and entrepreneurial counselling (Red Door, Local Economic Development Forum, local authority). xxvi) Provide feedback to local suppliers and the broader community on numbers of local people employed, tenders awarded and business opportunities created to the advantage of the local community; in order to strengthen the relationship between Eskom and the various role-players around the proposed nuclear power station.	Applicant Applicant Applicant Applicant	
i) Lack of skills	i) Introduce training initiatives aimed at improving skills, particularly unskilled and semi-skilled workers. ii) Implement existing Eskom policies to facilitate the employment and skills training of locals, where feasible and as far as possible, and the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority. iii) Provide, where possible, on-the-job training to the local people and support training programmes to develop their existing skills and to ensure that they receive skills that are transferable to other sectors, by facilitating a combination of the following: o Training directly done or done in-house; o Training as part of a process of coordination by Eskom to involve and support appropriate training providers (e.g. funding training programmes at tertiary institutions) with regards to targeting of employment and skills development initiatives; and o Training abroad.	Applicant Contractor Contractor	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)

[9] Red Door is a Western Cape Government initiative for developing small business in the province. Red Door is intended to be a one-stop-centre where SMMEs are able to obtain assistance and business advice.

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iv) Promote community self-help projects as part of the corporate social responsibility programme.	Applicant	
j) Code of Conduct	Specify the code of conduct of contract workers in worker related management plans and employment contracts by contractors, sub-contractors and service providers; e.g. (recommendation) i) Draft specific specifications for each action and provide a "conduct" list to persons working on site during the design phase. ii) Draw up a code of practice for site work by surveyors and their staff with specific reference to environmental aspects related to their work.	 Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)
k) Environmental Monitoring Committee (EMC)	i) Include social issues on the agenda and terms of reference of the Environmental Monitoring Committee to ensure: o Where a Nuclear 1 construction worker has been found guilty of committing transgressions such as burglaries / thefts, disciplinary action will be taken in accordance with an established disciplinary policy; and o Proactive engagement with the SAPS and the community in developing mechanisms for the monitoring and distribution of information to counter potential community perceptions that there are perceived changes in the crime rate directly as a result of construction workers being in the immediate area.	Applicant	
l) STDs and HIV awareness	i) Develop, implement and maintain a STD, HIV and AIDS site awareness and prevention campaign, in accordance with Eskom's policy. ii) As a condition of contract for all contractors, subcontractors, service providers, suppliers and sub-operators, they should be encouraged to implement their own, or participate in Eskom's STD/HIV/AIDS awareness and prevention programme. iii) Provide an adequate supply of free condoms to all workers, by locating such in the bathrooms and other communal areas on the site.	Applicant with specialist guidance Contractor Contractor	ESKOM Policy: HIV / AIDS in the workplace, ref 32-1123
m) STDs and HIV surveys, testing and counselling	i) Undertake a voluntary STD and HIV and AIDS prevalence survey amongst all workers on a regular basis, in accordance with Eskom's policy. ii) Introduce and maintain a voluntary counselling and testing programme. **[Ongoing]**	Applicant Applicant	ESKOM Policy: HIV / AIDS in the workplace, ref 32-1123
n) Loss of biodiversity due to future land use	i) Protection of the natural environment is covered in details in other sections of this EMP. This section does not deal directly with biophysical impacts, but rather with the change in land use and the opportunity that the establishment of a conservation area on Eskom land around the power	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	station provides to mitigate negative economic impact. ii) It is Eskom's intention to establish a de facto nature reserve on land that it owns around the proposed power station. This has the potential to act as a catalyst to increase tourism and overcome negative public perceptions. iii) Engage in an intensive planning process in order to: ○ Ensure adherence to applicable legislation, e.g. environmental, water, roads, sustainability, etc. ○ Liaise with National, Provincial and Local authorities (e.g. IDPs, SDFs, WSDPs, ITPs, etc.) in order to advise that the requirements of the new power station be taken into consideration in their existing/revised planning policy and guidelines ○ Ensure comprehensive and transparent public participation in all planning processes ○ Optimise the creation of economic opportunities at all levels (in accordance with Eskom's procurement and SD&L policies). iv) Provide information to the relevant authorities and work with them where required in the development of more detailed Spatial Development Plans as soon as the location has been finalised. v) Provide information to the relevant authorities and work with them where required in the undertaking of a more detailed impact assessments based on the abovementioned detailed Spatial Development Plans. vi) Continue to manage and maintain owner-controlled areas outside the Nuclear-1 power station footprint as a conservation area.	Applicant Applicant Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)
7.1.11 HERITAGE MANAGEMENT			
Legal requirements National Heritage Resources Act, 1999 (Act No. 25 of 1999)			
a) General	i) Ensure that development occurs as per the approved layout in the EIR (or as amended after the site walk down) to limit impacts on heritage resources. ii) Commission an appropriate Heritage Specialist such as a suitably qualified and experienced archaeologist or palaeontologist with full principal investigator (PI) accreditation in pre-colonial and Pleistocene archaeology. Allow sufficient time for the specialist to collect heritage resources prior to construction activities. iii) Clear communication plans should be in place to contact the Heritage Specialist should any site inspections or emergency rescue work be	Applicant Applicant Applicant, contractor with specialist	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	required during construction. **{Method Statement}**	guidance	
	iv) Identify and require key construction personnel to attend a short heritage course to enable them to assist in the recognition of heritage resources.	Applicant, contractor with specialist	
	v) Develop a mitigation plan in conjunction with archaeology and palaeontology committees of South African Heritage Resources Agency (SAHRA) and Heritage Western Cape (HWC) to ensure that the proposed sampling strategy is appropriate and realistic before excavation and destruction permits can be issued.	Applicant, ECO	
	vi) Ensure the protection of possible shipwrecks during construction within the coastal environment by consulting a heritage specialist during construction of marine infrastructure.	Contractor with specialist guidance	
	vii) Should the relocation of human remains be required an appropriate archaeologist must be consulted together with any and all appropriate I&APs.	Applicant, specialist	
b) Archaeology	i) A 200 m-wide strip of land from the high water mark is to be kept free of development due to the concentration of heritage sites in this zone. This zone is to be clearly demarcated and no development or movement of vehicles or machinery is to be allowed in this zone, with the exception of designated tracks through the least sensitive areas to facilitate access to the beach for marine works.	Applicant, specialist and contractor	
	ii) There is a possibility that some minor impacts may occur in the 200 m coastal strip. These impacts could be handled through archaeological sampling, setting up localised exclusion areas or micro-siting of infrastructure away from sensitive areas.	Applicant, specialist and contractor	
	iii) In any place where the shoreline is to be affected by cooling inlets or outlets or any other temporary or permanent infrastructure, e.g. access roads to the beach for construction of marine works, archaeological sites in the shoreline area will need to be fully sampled	Applicant, specialist and contractor	
	iv) Ensure that a suitable facility for the safe indefinite storage of any finds is made available, be it at a museum or a specially designed facility in the Eastern Cape.	Applicant, specialist	
	v) During the construction period (especially land clearing and bulk excavation) an archaeologist and/or representative must initially be on site at all times while bulk excavation is taking place.	Contractor, specialist	
	vi) During construction should a fossil or artefactual material be found, the archaeologist will need to identify the horizon that the find is associated	Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	with and, if necessary, be given the opportunity and budget to bring a "rescue" team onto site to excavate the find, expose the material and sample it accurately and adequately. vii) Should fossil human remains be uncovered during construction activities, all activities must cease and an archaeologist must be consulted immediately. viii) Ensure that necessary permits are obtained prior to any demolition of heritage resources/buildings.	and specialist Applicant, contractor Applicant, contractor	
c) Living Heritage - St. Andrews	i) Negotiations should be held with St. Andrews school to allow the traditions that have become associated with the shack to continue. This could be done through retention of the shack in-situ, or the negotiation of a suitable offset with St. Andrews (i.e. building a similar facility close by).	Applicant	
d) Procedures on discovery of potential heritage artefacts and/ or features	i) Provide and arrange the opportunity and budget for any required rescue events mentioned above, such that it would allow the archaeologist to conduct the rescue operation to the highest standards, and as quickly as is reasonable. ii) Ensure that a suitable facility for the safe indefinite storage of any finds is made available – be it at a museum or a specially designed facility on site. iii) Follow the following procedures on discovery of any potential heritage/ archaeological sites/ objects (including artefacts, fossils, bones, etc.) o Pause all further clearance, excavation and/or other construction at the discovery site and surrounding area immediately on making the find until further notice from the appointed archaeologist; o Notify the site supervisor / manager, ECO and/or on-site archaeologist immediately [without any delay]; o Note the location of the sites/ objects and ensure that such sites/ objects are not disturbed/ destroyed (any further), e.g. notify all staff working in the vicinity of the 'temporary "No-go" area and cordon off the location with danger tape; and o Hand over isolated finds that are turned up immediately to a designated person for safekeeping, noting as far as possible where they came from; and o Keep excavated material which includes a clump of bones without further disturbance in a temporary stockpile for safekeeping, for inspection by a palaeontologist. iv) Follow the following procedures after discovery of any potential heritage/	Applicant Applicant Contractor Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	archaeological sites/ objects were made or reported: ○ Inspect the location where the find was made, record the details of the find (coordinates, description, etc.); ○ Demarcate the archaeological site, should the find indeed be of potential archaeological value, and give instruction as to the required work stoppages and "No-go" arrangements and procedures, if any; ○ Contact SAHRA immediately to report and register the find; ○ Apply and obtain permits from SAHRA should the proposed affect, destroy or alter any heritage sites ○ Undertake the excavations, removal, exhumations, etc. appropriately and as quickly as possible; ○ Remove any find of fossil human remains from the late Pleistocene (and earlier) with appropriate care to the highest standards, and as quickly as is reasonable. v) Secure any site that an archaeologist has confirmed as archaeological sites as follows: ○ Demarcate the site with wire fencing with a radius of at least 30 m or any other radius which the archaeologist has specified; ○ Extend the work schedule accordingly, should the site activities be suspended due to this discovery. The excavation work may only be undertaken by an archaeologist. Relevant I&APs should be informed and consulted when human remains are uncovered, and if necessary the reburial of any human remains should be facilitated. vi) Address potential impacts to protected shipwrecks, if any, by means of specific heritage impact assessments, once there is certainty about the sizes and locations of cooling water inlet and outlet pipes.	Contractor Applicant, specialist	
e) Impact on palaeontological resources	i) Should Palaeozoic fossils be revealed during excavations, these should be sampled by a qualified palaeontologist prior to the continuation of construction.	Applicant, specialist	
f) Prohibitions	i) The collection of heritage/ archaeological objects/ artefacts at identified heritage sites is strictly prohibited. ii) Any destruction of a declared heritage site is prohibited unless a permit is obtained from SAHRA and the archaeologist has mapped and noted the site in accordance with the SAHRA requirements. iii) All persons are prohibited from undertaking excavation work at an archaeological site, unless that person is an archaeologist or working	Contractor Contractor Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	under the supervision or instructions from an archaeologist. iv) All access to archaeological sites is prohibited unless it is by an archaeologist or under his/her supervision. v) Construction activities are prohibited within 50 m of all identified archaeological sites, unless such a prohibition has been lifted by the archaeologist or SAHRA.	 Contractor Contractor	
7.1.12 OVERALL SITE MANAGEMENT, SITE DEVELOPMENT PLAN			
Legal Requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) Fencing Act, 1063 (Act No. 31 of 1963) Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Veld and Forest Fires Act, 1998 (Act, No. 101 of 1998) National Water Act, 1998 (Act No. 36 of 1998)			
a) General preparedness and administration	i) Undertake all work in an environmentally sensitive manner and strictly prohibit any impact on any declared "No-go" areas. ii) Enforce all legislation, policies and procedures applicable to the development strictly. iii) Adhere to this EMP and all approved Method Statements / SOPs strictly, and where this is not possible / feasible follow the relevant procedures to apply for approval of an appropriate update or amendment thereto. iv) Develop, implement and maintain a Quality Management Programme (in line with the ISO 9001 principles) to ensure effective site monitoring, auditing and reporting in order to maintain confidence in meeting the Eskom, site and plant safety requirements and performance objectives. v) Ensure that the latest version of this EMP (or any applicable parts thereof) form part of any contractual agreements with Contractors and Sub-contractors for any appointments related to the execution of the nuclear power station project (e.g. site inspections, site probes, site surveys, site clearing, construction, commissioning, services, maintenance, upgrade, decommissioning, demolition, remediation, rehabilitation, etc.). vi) Ensure that the latest version of this EMP forms part of an Environmental Management System (EMS) for the construction, operational and decommissioning phases of the nuclear power station project (in line with ISO:14001). vii) Adopt a precautionary approach with any works deviating from	Contractor Contractor Contractor Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	specifications and all Method Statements and Safe Operating Procedures being approved by both the Site Manager / Power Station Manager and accepted by the ECO.		
b) Record keeping	i) Keep the following records on site in accordance with the standard Eskom site documentation and ensure that such documents are signed by all the relevant parties: o Physical access plan; o Complaints register; o Site daily diary; o Records of all remediation/ rehabilitation activities; o Copies of reports to the Environmental Control Officer; o Copy of the Construction Method Statements / Safe Operating Procedures; o Fire Protection Association Plan; o Environmental Incident Register; o ECO inspection audit reports; o The Environmental Authorisation issued for the project o An appropriate fines system for non-compliance will be developed and implemented. ii) Avail all records relating to monitoring and auditing in respect of the nuclear power station development for inspection to any relevant authority, Environmental Monitoring Committee, ECO or Eskom's Environmental Audit Team. **[As necessary]**	Contractor Applicant, contractor and ECO	
c) Site clearance	i) Clear the site in a logical sequence and manner that allows mobile species to escape, by starting clearance from an area of relatively high disturbance and progressing in an orderly manner in the direction of least disturbance and least physical obstruction; e.g. begin clearing from an existing fence and clear towards an area that is not yet fenced and is still covered by natural habitat. ii) Co-stockpile cleared vegetation with cleared topsoil and manage it in such a way that cleared vegetation is chipped and mulched and placed on top of stockpiled soil, and that the mixing of the materials is minimised as much as is reasonably practical.	Applicant and contractor Applicant and Contractor	
d) Site elevation and footprint	i) Take all the relevant biophysical environment protection specification into consideration when planning and designing the site and construction areas footprints and layout as well as access routes (in accordance with Section	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	7.1). ii) Plan the final locality and level of the plant area in order to minimise the impact of the flood hazards; and in doing so and by taking the extreme water levels from the ocean into account, with a recommended minimum elevation based on the IAEA recommended levels associated with tsunamis. iii) Restrict the footprint of the development to the smallest area possible, taking into consideration that while the actual footprints of the buildings may be fixed, other areas are likely to be more flexible in their extent, e.g. areas for lay down, storage of topsoil, parking, etc. iv) Avoid creating laydown and storage areas for overburden in areas of high quality habitat; and, where possible, restrict such laydown and storage areas in previously disturbed areas. v) Minimise all structures outside of the site security fence. vi) Use, where reasonably feasible, natural topographical features boundaries for layout planning to enable sound rehabilitation of areas (dunes, wetlands etc.); e.g. refrain from cutting across natural features, such as dune ridges and wetlands as this would make rehabilitation of the areas that remain more difficult and less effective. vii) Maintain road width of the proposed Thyspunt western access route at no more than 40 m altogether, as per the proposed route of the Western Access Road report.	Applicant Contractor Contractor Contractor Contractor Applicant	
e) Master and Utilisation Plans	i) Develop and provide a Site Master Layout and Utilisation Plan, which takes the relevant listed environmental specifications into consideration, by showing the overall site layout, including but not limited to: o Site boundaries; o Contractor yard site allocations; o On-site "No-go" areas, that are to remain undisturbed; o Footprint of the nuclear power station and associated service infrastructure and facilities; o Access roads and security access points / gates; o Staging area and pick-up zones for personnel and materials shall be clearly demarcated. o On-site main road servitudes; o On-site main stormwater management system and sedimentation traps; and o Areas earmarked for central construction service facilities, e.g. water	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	system and facilities, sewage and wastewater treatment facilities and systems, waste handling facilities, construction offices, ablutions, canteens, vehicle wash bays and service station, fuel storage and station, topsoil and spoil stockpile, concrete batching facilities, excess concrete storage and crushing-for-re-use areas, etc. ii) Develop and provide a Detailed Construction Site Utilisation Plan, which takes the above listed environmental specifications and the Site Master Layout and Utilisation Plan into consideration; and which shows the contractors construction area/site layout, including but not limited to: o All buildings; o Ablution facilities; o Construction vehicle wash areas; o Large vehicle turning areas; o Crane clearance areas; o Drop-off and pick-up zones for personnel and materials o Material (e.g. construction material, diesel/ petrol) and equipment storage and lay-down areas o Topsoil and spoil stockpile areas; and o Any other infrastructure that may be required. **{Method Statement}**	Applicant	
f) Site demarcation, signage and fencing	i) Survey and demarcate the site and construction areas accurately and in accordance with the site utilisation / layout plan to establish the permitted footprint prior to the start of construction. ii) Mark off the area to be affected effectively, to demarcate the limits of allowable disturbance of natural areas; e.g. provide stakes and orange plastic safety fencing (or similar) to demarcate the footprint area within which all construction is to take place prior to site clearance and fence such areas after initial site clearance. iii) Prohibit / refrain from commencing with any construction activities (other than for access roads and fencing) prior to the site being fenced off and working areas being secured. iv) Dedicate and demarcate suitable on-site areas for material, equipment, waste, topsoil and spoil stockpile areas in accordance with Detailed Construction Site Utilisation Plan prior to commencing with construction activities. v) Exclude all areas of high ecological should be avoided where practicable.	Contractor Contractor Contractor Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
g) Restriction of animal movement	i) Consider the requirement to allow movement of organisms along natural corridors and their access to resources (e.g. wetlands) by incorporating such in the design layout and features (e.g. road, culvert bridge, pipeline and fence design); including but not limited as follows: ○ Access routes as per the approved layout should only be used. Limit off-road tracks as far as practically possible; ○ Minimise fragmentation of land by roads, tracks and other linear infrastructure; e.g. by avoiding / minimising cutting across large areas of natural habitat, locating roads within or along the edges of areas that are already disturbed or are to be developed, and using or upgrading existing roads rather than to create new ones. ○ Cross large, incised watercourses by means of raised bridges where reasonably practicable; ○ Construct overpasses or underpasses, where a road runs between high points to allow for the movement of fauna where reasonably practicable; ○ Provide multiple culverts for long raised road sections; ○ Use appropriate curb and roadside gutter designs with low, sloping profiles without any vertical surfaces, to facilitate the movements of small animals (e.g. frogs, lizards, mice). ○ Place pipelines and cables underground to prevent surface barriers, wherever possible, and fill in trenches and rehabilitate the affected area as soon as reasonably possible.	Applicant	
	ii) Design, implement and maintain roads off the terrace such that runoff is dissipated in side drains/ swales, rather than concentrated in lined channels, where possible.	Contractor	
	iii) Define and demarcate limited access tracks, where transportation through sensitive environments cannot be avoided.	Applicant and ECO	
	iv) Refrain from using off-road vehicles outside designated and demarcated roads or tracks, when travelling / transporting outside the demarcated construction / operations footprint.	Applicant and contractor	
	v) Declare and display / indicate appropriate speed limits that would effectively mitigate potential environmental impacts; e.g. dust, noise, spills, accidents, etc.	Applicant	
	vi) No fences should be erected along the western access roads whilst under construction so as to ensure that fauna can move freely. Where fences are unavoidable, barbed wire should not be used.	Applicant, contractor and ECO	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
h) Staff facilities development	i) Develop an overall Site Facility and Services Master Plan. Contractors to include the information in their tenders: how they will make effective provision for phasing in / out of staff facilities and services, based on best estimates of such requirements by all their, contractors and their sub-contractors on site.	Applicant	
	ii) Install services, such as drinking water, canteens, cooking areas, ablution and sewage facilities, as soon as possible after construction activities commence; and ensure this is done in accordance with the Site Facility and Services Master Plan, unless the Project Manager permits or directs otherwise. **{Method Statement}**	Contractor	
	iii) Install a limited number of appropriately designed central canteens for the use of construction personnel (and catering for the maximum number of personnel likely to be on site at the peak of construction) to facilitate effective waste management and ensure that the availability of food scraps over the site that would promote vermin is limited.	Contractor	
	iv) Install and commission permanent services, such as drinking water, canteens, kitchens, ablution and sewage facilities for the operational phase, and prior to commissioning of the nuclear power station and in accordance with the Site Facility and Services Master Plan.	Applicant	
	v) Provide adequate temporary chemical toilets on site, during periods where more permanent ablution facilities have not yet been provided, are insufficient and/or located far away from an area of work, as follows: o Provide 1 toilet per 20 employees; o Locate toilets within 100 m from any point of work but no closer than 50 m to any watercourse or water body and preferably away and/or hidden from public roads, residential areas and other public places; o Secure toilets firmly to prevent them from toppling over due to wind or any other cause; o Provide for and ensure that toilets are emptied and maintained hygienically on a regular basis all the time; and that they are emptied before and left emptied over long weekends and builders' holidays; **{Method Statement} / {SOP}**	Contractor	
	vi) Prohibit staff from abluting anywhere other than in toilets.	Contractor	
i) Materials management	i) Prohibit pollutants such as cement, concrete, lime, paint, oil, chemicals and diesel / petrol fuels from discharging into any water source and/or polluting open ground.	Applicant, contractor	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure
	ii) Avoid locating materials storage areas in close proximity to ecologically	Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	sensitive areas and inside the 1:50 year flood line of watercourses. iii) Develop, implement and maintain an overall site Materials Management Master Plan for effective management and legal and safe transportation and handling of materials prior to commencement of construction. iv) Designate stockpile areas for various materials (topsoil, subsoil, rock and blasted materials and building rubble/excess concrete that can be crushed and re-used as fill material) and communicate these to the contractors. v) Institute strict control over materials brought onto site, which could potentially contain invasive species (pests); and implement effective measures to eradicate these before transport to the site, e.g.: ○ Undertake visual inspection of all materials, particularly those that have been stockpiled in high-risk locations, for presence of invasive species and apply topical control (e.g. direct spraying with low residual insecticides) when necessary; or ○ Fumigate or spray of all relevant materials routine with appropriate low-residue insecticides prior to transport to or in a quarantine area on site (with this option generally requiring less highly trained personnel than the former, but possibly resulting in much higher usage of pesticides.)	Applicant, contractor Contractor Applicant with specialist guidance	(ref 32-1034)
j) Blasting and sourcing of borrow material	i) Undertake blasting according to all relevant statutes and regulations and strictly prohibit and refrain from undertaking any blasting without the required authorisations. ii) Blasting must be done in accordance with section 82 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). iii) Plan blasting and employ blasting mitigation measures such that the impacts on avifauna breeding patterns are limited (as directed by the ECO). Contractors must submit a method statement for proposed blasting activities that must be approved by the ECO prior to any blasting activities. iv) Notify and consult with the ECO to establish whether any species rescue operation, e.g. removal / chasing away of large animals and birds, would be required prior to any blasting event. v) Excavated rock may be used for aggregate and/or wearing course if required. vi) Obtain authorisation of all borrow pits in terms of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), prior to any mining / retrieval of borrow pit material commencing. vii) Implement and/or adhere to all the conditions of the borrow pit	Contractor Contractor Contractor Contractor Contractor Contractor Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	authorisation, including any related environmental management plans/programmes.		
k) Refuelling, servicing and cleaning of vehicles, plant, equipment and machines	i) Refuel vehicles or machinery where reasonably practicable at a purposed designed and designated bunded refuelling area on site. ii) For refuelling of heavy duty construction vehicles in situ on site from a bowser, a method statement outlining the filling procedure which prevents spillage and contains accidental spillage, is to be compiled and complied with. (This will also apply during the time period while the bulk fuel storage is under construction.) In cases of an emergency repairs or for refuelling stationary equipment (e.g. generator) in which case drip tray are to be used. **{Method Statement}** iii) Design the bunded refuelling area to be provided with a hard standing surface that protects the fuel island from ingress of stormwater and prevent egress of water from the contaminated areas. iv) Place drip-trays that are suitably and practically designed to effectively contain spills (i.e. sufficient capacity and freeboard), and where necessary filled with appropriate absorbent material, under all parked construction vehicles and machines that are or may leak oil or fuel, maintained daily and regularly disposed of in an appropriate manner; unless such a vehicle is parked in an area provided with hard standing that drains towards an oil-water separator to handle the amount of water expected to fall within the hard standing area. v) Prohibit washing of any mechanical plant or equipment on the nuclear power station site, unless in an area specifically equipped for such a purpose in a way that would prevent ground, stormwater and groundwater contamination. vi) Undertake all vehicle maintenance (unless where on-site emergency repairs are necessary) in a designated vehicle maintenance area/ workshop, which is provided with a roof, appropriate spill containment (bunding), waste water treatment facility, fire protection, etc. **{Method Statement}** vii) Undertake stationary plant and vehicle emergency repairs in-situ only if there is good reason why these are impractical to carry out in a workshop; and if doing so, implement and adhere to appropriate spill prevention and containment measures (e.g. drain fuel / oil into drums, make use of drip-trays, cover the ground for part and tool lay-down areas with tarpaulins,	Contractor Contractor Contractor Contractor Contractor Contractor	ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	construct temporary containment berms etc.). **{Method Statement}** viii) Ensure suitable absorbent material is placed within drip trays under static plant (e.g. generators) to prevent rainwater build-up that could result in overflow of contaminated water. Contractor to ensure that the absorbent material is in a secondary containment.	Contractor	
7.1.13 HAZARDOUS MATERIALS MANAGEMENT			
Legal requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Veld and Forest Fires Act, 1998 (Act No. 101 of 1998) National Water Act, 1998 (Act No. 36 of 1998) Hazardous Substances Act, 1973 (Act No. 15 of 1973)			
a) Pollution through spills	i) Obtain, keep on record, make use and avail Material Safety Data Sheets (MSDSs) for all hazardous substances brought / used on site; and compile MSDSs for all liquid and solid hazardous substances and wastes that are generated on site over prolonged periods, are generated in large quantities, are very hazardous and/or hazards are unknown. ii) Develop and implement procedures for safe material transportation, storage and handling. **{Method Statement} / {SOP}** iii) Develop and implement emergency procedures / protocols to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures. **{Method Statement} / {SOP}** iv) Maintain a register of spills, incidents and 'near-misses' involving hazardous materials; and compile and keep on record investigation reports for all such events involving significant quantities and/or very hazardous substances or where the Site Manager / Power Station Manager and/or ECO requires such a report to be compiled. v) Clearly dedicate and demarcate areas for the storage of hazardous substances including hazardous waste and industrial effluent. vi) Provide some appropriate form of secondary containment to all portable chemical containers in storage areas. vii) Design, construct and allocate bunded areas (i.e. concrete platforms with bund walls or inward slopes) to accommodate hazardous liquid substances	Contractor Applicant, contractor Applicant, contractor Contractor Contractor Contractor Applicant, contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	(such as e.g. fuel, oil, paint, bitumen, herbicide and insecticides) to guard against infiltration of hazardous substances into the soil, groundwater or surface water, in accordance with the following design criteria: o Effective segregation for safe storage of incompatible material; o Bund all bulk hazardous chemical tanks and hazardous stores with impermeable floors and bund walls to contain at least 110% of the volume of material stored; or apply SANS 10089-1:2008 to multiple large tanks in bunds; o Provide for storage, handling and disposal of fuels, oils, lubricants and other potentially harmful chemicals (and their containers) to be done under proper supervision in accordance with the manufacturer's instructions (e.g. Material Safety Data Sheets (MSDS)). o A roof over the bunded area, wherever reasonably practical, to minimise collection of rain water within the bunded area; o Means for safe access to the bund for regular inspections and maintenance; o Appropriate emergency and safety equipment, e.g. tank failure alarm, fire alarm, firefighting system and equipment, etc. o A system or for means to safely mop up or remove any spilled hazardous material without causing any environmental pollution; and o A system, e.g. valve or submersible pump, to effectively drain or remove any accumulated rainwater on a daily basis when it is raining.		
	viii) Refrain from storing any material in a bund, other than what the bund provides for in terms of the design criteria given above.	Contractor	
	ix) Provide suitable measures for all on-site purification of transformer oil. **{Method Statement} / {SOP}**	Applicant, contractor	
	x) Ensure that materials are appropriately secured and contained to ensure safe passage between destinations without any loss or spill of material along the way.	Contractor	
	xi) Prohibit smoking in the vicinity of hazardous substance storage areas and erect and maintain "No smoking" and "Danger" signs at such areas.	Contractor	
	xii) Consider and treat all empty and externally dirty containers (e.g. tanks and drums) that contained hazardous substances as hazardous materials, e.g. by ensuring safe storage in bunded areas or by providing other means to prevent any spillage from these; this is unless the containers have been appropriately and fully drained and cleaned to render them non-hazardous. **{Method Statement} / {SOP}**	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	xiii) Ensure that adequate spill management equipment is available in the immediate vicinity where hazardous substances are used and/or stored. Where spill kits are used, they need to be properly stocked at all times.	Applicant, contractor	
b) Spill clean up	i) Make every effort to avoid spills of hazardous materials. ii) Develop and implement a Spill Clean-up Procedure that takes staff safety and environmental protection appropriately into consideration. **{Method Statement} / {SOP}** iii) Provide stock and maintain appropriate complete emergency spill kits at locations close to where hazardous substance are stored or used and ensure full availability at all times. **{Method Statement} / {SOP}** iv) Train all relevant staff members to use the emergency spill kit and on the procedures to deal with spills of hazardous substances such as e.g. oils, diesel, petrol, paints, pesticides, etc. v) Contain and clean-up any spills as soon as possible after the incident and thereafter remediate the affected area effectively and to the satisfaction of the ECO; including spills on unbunded hard surfaces, stormwater drains, roads, laydown areas, etc. vi) Report spills of hazardous substances immediately to the ECO and maintain a register for spills and all incidents involving hazardous materials. vii) Dispose of spilled material recovered from bunded areas by either appropriate re-use, recycling or disposal to a suitably licensed disposal facility. viii) Remove contaminated soil or yard stone immediately (do not leave in- situ) and disposed of this soil at a suitably licensed waste disposal site; or alternatively treat contaminated soil on site but ex-situ through bioremediation on an impermeable bunded area, provided such a method proof to be effective and prevents further or ongoing environmental contamination. ix) Clean up any spills immediately.	Contractor Contractor Contractor Contractor Contractor Contractor/ECO Contractor Contractor Contractor	
c) Concrete batching pollution	i) Avoid mixing concrete directly on the ground, in sensitive areas or near water resources. ii) Locate concrete batching activity / facilities in an area of low environmental sensitivity and indicate such location on the Detailed Construction Site Utilisation Plan.	Contractor Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iii) Treat all waste water resulting from batching of concrete to a quality that meets the relevant specification of the applicable Water Use License before re-use (e.g. road wetting) and/or discharge. **{Method Statement}**	Contractor	
	iv) Store bulk cement, bags of cement and empty cement bags in a designated area or a facility protected from the weather and in a way that minimises cement dust being wind blown into the environment.	Contractor	
	v) Carry out the cleaning of concrete delivery trucks, concrete mixers and other concrete equipment in controlled cleaning zones/facilities only; and refrain from undertaking any such cleaning elsewhere.	Contractor	
	vi) Clean up any accidental concrete spills that occur outside the designated concrete batching area immediately.	Contractor	
	vii) Rehabilitate the ground of the batching plant area and any area where concrete has been spilled to render it uncontaminated, upon completion of works.	Contractor	
d) Soil and water contamination	i) Treat and/or dispose of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (e.g. Waste Management License, Water Use License), with full cooperation from the relevant authorities and full documentation on the quantities and methods of treatment and/or disposal. **{Method Statement} / {SOP}**	Contractor	
	ii) Minimise contamination of accidental spills of hazardous substances (e.g. fuels, oils, greases, paints, solutes, herbicides, pesticides), by applying 'good' materials management and spill clean-up procedures (refer to Section 7.1.2 and Section 7.1.3 for further details);	Contractor	
e) Stormwater pollution	i) Dispose of any hazardous substances cleared from stormwater systems, e.g. oils/greases/chemicals from traps in accordance with the appropriate hazardous substances and waste management procedures.	Contractor	
f) Waste management	i) Keep attractive resources such as food, water and edible refuse completely out of reach of wild animals (e.g. baboons) by implementing effective and where necessary inventive and extreme measures to achieve this.	Contractor	
	ii) Exercise rigorous control of edible refuse, by providing for such refuse to be completely removed from site at frequent and regular intervals.	Contractor	
	iii) Ensure that all discarded construction material that can be utilised to build informal structures, is properly disposed of after construction.	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iv) Design, implement and maintain sanitation facilities and associated systems for containment, treatment and/or disposal of raw sewage and sewage sludge such that potential leakage or spillage is effectively prevented and that any 'clean' wastewater is discharged in accordance with all legal requirements (e.g. Water Use License). **{Method Statement} / {SOP}**	Contractor	
	v) Prevent any sewage from on-site sanitation facilities to leak, seep or spill onto the ground or into the surface or groundwater; and conduct regular checks and if necessary repairs.	Contractor	
	vi) Develop and maintain an overall site Integrated Waste Management Master Plan for effective and legal management and disposal of general waste, hazardous waste and building rubble, based on best estimates of such wastes being collectively generated by all the resident staff, contractors and their sub-contractors on site; and include such a plan in the contractor tendering and agreement process / operational EMS.	Applicant	
	vii) Develop and implement a detailed on-site Waste Management Plan, prior to the relevant waste generating activities commencing, covering inter alia: ○ Identification, classification and keeping of a register of type of waste generated; ○ Planning for the construction / establishment / operation / decommissioning of a centralised waste management facility and/or designated waste management areas; ○ Procedures to be followed for waste separation at source as well as reduce, re-use, recycle, recover and treatment of waste prior to the disposal option; ○ Waste management procedures for waste disposal, e.g. storage, disposal, keeping of waste consignment certificates, etc. **{Method Statement}/{SOP}**	Applicant, contractor	
	viii) Provide for and ensure only treated liquid releases to be diverted to the [cooling water discharge system of the nuclear power station].	Applicant	
	ix) Ensure that all conventional waste is properly disposed of and removed from the site to a permitted landfill site, or where applicable to an appropriately licensed waste recycling facility.	Contractor	
	x) Provide for appropriate recycling of waste, e.g. disposal of waste oils to an oil recycler.	Contractor	
g) Demolition of structures and	i) Obtain all relevant approvals and clearances prior to demolition. (Refer to heritage management section with regards to structures older than 60	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
buildings	years). ii) Ensure that all hazardous substances (e.g. radioactive materials, oils, greases, asbestos, mercury containing light bulbs, etc.), are safely removed and disposed of in accordance with legislative requirements to an appropriate facility for safe storage, treatment and/or disposal. iii) Remove any re-usable / recyclable material for re-use to an appropriately licensed recycler / recycling facility, where feasible. iv) Dispose of any rubble to an appropriately licensed disposal facility (e.g. building rubble site, recycler).	Contractor Contractor Contractor	
7.1.14 VISUAL IMPACT AND AESTHETICS			
Legal Requirements National Environmental Management Act, 1998 (Act No. 107 of 1998			
The specifications included in this section comprise the mitigation measures recommended in the Visual Impact Assessment which was undertaken as part of this project. While these specifications were regarded as preferred mitigation at the time of compilation of this EMP, suitable alternatives may well be established during the detail design of the project. In this case, Eskom must consult with an appropriately qualified specialist to confirm the suitability. Thereafter Eskom needs to submit the proposed revised mitigation measures to the DEA and any other relevant stakeholder for their consideration and approval. (Note that it is possible that the authorities may require a public consultation process to be followed, should they consider changes to the specification as substantial).			
a) Negative impact on wildlife due to light pollution	i) Protect wildlife from artificial light at night by implementing and applying the following measures (refer to Section 7.1.14 for further lighting requirements): ○ Reduce exterior lighting to the minimum necessary for essential functions; ○ Use only long-wavelength lights (red or orange) for exterior lighting; ○ Use directional fittings for exterior lights that direct light downward, not up or to the sides; and ○ Screen interior lighting with blinds, curtains, etc., to prevent exterior light pollution.	Applicant with Specialist guidance	
b) Visual impact due to light pollution	i) To the extent possible, given the importance of security for a nuclear power station, minimise the visibility of the nuclear power station at night as a result of security and safety lighting, by minimisation of light intensity and light spill by the analysis of lighting requirements and the selection of light fittings that direct light; as follows (refer to Section 7.1.14.	Contractor with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	Specification 25 for further lighting requirements): ○ Consult with a suitably qualified and experienced lighting engineer to design the Lighting Plan for the nuclear power station and surrounding security areas through utilisation of a process that involves the modelling of the light spill for various light units to achieve the required effect and to limit the "light spill". ○ Provide for the Lighting Plan to include the following lighting solutions/ principles ▪ Direct lights so as not to shine beyond the site onto adjacent residential areas, roads and / or into the air; ▪ Provide light fittings with shields to eliminate sight of the light source from sensitive nearby land users e.g. nearby communities; ▪ Direct light where possible to prevent light spill, e.g. use down lighting of areas preferred to up lighting; ▪ Direct perimeter lights to downwards and inwards; ▪ Specify emitted light colour to be a low pressure sodium (where practical), preferably not mercury halide (blue-white) or fluorescent lights, as these attract insects and considerable depletion of the insect populations will result over time; ▪ Use only long-wavelength lights for exterior lighting; ▪ Prohibit flood lighting the entire main structure but incorporate concealed lights high on the structure to shine downwards, so as to render darker areas on the building elevations less visually noticeable structure; ▪ No light fittings should spill light upwards or be directed upwards from a distance towards the area or building to be illuminated; and ▪ The lighting plan should strive to maximise the energy efficiency, including a hierarchy of lights that are essential to those that are switched on only when needed. ii) Keep to the lighting principles during the construction phase and for any other temporary lighting. iii) Implement and maintain the Lighting Plan.	Contractor with specialist guidance Contractor with specialist guidance	
c) General visual impacts	i) Prepare mitigation design details and specifications for all actions e.g. colour and form, slope stabilisation and vegetation to blend new cut and fill landforms into the setting. ii) Screen the lower portions of the large scale nuclear power station and	Applicant with specialist guidance Applicant with	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	associated structures, where reasonable, by strategically positioned and designed screening elements such as earth berms, fences and tree and shrub plantings at particular areas within and around the site.	specialist guidance	
	iii) Include screen berms in tender documentation for pricing by the relevant contractor, if applicable.	Applicant	
	iv) Maintain and modify the visuals where required and feasible to effectively mitigate visual impacts of the nuclear power station and associated infrastructure, e.g. re-vegetated cut or fill slopes to provide the visual integration with the surrounding landform, extension of screen berms in certain areas, etc.	Applicant	
	v) Address the visual impact issues that are identified during the abovementioned visual impact monitoring.	Applicant	
d) Visual impact of the western access road at the Thyspunt site	i) The edge of the cuts and fills that is where the slope meets the existing landform must be rounded to visually fit the existing landform.	Applicant, contractor	
	ii) The toe of the slope section where cuts are required in dunes should be stabilised by gabions or similar retaining systems.	Applicant, contractor	
	iii) The predominant westerly wind direction should be taken into account	Applicant, contractor	
e) Visual impacts due to colour variations	i) Minimise the visual impact of the large scale and form of the nuclear power station and transmission towers in a visually exposed and natural coastal setting, based on the following recommendations.	Applicant	
	ii) Use / apply a base colour of light grey, blue grey or a light straw, as it is visually neutral in the landscape and at distance blends more easily into the background: ○ Consider the light grey colour of the concrete of the reactor structure as suitable to reduce the visible scale; ○ Use / apply a darker band of the base colour near the top of the main structure to provide a visual illusion of a reduced scale and form of the nuclear power station; ○ Paint the visually prominent stack and all masts white or very light grey as it will mostly be seen in silhouette against the sky (where this does not conflict with the marking requirements of the Civil Aviation Authority); ○ Consider the grey of the standard galvanised finish of the transmission line towers to a 3 km radius from the site as suitable (newly galvanised metal should not be painted, as it will soon weather to a matt grey);	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iii) Consult a suitably qualified Landscape Architect with regard to the simulation of the nuclear power station to assist in the selection of colours that will fit the setting during the summer and winter seasons and design (layout and form) and simulation of other landscape design features (e.g. berms, fences, plants, etc.). iv) Subject construction buildings and infrastructure to Visual Impact Assessment mitigation measures that the Applicant may specify; e.g. construction buildings (e.g. workshops, storage building) and storage tanks must be painted in a specified green, while taller structures such as cranes (permanently on site) are to be white or light grey.	Applicant with specialist guidance Contractor	
f) Visual impacts associated with machinery and equipment	i) Minimise the visual impact caused by the visual clutter presented by machinery, equipment and material at construction / demolition sites, camps and lay-down areas that are visible to the public e.g. along roads and from residential areas. ii) Consider a rounded roof structure design for the turbine halls and reactor buildings, if possible, to reduce straight shadow lines on the structures. iii) Locate construction camps away from public places, where reasonably practical. iv) Practice good housekeeping.	Contractor Applicant Contractor Contractor	
g) Roads	i) Design and stabilise all access roads to the main and satellite sites (e.g. the mast site) to visually fit into the surrounding landform and vegetation, as best as reasonably possible; as follows: ○ Design and/or shape cut and fill sections to blend with the adjacent landform and materials, thus adjusting the curves, slope angles and material (applying merely a standard curve, slope angle and/or material is not appropriate). ○ Develop, implement and maintain a detailed rehabilitation design and plan of the road reserve showing stabilisation methods and a specification of planting type and species together with maintenance requirements; and do so with the engagement of a suitably qualified and experienced landscape architect and rehabilitation contractor. **{Method statement}**	Contractor	
h) Spoil dumps and terraces	i) Consider and design the location and form of temporary spoil dumps and terraces in the context of the surrounding scale and form of the dunes as well as the need to accommodate access roads and transmission lines and security patrolling; and do so with great care and in detail as the form	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	terraces are important as it determines the primary visual impact. ii) Provide for side slopes of the terraces (where applicable) to ideally be 1:3 but not steeper than 1:2 (where practical), taking the direction of the prevailing wind and the way in which this has formed the dunes is an important consideration in order to reduce dust and fine sand from blowing into sensitive environmental features (e.g. wetlands) and work areas.	Contractor	
i) Transmission lines	i) Design transmission infrastructure and routing that are as visibly "light" as possible within a 3 km radius of the site, e.g. where possible: ○ Consider making use of the new generation of guyed cross rope suspension or kite towers. ○ Align the transmission servitude corridor such that the lines cross a road at right angles to the road to minimise the view along the line route.	Applicant with specialist guidance	
j) Monitoring	i) Report on the visual impact monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. [At a frequency as detailed in Section 9.13]. ii) Address the visual impact issues that are identified during the abovementioned visual impact monitoring.	Applicant Contractor	
7.1.15 NOISE MANAGEMENT			
Legal Requirements Environment Conservation Act, 1989 (Act No. 73 of 1989) Government Notice No. R 154 of 1992 (National noise control regulations) National Environmental Management Act, 1998 (Act No. 107 of 1998)			
a) General	i) Develop and implement a Noise Control Management Plan with associated Noise Monitoring Programme (based on SANS 10103:2004). **{Method Statement} / {SOP}** ii) Reduce / mitigate noise, where construction (e.g. of roads) is to take place within approximately 500 m of residences; for example: ○ Provide residents with prior knowledge of scheduling for ultra-heavy-duty vehicles and advise on the frequency and day periods of exposure to such noise; ○ Select construction vehicles/ machinery with low noise emission levels (e.g. fitted with silencers); and ○ Restrict construction close to residential areas to daytime hours, if feasible. If not, obtain authorisation from the local authority for alternative arrangements and inform the Environmental Monitoring	Applicant , contractor Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	Committee of such arrangements.		
7.1.16 SECURITY, SITE ACCESS AND ACCESS CONTROL			
Legal requirements National Key Points Act, 1980 (Act 102 of 1980) National Water Act, 1998 (Act No. 36 of 1998) Fencing Act, 1963 (Act No. 31 of 1963) National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) Environmental Conservation Act, 1989 (Act No. 73 of 1989) Sea Birds and Seals Protection Act, 1973 (Act No. 46 of 1973) Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)			
a) No-go zones and 200 m corridors	i) See Section 7.2 for dune access, no-go areas and 200 m and 100 m corridors. ii) In accordance with the EIA conclusions and recommendations, with the exception of the western access road, development is prohibited in the Oyster Bay mobile dune system. The siting of the nuclear power station and HV yard should thus be such that the coastal corridor (a 200 m width from the high water mark) is retained. The offset from the southern side of the Oyster Bay Mobile Dune system must also be maintained as a 'No-go' area. Should any designs be changed that necessitates a change in footprint, the relevant specialists must to be consulted. iii) Refrain from disturbing mobile dunes and thus declare and retain mobile dunes as a "No-go" area, apart from designated access tracks and the construction of transmission line pylons through the mobile dune field. iv) Access during operation will be by 4x4 vehicles, but without permanent access roads.	Applicant with specialist guidance Applicant Contractor Contractor	
b) Wetland disturbances	i) Key to mitigating impacts on wetlands is the formal declaration and demarcation of setbacks and buffer zones and inclusion of such zones into site layout master planning and "No-go" areas outside of the minimum disturbance area required for construction. Since wetlands are integrated and complex systems, positioning and the setting of "no go" development areas on and off site is considered essential mitigation, and requires consideration of both surface and groundwater interactions between wetlands and development-related activities on the site. It is thus essential that Eskom consults with suitably qualified wetland, ecological, hydrological and geohydrological specialist during the site layout planning process.	Applicant , contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ii) Avoid impact on the sensitive coastal environment, including the coastal wetlands as well as Langefontein; and declare these areas and their associated buffer zones as "No-go" areas.	Applicant, contractor	
	iii) Buffer the sensitive wetlands and streams by a minimum of 100 m, the western edge of the Langefontein wetland by 200 m and provide a buffer of at least 150 m from the upstream edge of each coastal seep; and provide for such to be incorporated and considered in site layout, utilisation and stormwater management planning (refer to Section 7.2.5 for further details).	Contractor	
	iv) Dedicate and demarcate on-site "No-go" areas and off-site "No-go" areas that are at risk by suitable fences where reasonably practical; and if not with danger tape and/or "No-go" sign boards.	Contractor	
c) Breeding bird disturbance	i) Where practicably possible, and in consultation with the ECO and appropriate specialist, define, create and maintain a "No-go" buffer zone of at least 200 m width surrounding all sensitive bird breeding sites (to be established during walk down assessment).	Contractor, ECO	
d) Vegetation disturbance	i) Demarcate all areas to be cleared and those not to be cleared (e.g. "No-go" areas) clearly and effectively, prior to clearing.	Contractor, ECO	
e) Loss of visual integrity	i) Institute and consider all areas on the applicant's owned property outside the formerly demarcated and fenced in development areas strictly as "No-go" areas, unless the Project Manager / Power Station Manager provided specific written permission for these area to be accessed.	Applicant	
f) Access control	i) Ensure adequate signage is provided along the major roads as allowable by the relevant authorities and at the entrance of the construction site.	Applicant	
	ii) Clearly communicate access policy for the properties to the staff and public, using notice boards on access gates and by directly communicating with the nearby communities. (Refer to Section 7.1.16 for specifications related to special access permissions).	Contractor	
	iii) Provide and declare the access gateways and what use they are intended for; control access at all these gateways.	Contractor	
	iv) Raise awareness and clearly communicate any public safety risk to the public, using appropriate safety and precaution signage erected in applicable areas, radio broadcasts, and notice boards and/or by directly communicating with the nearby communities (meetings, flyers).	Applicant, , contractor, ECO	
	v) An access control procedure is to be developed. It should state how access to site can be obtained and how it is to be controlled such that the	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	identity of who (visitors and staff) is on site and when can be determined at all times.		
	vi) Engage proactively with relevant authorities to introduce and maintain active policing of the marine exclusion zone as a deterrent to poachers.	Applicant	
	vii) Engage proactively with local authorities/ SAPS/ Community Policing Forums to ensure that job seekers do not settle in the vicinity of Construction Villages or the construction terrain or site.	Applicant	
	viii) Engage proactively with relevant authorities to ensure that all legislation preventing illegal settlement is enforced by them at all times with respect to the construction village.	Applicant	
	ix) Control access to areas of the nuclear power station site that are not involved in construction or operation of the plant.	Contractor	
	x) Fence the main development footprint and any satellite construction / operation sites off to allow site access control, prevent unauthorised access and prevent larger mammals from entering (refer to fencing specification as provided in Section 7.1.16, Specification 6.) **{Method Statement}**	Contractor	
g) Criminal activities	i) Experience in other projects has shown that members of the community readily attribute crimes committed to the presence of construction workers, particularly where there are significant pre-existing levels of crime. This perception is entrenched by the actions of workers who may for example enter or use private properties without permission (e.g. for example take shortcuts, access taps or to ask for water or use of ablution facilities). Pro-active discussions between the Contractor(s) and project applicant have proved effective in addressing concerns and putting possible preventative measures in place.	Applicant	
	ii) Engage with and urge the South African Police Services (SAPS) as well as local appropriate policing (with the assistance from the Environmental Monitoring Committee), to ensure that baseline statistics are available on a monthly basis regarding existing crime rates.	Applicant	
	iii) Arrange meetings with residents associations, community-policing forums, as well as the local police staff to discuss contractors' plans, procedures, schedules and possible difficulties, and safety and security concerns; with the number of meetings and the timing of these meetings to be discussed with the interested and affected parties and a work plan to be put forward.	Applicant	
	iv) Eskom shall comply with NKP Act. The site security plan is to be designed in consultation with the SAPS and the state security agency (NIA).	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	v) Inform (liaise with) the relevant authorities of any required support for site control from the relevant police, emergency services, military, naval and coastal management agencies.	Applicant	
	vi) Work closely with the local police department and their own private security company in order to ensure that there is sufficient policing in the area.	Applicant	
	vii) Integrate the site specific control measures with existing local and regional security measures, where appropriate.	Applicant	
	viii) Develop, implement and maintain a Site Security Programme.	Applicant	
h) Prohibitions	i) Prohibit / control access to portions of the property that are to remain undeveloped; and ensure that it is used for conservation, research or non-destructive recreational and/or educational purposes only.	Applicant, Contractor	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93
	ii) Prohibit use of any deviation from approved access roads or transportation routes unless written approval has been received therefore from the Site Manager / Power Station Manager.	Contractor	
7.1.17 SAFETY			
Legal Requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) National Veld and Forest Fire Act, 1998 (Act No. 84 of 1998) National Environmental Management Act, 1998 (Act No. 107 of 1998) National Water Act, 1998 (Act No. 36 of 2008			
a) Emergency Preparedness and Response	i) Inform all staff of the hazards on the site and provide suitable training on how to protect themselves, others and the environment from such hazards; how to react and what to do in an emergency.	Contractor	
	ii) Develop and implement an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency; which includes but is not limited to fires, spills, and contamination of ground and surface water, accidents to employees and damage to services. **[Ongoing and where necessary], {Method Statement} / {SOP}**	Contractor	
	iii) Include contact details of all relevant emergency services and response teams and neighbouring land owners/ users/ managers in the Emergency Preparedness Plan; keep and display such contact details in appropriate places; and ensure that these are regularly checked und updated if necessary.	Contractor	
	iv) Appoint an on-site emergency response team, train key staff in emergency	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	response and make all staff aware of the emergency procedures. **[Ongoing]**		
	v) Work closely with the local emergency services departments in order to ensure that required services are sufficient in the area; particular due to increased population and traffic on roads; for providing support in case of making fire breaks and site emergencies; and for assistance with evacuation procedures once the site is operational.	Applicant	
	vi) Maintain a register of and compile reports on all incidents, accidents, 'near miss', etc., which includes the action taken after the event has occurred; and inform at least the Site Manager / Power Station Manager as well as the ECO of the event.	Contractor	
	vii) Notify any relevant authorities immediately and keep detailed record of such notifications, should any serious incident occur, including e.g.: o The local Emergency Services Department for all incidents that may affect the local community and road users; o The Department of Environmental Affairs for incidents that likely have a detrimental effect on the environment; o The Department of Labour for reportable incidents as defined in the Occupation Health and Safety Act (Act No 85 of 1993); o The SA Police Service, for accidents on public roads; and o The Department of Water Affairs for any emergencies that affect water resources.	Contractor	
	viii) Develop, implement and maintain emergency evacuation procedures in case of a nuclear incident. **{EOP}**	Contractor	
b) General	i) Take appropriate and effective precautions and all reasonable measures to ensure the safety of people on site and in the surrounding Owner Controlled area.	Applicant , contractor	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93
	ii) Address community safety & community safety concerns related to construction/operation activities.	Applicant	
	iii) Maintain all vehicles used on site in a roadworthy and leak free condition and maintain all equipment in a safe working condition and such that any accidental emissions, spills, explosions, etc. are avoided.	Contractor	ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345
	iv) Erect and maintain appropriate safety and environmental risk precaution signs prior to commencing with construction activities.	Contractor	
c) Fire prevention and	i) Responsible parties will be liable for any damage caused by fires resulting	Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
response	from their operation, negligence or lack of protection of the site from veld fires (e.g. the failure to maintain fire breaks).		
	ii) Include a fire emergency preparedness plan for fighting accidental fires in the Emergency Preparedness Plan (refer to Section 7.1.17).	Contractor	
	iii) The project team will compile a Fire Management Plan (FMP) and contractors directed by the ECO will submit a FMP; the project FMP shall be approved by the local Fire Protection Association (FPA), and shall include inter alia aspects such as relevant training, equipment on site, prevention, response, rehabilitation and compliance to the National Veld and Forest Fire Act, Act No. 84 of 1998;	Contractor and ECO	
	iv) Define, implement and maintain a proper firebreaks around the entire site footprint (permanent), satellite facilities (permanent) and where appropriate on-site (temporary or permanent), to prevent accidental fires spreading to, from or across the site; and ensure that this is done in accordance with the requirements of Veld and Forest Fires Act.	Contractor	
	v) Fire-fighting equipment for each construction / operational / demolition team and/or area must be readily available on site; bearing in mind that these should be approved by the local Fire Prevention Officer, ECO, Safety and/or Health Officer.	Contractor	
	vi) Avail and maintain appropriate fire-extinguishers on all vehicles carrying flammable materials. Ensure that all construction vehicles on site and all vehicles entering site that are carrying flammable materials are fitted with appropriate fire extinguishers that are inspected/maintained in accordance with an appropriate schedule.	Contractor	
	vii) Keep a register and inspection log of all firefighting equipment; and inspect and check firefighting equipment regularly and record such inspection on the inspection log that is retained on-site.	Contractor	
	{Method Statement} / {SOP}		
	viii) Prevent accidental fires through proper sensitisation of staff towards the associated risks, dangers and damage of property.	Contractor	
	ix) Inform and/or involve neighbouring land owners/ users/ managers should there be a risk of a fire spreading to their land.	Contractor	
d) Prohibitions	i) Prohibit the transportation of persons on the back of vehicles unless in accordance with the Eskom Policy.	Applicant and Contractor	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93
	ii) Prohibit the use of open fires and random “braais” on-site, strictly, unless they are effectively contained and designated areas which do not pose a fire hazard threat to vegetation.	Applicant and Contractor	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iii) The use of branches of trees, shrubs or any vegetation for fire making purposes is strictly prohibited.	Applicant/ECO	

7.2 Operational Phase

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
7.2.1 AIR QUALITY			
Legal Requirements National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) National Environmental Management Act, 1998 (Act 107 of 1998)			
a) General compliance	Develop, implement and maintain an Air Quality Management Master Plan, including but not limited to: i) An 'off site' Air Quality Monitoring Programme monitoring specific areas of concern as determined by the ECO; ii) Appropriate air emission and air quality targets / criteria; iii) Develop, implement and maintain a comprehensive air quality monitoring programme which includes measurements of levels in worker areas and areas of the community in accordance with the requirements detailed in Section 9.5. iv) Report on the air quality monitoring results to the relevant authorities. **[At a frequency of every 3 to 6 months]**; and v) Address any air pollution issues that are identified during the air quality monitoring. **{Method Statement} / {SOP}**	Applicant	
b) Nuclear	i) Implement and maintain measures to maintain any contaminant releases to the atmosphere to within the National Nuclear Regulator's specified annual release limits.	Applicant	
7.2.2 GEOLOGY AND SOILS			
Legal Requirements National Environmental Management Act, 1998 (Act 107 of 1998) Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)			

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
Marine Pollution (Control and Civil Liability) Act, 1981 (Act 6 of 1981)			
a) Dune Management	i) Buffer the sensitive coastal dune systems by a minimum of 100 m. ii) Refrain from disturbing mobile dunes and thus declare and retain mobile dunes as a "No-go" area, apart from designated access tracks for operational maintenance. iii) Maintain any access tracks/walkways through the dunes in accordance with the design specifications and the abovementioned *Site Master Plan*. iv) Where necessary, maintain dune areas with drift fences, brushwood and with pioneer indigenous dune vegetation, should any dunes be disturbed. v) Monitor vegetated dunes and repair blowouts by placing brushwood or using drift fences on the bare sand surfaces, and then re-vegetating the bare sand with suitable pioneer species. **[Regularly]** vi) Develop a rehabilitation plan that considers geological features and the rehabilitation thereof. vii) Prohibit permanent access roads/walkways through the mobile dunes between the power station and the HV yard. Access during operation will be by 4x4 vehicles, but without permanent access roads. viii) Access to the pylons for inspection, testing and maintenance purposes must be achieved by 4x4 vehicles along tracks. **{Method Statement}** ix) The vegetated dunes in the vicinity of completed roads must be monitored annually by a suitably qualified dune specialist to check that there is no de-stabilization. x) Should any dunes be disturbed, they should be stabilised in some manner typically such as the use of drift fences, brushwood and with pioneer indigenous dune vegetation. xi) Refer to Section 7.2.16, Security, Site access and access control to minimise impacts on the Dunes due to site access.	Applicant Applicant Applicant Applicant/ECO Applicant/ECO Applicant Applicant Applicant ECO with specialist guidance Applicant Applicant	
b) Erosion management	i) Remediate any erosion channels which develop on open ground by suitably backfilling, compacting and restoring to a proper condition (i.e. landscaped, vegetated etc.).	Applicant	
c) Spoil Disposal at Sea	i) Following disposal at sea, areas predicted to be affected over the first ten years are to be sampled annually for at least ten years ii) Communities establishing on actual spoil site to be monitored annually, at the same time as above.	Applicant and ECO Applicant and ECO	
7.2.3 WATER MANAGEMENT			
Legal Requirements			

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
National Environmental Management Act, 1998 (Act No.107 of 1998) National Water Act, 1998 (Act No. 36 of 1998) Water Services Act, 1997 (Act No. 108 of 1997)			
a) Site Water Supply Master Plan	i) Maintain an overall site Water Supply Master Plan for effective provision of freshwater for all on-site processes, operations, facilities and services for resident staff, based on best estimates of such requirements; and include such a plan in the contractor tendering and agreement process / operational EMS.	Applicant	
b) Water Use Licence (WUL)	i) In the case of a nuclear power station site the stormwater management system for the nuclear power island area itself needs to be designed in accordance with the standards specified in the Integrated Water Use License for the power station by the Department of Water Affairs. ii) Assess all project activities and associated water use requirements (e.g. treated wastewater discharge and water abstraction) well in advance in order to ensure the relevant Water Use License (WUL) is applied for where required; and ensure that such a WUL is in place and all associated conditions complied with prior to such use commencing. **{Method Statement} / {EOP}.** iii) Implement and adhere to all conditions of the Water Use Licence (WUL) and the relevant water use, stormwater, wastewater specifications and plans referred to in this EMP.	Applicant Applicant, audited by ECO Applicant	
c) Surface water usage and quality	i) Prohibit use of natural surface water sources (i.e. streams, rivers, wetlands) for potable and other water use, as only desalinated water may be used on site. ii) Ensure that no natural surface water sources (i.e. streams, rivers, wetlands) are used; e.g. in situ to wash / clean plant or equipment, and/or for any water abstraction (other than for emergency firefighting).	Applicant Applicant	
d) Supply abstraction and consumption	i) Avoid abstraction from aquifers with direct links to freshwater ecosystems. All fresh water for operational phase activities must be obtained from desalinated sea water. ii) Groundwater monitoring must continue throughout operation.	Applicant Applicant, specialist	
e) Groundwater shortage, wastage and salinisation of fresh water	i) Establish a 'lessons learned' task team to: o Address inadvertent, unmonitored liquid releases of radioactivity from existing commercial nuclear power stations, including that from the Koeberg Nuclear Power Station; o Review previous incidents, identify lessons learned from these events,	Applicant with specialist guidance	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	and determine what, if any, changes are needed in the proper development and operation of the proposed site; o Develop a Groundwater Management Master Plan for the site in accordance with all the relevant requirements of this EMP. **[Ongoing]** ii) Inspect the structures of the power station regularly to ensure that groundwater does not permeate through its retaining wall. iii) Implement the comprehensive groundwater monitoring programme in accordance with the requirements detailed in Section 9.4. **[Continue until the end of the project life cycle]** iv) Report on the groundwater monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by a statutory authority]** v) Address any issues, such as groundwater contamination, that are identified during the abovementioned groundwater monitoring. vi) Develop effective groundwater remediation procedures, and make the arrangements and take preparations required to put these in place, to allow for immediate implementation prior to any potential impact on groundwater quality (with only minor, insignificant levels of contamination allowed to be mitigated with natural attenuation). **{Method Statement} / {EOP}** vii) Implement the groundwater remediation procedures, should the results of groundwater monitoring indicate that contamination has occurred. **[Immediately]**	Applicant Applicant, ECO Applicant, ECO Applicant, ECO Applicant, ECO Applicant, ECO	
f) Groundwater contamination (most notably that of the primary aquifer) by seawater resulting from sea water ingress during dewatering	i) Undertake a site assessment, if contamination is detected (predominantly based on a deterioration of groundwater quality), as follows: o Identify the source of contamination and the scale of the problem; o Investigate the extent of contamination by auguring a series of shallow, temporary exploration holes and collecting samples for analysis.	Applicant and ECO	
g) Waste water management	i) Develop an overall site Wastewater Treatment Master Plan for effective and legal management and disposal of wastewater during the operational phase of the project, based on best estimates of wastewater generation; and include such a plan in the contractor tendering and agreement process /	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	operational EMS.		
	ii) Design and construct a waste water management system and associated facilities for the safe and effective containment (including emergency containment), processing, treatment, re-use and disposal of all industrial wastewater (including contaminated stormwater) from various activities and operations that complies fully with all relevant legal requirements; and aligns suitably with the Wastewater Treatment Master Plan.	Applicant	
	iii) Obtain all the relevant authorisations for discharge of treated wastewater and ensure that all the conditions of authorisation are effectively implemented and/or adhered to.	Applicant	
	iv) Provide only treated liquid waste releases to be diverted to the cooling water discharge of the nuclear power station under a valid WUL. **{EOP}**	Applicant	
	v) Provide for the effective treatment and legal disposal of any sludge generated at the wastewater treatment facilities.	Applicant	
	vi) Remove (do not leave in-situ) all polluted water, including contaminated stormwater, immediately from an area or system where such polluted water could spill or wash into the surrounding water resources or onto open ground and transfer it to an impermeable tanker, sump or container for safekeeping before transportation for treatment and/or disposal to an appropriate wastewater treatment facility or alternatively to an appropriately licensed landfill site.	Applicant	
h) Stormwater management	i) Prevent and minimise as far as possible the impact of flood hazards.	Applicant	
	ii) Implement and maintain a *Stormwater Management Plan* and associated stormwater management system. **{Method Statement}** / **{SOP}**	Applicant	
	iii) Monitor the stormwater quality at the designated monitoring points in accordance with the requirements detailed in Section 9.3.	Applicant	
	iv) Report on the stormwater quality monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by an authority]**	Applicant	
	v) Address any issues identified during the abovementioned stormwater quality monitoring.	Applicant	
	vi) Develop and maintain an overall site Stormwater Management Master Plan for appropriate, effective and legal management of stormwater; and include such a plan in the operational EMS.	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	vii) Design, implement and maintain all required stormwater control and mitigation measures so as to comply with applicable design standards thereby ensuring the safety of the plant as well as conserving the surrounding environment. viii) Ensure storm water control berms (e.g. trench and/or earth barriers) divert rainwater around and away from the operation in a way that retains such rainwater as uncontaminated. ix) Implement appropriate measures to prevent stormwater pollution. x) Inspect and maintain all the storm water management system (drainage structures, silt / debris / oil traps, etc.) to retain it cleared of organic and inorganic debris in order to prevent storm water contamination. **[Regularly]**	Applicant Applicant Applicant Applicant	
i) Brine management	i) Dispose of brine with released cooling water during the operational phase to encourage rapid mixing.	Applicant	
j) Dewatering	i) Minimise dewatering requirements and prohibit any non-essential dewatering. ii) Place drip trays under pumps in order to contain fuel and/or oil spills and leaks, when dewatering. Also place suitable spill absorbent material in each tray to absorb such spills. iii) Take all reasonable precautions to prevent spillage during the re-fuelling of dewatering pumps. iv) Refrain from pumping / releasing any water from the dewatering activities into the environment without the necessary approvals.	Applicant, contractor Applicant ,contractor Applicant, contractor Applicant, contractor	
k) Prohibitions	i) Prohibit use of natural surface water sources (i.e. streams, rivers, wetlands) for potable and other water use, as only desalinated water may be used on site. ii) Prohibit use of wetlands as sources of water. iii) Prohibit any excess groundwater from being pumped into the wetlands.	Applicant Applicant Applicant	
7.2.4 SEWERAGE MANAGEMENT			
Legal Requirements National Water Act, 1998 (Act No. 36 of 1998) Health Act, 1977 (Act No. 63 of 1977)			
a) Pollution contamination	i) Dispose of sewage in a sustainable manner that will fully prevent any raw or treated sewage to contaminate surface water, wetlands or groundwater. ii) Monitor treated sewage quality disposed into the sea to ensure that it meets requirements of the applicable legal authorisations; **[At frequencies**	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	required by the water use license]; iii) Include the sewage treatment plant in operational environmental audits to ensure that its management procedures meet the requirements of its license.	Applicant	
7.2.5 WETLAND MANAGEMENT			
Legal Requirements National Water Act, 1998 (Act No. 36 of 1998) National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)			
a) Damage to environmentally sensitive wetlands including coastal seeps	During operation, the following restrictions on activities that could affect wetlands will continue to apply: i) Buffer the sensitive wetlands and streams by a minimum of 100 m, the western edge of the Langefonteinvlei wetland by 200 m and provide a buffer of at least 150 m from the upstream edge of each coastal seep; and provide for such to be incorporated and considered in site layout, utilisation. ii) If it is necessary to change any infrastructure during operation, take all necessary precautions to ensure that activities do not alter natural ground and surface water flows in areas identified as sensitive in the freshwater specialist report. iii) Implement a comprehensive wetland monitoring programme which includes evaluation of the efficacy of mitigation measures in accordance with the requirements detailed in Section 9.7. iv) Report on the wetland monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed in Section 9.7]** v) Address wetland impact issues that are identified during the abovementioned wetland monitoring.	 Applicant Applicant Applicant Applicant, ECO Applicant, ECO	
b) Prohibitions	i) Prohibit vehicular traffic in or close to any wetland and its associated buffer zone.	Applicant	
7.2.6 FLORA MANAGEMENT			
Legal Requirements Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) Relevant provincial nature conservation ordinances and acts			
a) Alien plant management	i) Identify and manage all declared aliens in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and eradicate alien invasive vegetation systematically and fully. **[Ongoing], {Method Statement} / {SOP}**	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ii) Develop, implement, maintain and expand alien eradication and rehabilitation programmes.	Applicant	
b) Impact on Red data species on traverse dunes. (*Helichrysum cochleariforme duineteebossie* (NT), *Psoralea repens duine-ertjie* (NT), the succulent vygie *Ruschia indecora* (EN), and *Passerina ericoides kusgonnabas* (VU) (Red Data status in brackets)	i) Keep retained or re-established indigenous (local) vegetation low by regular mowing to provide habitat for small and fossorial animals and invertebrates, rather than clearing vegetation altogether, in such limited areas where this is necessary; e.g. within areas where high vegetation cannot be tolerated for security and safety reasons. ii) Monitor habitat where Red Data species affected by construction have been relocated. iii) Monitor habitat (e.g. maintain fire frequency) to ensure optimal habitat conditions for Red Data species and adapt management practices as necessary. iv) Address all flora related issues identified during the abovementioned flora monitoring.	Applicant Applicant Applicant with specialist guidance Applicant with specialist guidance	
c) Prohibitions	i) Prohibit collection of fire wood by staff; unless it is wood from controlled alien vegetation and site clearance made available by Eskom at a specific outlet point for collection by staff and the public.	Applicant	
7.2.7 SITE REMEDIATION, REHABILITATION AND RE-VEGETATION			
Legal Requirements National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) National Environmental Management Act, 1998 (Act 107 of 1998)			
a) Loss of habitation compensation	i) Implement the *Loss of Habitat Compensation Plan.* ii) Continue to develop, manage and maintain owner-controlled areas outside the nuclear power station footprint as a nature conservation area (nature reserve). iii) Provide access for scientific research and for recreation to nature conservation areas within the owner-controlled area. iv) Incorporate additional properties that are purchased into the protected area.	Applicant Applicant Applicant Applicant	
b) Terraces and temporary spoil dumps	i) Continue to implement and maintain the rehabilitation plan. ii) Monitor the effectiveness of rehabilitation on rehabilitated terraces and take action to address poor rehabilitation e.g. by addressing erosion and poor establishment of seed. iii) Investigate the causes of poor rehabilitation success (e.g. poor soil preparation, lack of sufficient topsoil, lack of fertilisation, lack of mulching, etc.) and address appropriately.	Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
c) Rehabilitation of disturbed areas	i) Continue with the implementation of the Detailed Rehabilitation Plan ii) Continue with effective rehabilitation of all areas disturbed during the development of the proposed facility, outside the nuclear power station site footprint and natural areas inside the site boundaries, and provide for such rehabilitation to make use of locally occurring indigenous species (refer to Section 7.2.12.)	Applicant Applicant	
7.2.8 FAUNA MANAGEMENT			
Legal Requirements National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Animals Protection Act, 1962 (Act No. 71 of 1962)			
a) Problem animals	i) Continue to implement the problem animal capture & release procedure that include contact details of people who can remove problem animals on the site, in order to protect the safety of the animals and people. ii) Eliminate feral cats and dogs from the site humanely but completely, through appointing suitably qualified eradication specialists (e.g. SPCA) to either catch for placement in the care of the SPCA or extermination; since such animals are a serious threat to wildlife.	Applicant Applicant with specialist guidance	
b) Vertebrates	i) Continue with the implementation of the vertebrate monitoring programme which includes monitoring sensitive faunal populations in accordance with the requirements detailed in Section 9.8. ii) Address vertebrate impact issues that are identified during the abovementioned vertebrate monitoring.	Applicant, ECO Applicant, ECO	
c) Invertebrates	i) Continue with the implementation of eradication/ control programme for early detection and intervention of invasive invertebrate species, so that their spread to surrounding natural ecosystems can be prevented. ii) Continue with implementation of comprehensive invertebrate monitoring programme which includes monitoring sensitive populations in accordance with the requirements detailed in Section 9.9. iii) Address invertebrate impact issues that are identified during the abovementioned invertebrate monitoring. iv) No invertebrates may killed, captured or trapped for any purpose whatsoever – fences and boundaries should be patrolled regularly in order to locate and remove traps; v) Dangerous invertebrates (specifically scorpions and spiders) should be handled by a competent person only; vi) Compile a graphic list of potentially dangerous invertebrates and present this	Applicant, ECO Applicant, ECO Applicant, ECO Applicant Applicant Applicant, with	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	to all workers as part of the site induction;	specialist guidance	
	vii) Sensitize all personnel to the presence, characteristics and behaviour of invertebrate on the site;	Applicant	
	viii) Include suitable procedures in the event of encountering potentially dangerous invertebrates on the site; and	Applicant	
	ix) No domestic pets should be allowed on the site unless used for security purposes (e.g. dogs and horses).	Applicant	
	x) Invertebrate biodiversity monitoring should be conducted at least twice per year (summer and winter) in order to assess the status of the natural habitat and effects of the development on the natural environment.	Applicant, specialist	
d) Animal movement restriction	i) Maintain the habitat corridors effectively as per the Site Master Layout and Utilisation Plan, e.g. by refraining from 'blocking' such corridors, incorporation in buffer zones and other "No-go" areas, demarcation and signage, etc.	Applicant	
	ii) In general, as far as security restrictions allow, no fences should be erected in the nature conservation area around the power station, to allow free movement of species.	Applicant	
	iii) The 200 m coastal corridor should, if security restrictions allow, not be fenced off from the rest of the nature conservation area.	Applicant	
e) Avifauna	i) Because virtually the entire coastline is sensitive, owing to breeding pairs of oyster catchers and plovers, all activities at the coast need to be kept to a minimum, especially the use of off-road vehicles.	Applicant	
	ii) Normal, low-impact recreational activities can be allowed to resume on the beaches during the operational phase.	Applicant	
	iii) Maintain standard devices that effectively improve the visibility of the overhead transmission lines (e.g. "flappers", reflectors or "balls") on transmission routes.	Applicant	
	iv) Monitor overhead transmission routes and installations to reveal and identify areas where bird mortality associated with these installations is occurring; and implement / apply additional mitigation measures in such areas.	Applicant, ECO	
f) Prohibitions	i) Prohibit the exploitation of wildlife resources strictly, e.g. prohibit snaring, trapping, hunting and fishing; and inspect the site and surrounding area regular for any evidence of such activities.	Applicant	
	ii) Prohibit feeding of wild animals; unless it forms part of a conservation programme and is undertaken under the control of a zoologist.	Applicant	
	i) Prohibit domestic animals or livestock from being brought on or entering the site. This applies to the entire site for the construction and operational	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	phases of the development. ii) Prohibit pets on site with the exception of animals for security purposes (i.e. dogs and horses), since these interact negatively with wildlife and must not be allowed into 'protected' natural areas.	Applicant	
7.2.9 MARINE MANAGEMENT			
Legal Requirements Marine Living Resources Act, 1998 (Act No. 18 of 1998)			
a) Marine biology	i) Monitor thermal pollution around the release point for warmed cooling water to determine the accuracy of the predictions of the spread of warmed cooling water. ii) Based on the above monitoring, take steps (if necessary) to amend the design of the release point to improve the effectiveness of heat dissipation. iii) Use exclusion screens and diversion of trapped debris for clearing of debris from intake water. iv) During operation, siphon off seawater from the cooling water intake, for seawater desalination purposes as far as practicable. i) Make use of low-level chlorination regimes to effectively control fouling of pipes. ii) Implement the oceanographic monitoring programme in accordance with the requirements detailed in **Section 9.11**. iii) Report on the marine system and oceanographic monitoring results to the Environmental Monitoring Committee and Department of Agriculture, Forestry and Fisheries and its Scientific Squid Working Group. **[At a frequency as detailed in Section 9.10]** iv) Address marine system impact issues that are identified during the abovementioned marine system monitoring. v) Conduct annual surveys to monitor the presence of egg capsules of Chokka squid and to determine the impact on chokka squid populations.	Applicant with specialist guidance Applicant Applicant Applicant Applicant Applicant, ECO Applicant, ECO Applicant Applicant, specialist	
7.2.10 SOCIO-ECONOMIC ENVIRONMENT MANAGEMENT			
Legal Requirements National Road Traffic Act, 1996 (Act No. 93 of 1996) Nuclear Energy Act, 1999 (Act No 46 of 1999) Promotion of Access to Information Act, 2000 (Act No.2 of 2000) Constitution Act, 1996 (Act No. 108 of 1996) Health Act 1977 (Act No. 63 of 1977)			
a) Vehicles, traffic and	i) Inform all people entering site that they need to adhere to all traffic rules and	Applicant	ESKOM POLICY:

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
transportation	road safety regulations on public roads, including e.g. speed limits, vehicle registration, transport emergency card listing the hazards and emergency information for a material being transported (tremcards); ii) Maintain all operational Eskom vehicles using public roads in a roadworthy condition and refrain from using non-roadworthy vehicles on public roads. iii) Keep the disruption of public roads as short as possible to minimise public inconvenience for both planned and unforeseen events. iv) Secure all loads for transport effectively and cover vehicles transporting materials such as sand, rock, scrap metal and pipes effectively, to prevent their contents falling or blowing off and causing traffic hazards.	Applicant Applicant Applicant a	Vehicle and Driver Safety Management, ref 32-93 ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345
b) Perceived risk associated with nuclear incidents	i) Continue with the implementation of a community-oriented and comprehensive public information campaign that addresses the popular misconceptions regarding the Nuclear-1 programme, including but not limited to specifically the impacts (or lack thereof) of: o Nuclear power generation on marine life; o Nuclear power generation on the immediate environment; o The risks of radionuclide pollution, as well as naturally occurring radiation in the environment; and o The nuclear power station on the sense of place. ii) Disseminate information related to the nuclear power station regularly. **[Ongoing]** iii) Provide public access to independently compiled radiological monitoring results so that nearby landowners can satisfy themselves about the levels of radiation being released from the power station.	Applicant Applicant/ NNR Applicant	
c) Insufficient public infrastructure	i) Continue to liaise closely with the relevant municipal, provincial and other authorities on all matters related to potential use of or impact on public services or service infrastructure, e.g. roads, pipelines, telecommunication, waste facilities, health services, emergency services, law enforcement services, etc.; including development and mitigation plans. ii) Should the implementation of the Social Services not have been completed prior to or during construction, ensure that its implementation is completed within a reasonable time during operation.	Applicant Applicant	
d) Housing	i) Service, manage and maintain the staff village(s) and associated infrastructure effectively in accordance with appropriate social and 'clean' town standards; until its placement under local municipal control.	Applicant	ESKOM housing strategy / Eskom Strategy for vendor accommodation

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
e) Economic impact	While the nuclear power station in itself is motivated by securing long-term economic sustainability as it provides for a reliable and strategically placed electricity source, the project would also stimulate local and regional economic growth during construction and operation. The latter should be enhanced while negative impacts on the socio-economic environment should be mitigated by introducing measures as specified in this section 7.2.10. In addition an important mitigation for minimising the negative economic impacts on the local economy consists of measures to retain, protect and enhance as much of the natural environment as possible (as covered in much detail in Section 7.2.10). This subsection thus only covers and highlights some additional specifications and cross-references to minimise and mitigate negative economic impact. i) Establish a visitor information centre with informative lectures and films. ii) Establish hiking and cycling trails, and promote eco-tourism and conservation education to further develop nature tourism. iii) Work in unison with conservation authorities and, where possible, other nature reserves. iv) Consider the establishment of visitor information and educational centres in order to attract tourists to the area.	 Applicant Applicant Applicant Applicant	
f) Social friction due to influx of job seekers	i) Engage proactively with local authorities/ SAPS/ Community Policing Forums to ensure that job seekers do not settle in the vicinity the site. ii) Management and control of influx of job seekers is important to avoid social problems such as public unrest. iii) Attempt to minimise population influx by utilising local labour, where possible.	Applicant Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)
g) Loss of employment	i) Eskom's declared policy is to transfer construction workers from Nuclear-1 to future development as the construction phases are likely to overlap. Such transfers might not always be possible, depending on the location of the future development, but should nevertheless be maximised, if possible, in order to mitigate the perceived adverse impacts of unemployment once the construction phase of Nuclear-1 is completed. Other opportunities and measures to enhance re-employability of employees and reduce the loss of employment, once the construction period closes, should also be actively sought, implemented and promoted. ii) Absorb as many construction staff into the operational phase of the project as is feasible; and similarly operational staff into decommissioning phase and to other related available projects.	Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	iii) Make use of local labour and local suppliers of material for the construction in accordance with Eskom's SD&L policies.	Applicant	
	iv) Promote community self-help projects as part of the corporate social investment programme.	Applicant	
	v) Cooperate with provincial and district authorities with regard to matters relating the creation employment opportunities.	Applicant	
	vi) Develop a community labour agreement with targets for employment and for career progression.	Applicant	
	vii) Undertake salary reviews to ensure competitive employment packages and in order to attract and retain the required skills.	Applicant	
	viii) Establish a labour policy to facilitate the employment and skills training of locals, where feasible and as far as possible, and the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority; as follows: o Set clear targets and criteria for local employment (in line with SD&L policies), local employee skills training and population demographic representation; and state these clearly in all relevant publications, tender documents, etc.; o Create opportunities for the employment of women, where feasible; and o Use labour-intensive methods of construction, where reasonably practicable.	Applicant	
	ix) Define a recruitment programme and specify the number of workers required, as well as the specific skills required in respect of each worker, as soon as possible before the commencement of the work.	Applicant	
	x) Appoint or establish an employment / skills registration agency or 'labour desk', in consultation with the local community stakeholders, to:	Applicant	
	xi) Implement a formalised system to clarify, publish and distribute information on employment opportunities (e.g. time frames, vacancies, skills requirements, etc.) and deal with employment / skills registration in a coordinated and organised manner, that avoids duplication, misrepresentation, confusion and unrealistic expectations amongst employment 'givers' and seekers; and	Applicant	
	xii) Establish a labour skills, grading and assessment centre to provide this specific and relevant information on available employment, including: o The number and type of jobs; o Skills requirements for the jobs;	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ Duration of the jobs; ○ Remuneration scales; ○ Hours of work; ○ Conditions of work; ○ Procedures for the application of jobs; ○ Procedures for selecting job applicants; ○ Training and certification available on the job.		
	xiii) Determine the available skills in the area and the level of training required.	Applicant	
	xiv) Identify prospective candidates who would meet the job specifications in consultation with the relevant local authorities;	Applicant	
	xv) Take responsibility for accurate information dissemination at community level.	Applicant	
	xvi) Follow open tender processes, which include improved communication of tender opportunities through advertising in local community media (including the local radio station).	Applicant	
	xvii) Expedite the process of registering local service providers on Eskom's procurement database as an ongoing concern, to assist local suppliers of goods and services with registration on Eskom's database and with meeting compliance standards and understanding tender requirements.	Applicant	
	xviii) Provide information regarding the types of business opportunities and economic spin-offs that may arise from the proposed development to the various structures and institutions actively involved in the formal and informal economy.	Applicant	
	xix) Include basic business and entrepreneurial skills as part of a skills development component of the development to ensure social capital development and empowerment of the local entrepreneurs.	Applicant	
	xx) Engage in participatory workshops in which interested members of local communities can be guided regarding types of business opportunities that could arise.	Applicant	
	xxi) Investigate ways of enabling potential sub-contractors from low-income areas to tender with the support of Red Door and other economic institutions.	Applicant	
	xxii) Set up linkages for small business loans, as well as small business skills training. In this regard, the role of partnerships with other role-players who could assist in these matters, should be considered, (i.e. Red Door).	Applicant	
	xxiii) Interact closely with institutions that could assist with provision of support to small businesses, including the possible identification of agencies that	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	could assist with the provision of seed finance and entrepreneurial counselling (Red Door, Local Economic Development Forum, local authority). xxiv) Provide feedback to local suppliers and the broader community on numbers of local people employed, tenders awarded and business opportunities created to the advantage of the local community; in order to strengthen the relationship between Eskom and the various role-players around the proposed nuclear power station.	Applicant	
h) Improving skills	i) Establish a labour policy to facilitate the employment and skills training of locals, where feasible and as far as possible, and the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority. o Set clear targets and criteria for local employment (in line with SD&L Policies), local employee skills training and population demographic representation; and state these clearly in all relevant publications, tender documents, etc.; o Take care to avoid potential conflict between people in the immediate surroundings seeking employment and those from elsewhere; o Create opportunities for the employment of women, where feasible; and **{Method Statement} / {SOP}** ii) Provide, where possible, on-the-job training to locals and support training programmes to develop their existing skills and to ensure that they receive skills that are transferable to other sectors, by facilitating a combination of the following: o Training directly done or done in-house; o Training as part of a process of coordination by Eskom to involve and support appropriate training providers (e.g. funding training programmes at tertiary institutions) with regards to targeting of employment and skills development initiatives; and o Training abroad. iii) Promote community self-help projects as part of the corporate social investment programme.	Applicant Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)
i) Environmental Monitoring Committee (EMC)	i) Include social issues on the agenda and terms of reference of the Environmental Monitoring Committee to: o Monitor and ensure that the conditions set out in the EMP are implemented; o Drafting a code of conduct for all staff that will be present on site during	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	operation. ○ Where a Nuclear 1 operational worker has been found guilty of committing transgressions such as burglaries / thefts, disciplinary action will be taken in accordance with an established disciplinary policy; and ○ Proactively engage with SAPS and the community in developing mechanisms for the monitoring and distribution of information to counter potential community perceptions that there are perceived changes in the crime rate directly as a result of construction workers being in the immediate area.		
j) STDs and HIV awareness	i) Develop, implement and maintain a STD, HIV and AIDS site awareness and prevention campaign, in accordance with Eskom's policy. ii) Attempt to minimise population influx by utilising local labour, where possible. iii) Provide an adequate supply of free condoms to all workers, by locating such in the bathrooms and other communal areas on the site.	Applicant Applicant, Applicant	ESKOM Policy: HIV / AIDS in the workplace, ref 32-1123
k) STDs and HIV surveys, testing and counselling	i) Undertake a voluntary STD and HIV and AIDS prevalence survey amongst all workers on a regular basis, in accordance with Eskom's policy. ii) Maintain a voluntary counselling and testing programme. **[Ongoing]**	Applicant Applicant	ESKOM Policy: HIV / AIDS in the workplace, ref 32-1123
l) Impact on biodiversity	iii) Proclaim, develop, manage and maintain owner-controlled areas outside the nuclear power station footprint as a natural conservation area throughout operation of the power station. **[Ongoing]**	Applicant	
7.2.11 HERITAGE MANAGEMENT			
Legal Requirements National Heritage Resources Act No. 25 of 1999 World Heritage Resource Act No. 49 of 1999			
a) General	i) Ensure that a suitable facility for the safe indefinite storage of any finds is made available and maintained – be it at a museum or a specially designed facility on site ii) Should any heritage resources be uncovered at any point an appropriate Heritage Specialist must be appointed immediately and SAHRA must be notified.	Applicant Applicant	
7.2.12 OVERALL SITE MANAGEMENT, SITE DEVELOPMENT PLAN			
Legal requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)			

ASPECT	***MITIGATION MEASURE***	***RESPONSIBILITY***	***COMMENTS***
Fencing Act, 1963 (Act No. 31 of 1963) Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Veld and Forest Fires Act, 1998 (Act No. 101 of 1998) National Water Act, 1998 (Act No. 36 of 1998) Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)			
a) General preparedness and administration	i) Undertake all work in an environmentally sensitive manner and strictly prohibit any impact on any declared "No-go" areas. ii) Enforce all legislation, policies and procedures applicable to the development strictly. iii) Adhere to this EMP and all approved Method Statements / SOPs strictly, and where this is not possible / feasible follow the relevant procedures to apply for approval of an appropriate update or amendment thereto. iv) Develop, implement and maintain a Quality Management Programme (in line with the ISO 9001 principles) to ensure effective site monitoring, auditing and reporting in order to maintain confidence in meeting the Eskom, site and plant safety requirements and performance objectives. v) Ensure that the latest version of this EMP (or any applicable parts thereof) form part of any contractual agreements with Contractors and Sub-contractors for any appointments related to the execution of the nuclear power station project (e.g. site inspections, site probes, site surveys, site clearing, construction, commissioning, services, maintenance, upgrade, decommissioning, demolition, remediation, rehabilitation, etc.). vi) Ensure that the latest version of this EMP forms part of an Environmental Management System (EMS) for the construction, operational and decommissioning phases of the nuclear power station project (in line with ISO:14001). vii) Adopt a precautionary approach with any works deviating from specifications and all Method Statements and Safe Operating Procedures being approved by both the Site Manager / Power Station Manager and accepted by the ECO.	Applicant Applicant Applicant, Applicant Applicant Applicant Applicant	
b) Record keeping	i) Keep the following records on site in accordance with the standard Eskom site documentation and ensure that such documents are signed by all the relevant parties: o Physical access plan; o Complaints register; o Site daily diary;	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ Records of all remediation/ rehabilitation activities; ○ Copies of reports to the Environmental Control Officer; ○ Copy of the Construction Method Statements / Environmental Operating Procedures; ○ Fire Protection Association Plan; ○ Environmental Incident Register; ○ ECO inspection audit reports; ○ The Environmental Authorisation issued for the project ○ An appropriate fines system for non-compliance will be developed and implemented. ii) Avail all records relating to monitoring and auditing in respect of the nuclear power station development for inspection to any relevant authority, Environmental Monitoring Committee, ECO or Eskom's Environmental Audit Team. **[As necessary]**	Applicant and ECO	
c) Staff facilities maintenance	i) Install and commission permanent services, such as drinking water, canteens, kitchens, ablution and sewage facilities for the operational phase, and prior to commissioning of the nuclear power station and in accordance with the Site Facility and Services Master Plan. ii) Prohibit staff from abluting anywhere other than in toilets.	Applicant Applicant	
d) Materials management	i) Develop, implement and maintain a set of procedures to ensure that during normal operation, all releases of radioactive substances are within the limits of the nuclear power station operational technical standards; with the procedures indicating the methodologies to determine the amount of the releases and the nuclide contents. ii) Prohibit pollutants such as cement, concrete, lime, paint, oil, chemicals and diesel / petrol fuels from discharging into any water source and/or polluting open ground. iii) Avoid locating materials storage areas in close proximity to ecologically sensitive areas and inside the 1:50 year flood line of watercourses. iv) Develop, implement and maintain an overall site Materials Management Master Plan for effective management and legal and safe transportation and handling of materials as part of the operational EMS v) Institute strict control over materials brought onto site, which could potentially contain invasive species (pests); and implement effective measures to eradicate these before transport to the site, e.g.: ○ Undertake visual inspection of all materials, particularly those that have	Applicant Applicant Applicant Applicant Applicant	Eskom Policy: Eskom Procurement and Supply Management Policy (ref 32-1033) and Procedure (ref 32-1034)

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	been stockpiled in high-risk locations, for presence of invasive species and apply topical control (e.g. direct spraying with low residual insecticides) when necessary; or ○ Fumigate or spray of all relevant materials routine with appropriate low-residue insecticides prior to transport to or in a quarantine area on site (with this option generally requiring less highly trained personnel than the former, but possibly resulting in much higher usage of pesticides.)		
e) Refuelling, servicing and cleaning of vehicles, plant, equipment and machines	i) All transformers and diesel tanks (for emergency generators) are to be appropriately bunded to prevent the pollution of surface water in the event of a leakage of transformer oil or diesel. The same shall apply to all other storage areas for liquid hazardous substances. ii) All transformers shall use transformer oil free of poly-chlorinated biphenyls (PCBs). iii) Prohibit washing of any mechanical plant or equipment on the nuclear power station site, unless in an area specifically equipped for such a purpose in a way that would prevent ground, stormwater and groundwater contamination.	Applicant Applicant Applicant	ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345
7.2.13 HAZARDOUS MATERIALS MANAGEMENT			
Legal requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) National Veld and Forest Fires Act, 1998 (Act No. 101 of 1998) National Water Act, 1998 (Act No. 36 of 1998) Hazardous Substances Act, 1973 (Act No. 15 of 1973)			
a) Pollution through spills	i) Obtain, keep on record, make use and avail Material Safety Data Sheets (MSDSs) for all hazardous substances brought / used on site; and compile MSDSs for all liquid and solid hazardous substances and wastes that are generated on site over prolonged periods, are generated in large quantities, are very hazardous and/or hazards are unknown. ii) Develop and implement procedures for safe material transportation, storage and handling. **{Method Statement} / {EOP}** iii) Develop and implement emergency procedures / protocols to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures **{Method Statement} / {EOP}** iv) Maintain a register of spills, incidents and 'near-misses' involving hazardous	Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	materials; and compile and keep on record investigation reports for all such events involving significant quantities and/or very hazardous substances or where the Site Manager / Power Station Manager and/or ECO requires such a report to be compiled.		
	v) Clearly dedicate and demarcate areas for the storage of hazardous substances including hazardous waste and industrial effluent.	Applicant	
	vi) Train all staff handling hazardous substances and waste on the requirements in terms of the specific substance they handle, including requirements in accordance with the substance's MSDS and abovementioned procedures and protocols.	Applicant	
	vii) Obtain all necessary approvals with respect to storage of hazardous substances from the appropriate authorities; e.g. diesel/ petrol fuel storage and dispensing, keeping and using of explosives, keeping of pesticides, etc.	Applicant	
	viii) Ensure that areas of fuels storage and other flammable materials comply with standard fire safety regulations and any conditions of approval of the local Fire Prevention Officer as well as the Major Hazardous Installation Regulations (OHS Act) if required. **{Method Statement} / {SOP}**	Applicant	
	ix) Provide some appropriate form of secondary containment to all portable chemical containers in storage areas.	Applicant	
	x) Design, construct and allocate bunded areas (i.e. concrete platforms with bund walls or inward slopes) to accommodate hazardous liquid substances (such as e.g. fuel, oil, paint, bitumen, herbicide and insecticides) to guard against infiltration of hazardous substances into the soil, groundwater or surface water, in accordance with the following design criteria: o Effective segregation for safe storage of incompatible material; o Bund all bulk hazardous chemical tanks and hazardous stores with impermeable floors and bund walls to contain at least 110% of the volume of material stored; or apply SANS 10089-1:2008 to multiple large tanks in bunds; o Provide for storage, handling and disposal of fuels, oils, lubricants and other potentially harmful chemicals (and their containers) to be done under proper supervision in accordance with the manufacturer's instructions (e.g. Material Safety Data Sheets (MSDS)). o A roof over the bunded area, wherever reasonably practical, to minimise collection of rain water within the bunded area;	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	○ Means for safe access to the bund for regular inspections and maintenance; ○ Appropriate emergency and safety equipment, e.g. tank failure alarm, fire alarm, firefighting system and equipment, etc. ○ A system or for means to safely mop up or remove any spilled hazardous material without causing any environmental pollution; and ○ A system, e.g. valve or submersible pump, to effectively drain or remove any accumulated rainwater on a daily basis when it is raining. xi) Refrain from storing any material in a bund, other than what the bund provides for in terms of the design criteria given above. xii) Provide suitable measures for all on-site purification of transformer oil. **{Method Statement} / {EOP}** xiii) Ensure that materials are appropriately secured and contained to ensure safe passage between destinations without any loss or spill of material along the way. xiv) Prohibit smoking in the vicinity of hazardous substance storage areas and erect and maintain "No smoking" and "Danger" signs at such areas. xv) Consider and treat all empty and externally dirty containers (e.g. tanks and drums) that contained hazardous substances as hazardous materials, e.g. by ensuring safe storage in bunded areas or by providing other means to prevent any spillage from these; this is unless the containers have been appropriately and fully drained and cleaned to render them non-hazardous. **{Method Statement} / {EOP}** xvi) Ensure that adequate spill management equipment is available in the immediate vicinity where hazardous substances are used and/or stored. Where spill kits are used, they need to be properly stocked at all times.	Applicant Applicant Applicant Applicant	
b) Spill clean up	i) Make every effort to avoid spills of hazardous materials. ii) Develop and implement a Spill Clean-up Procedure that takes staff safety and environmental protection appropriately into consideration. **{Method Statement} / {EOP}** iii) Provide stock and maintain appropriate complete emergency spill kits at locations close to where hazardous substance are stored or used and ensure full availability at all times. **{Method Statement} / {EOP}** iv) Train all relevant staff members to use the emergency spill kit and on the procedures to deal with spills of hazardous substances such as e.g. oils,	Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	diesel, petrol, paints, pesticides, etc. v) Contain and clean-up any spills as soon as possible after the incident and thereafter remediate the affected area effectively and to the satisfaction of the ECO; including spills on unbunded hard surfaces, stormwater drains, roads, laydown areas, etc. vi) Report spills of hazardous substances immediately to the ECO and maintain a register for spills and all incidents involving hazardous materials. vii) Dispose of spilled material recovered from bunded areas by either appropriate re-use, recycling or disposal to a suitably licensed disposal facility. viii) Remove contaminated soil or yard stone immediately (do not leave in- situ) and disposed of this soil at a suitably licensed waste disposal site; or alternatively treat contaminated soil on site but ex-situ through bioremediation on an impermeable bunded area, provided such a method proof to be effective and prevents further or ongoing environmental contamination. ix) Clean up any spills immediately, see Section 7.2.7.	Applicant Applicant Applicant Applicant Applicant	
c) Soil and water contamination	i) Treat and/or dispose of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (e.g. a Waste Management License or Water Use License), with full cooperation from the relevant authorities and full documentation on the quantities and methods of treatment and/or disposal. **{Method Statement}** / **{EOP}** ii) Prevent soil and groundwater contamination by hazardous substances by implementing and maintaining appropriate measures and procedures, including but not necessarily limited to the following: o Minimise contamination by accidental spills of hazardous substances (e.g. fuels, oils, greases, paints, solutes, herbicides, pesticides), by applying 'good' materials management and spill clean-up procedures (refer to Section 7.2.13 and Section 7.2.7 for further details); o Bund all bulk hazardous chemical tanks and hazardous stores with impermeable floors and bund walls to contain at least 110% of the volume of material stored; or apply SANS 10089-1:2008 to multiple large tanks in bunds. o Contain, process, treat and dispose of all construction and industrial wastewater generated at the sites from various activities and operations	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	safely and effectively (refer to Section 7.2.3 for further details) and in line with the site Water Use License, once issued; and o Design, implement and maintain all ablution facilities and the discharge process of raw sewage to prevent potential contamination (refer to Section 7.2.4 for further details).		
d) Stormwater pollution	i) Dispose of any hazardous substances cleared from stormwater systems, e.g. oils/greases/chemicals from traps in accordance with the appropriate hazardous substances and waste management procedures.	Applicant	
e) Waste management	i) Keep attractive resources such as food, water and edible refuse completely out of reach of wild animals (e.g. baboons) by implementing effective and where necessary inventive and extreme measures to achieve this. ii) Exercise rigorous control of edible refuse, by providing for such refuse to be completely removed from site at frequent and regular intervals. iii) Maintain sanitation facilities and associated systems for containment, treatment and/or disposal of raw sewage and sewage sludge such that potential leakage or spillage is effectively prevented and that any 'clean' wastewater is discharged in accordance with all legal requirements (e.g. Water Use License). **{Method Statement} / {EOP}** iv) Prevent any sewage from on-site sanitation facilities to leak, seep or spill onto the ground or into the surface or groundwater; and conduct regular checks and if necessary repairs. v) Develop and maintain an overall site Integrated Waste Management Master Plan for effective and legal management and disposal of general waste, hazardous waste and building rubble, based on best estimates of such wastes being collectively generated by all the resident staff, contractors and their sub-contractors on site; and include such a plan in the / operational EMS. vi) Develop and implement a detailed on-site Waste Management Plan, prior to the relevant waste generating activities commencing, covering inter alia: o Identification, classification and keeping of a register of type of waste generated; o Planning for the construction / establishment / operation / decommissioning of a centralised waste management facility and/or designated waste management areas; o Procedures to be followed for waste separation at source as well as	Applicant Applicant Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	reduce, re-use, recycle, recover and treatment of waste prior to the disposal option; ○ Waste management procedures for waste disposal, e.g. storage, disposal, keeping of waste consignment certificates, etc. **{Method Statement} / {SOP}** vii) Provide for and ensure radioactive waste management practices to be consistent with the IAEA guidelines and the NNR requirements. viii) Minimise production of all solid, liquid, and gaseous radioactive waste, both in terms of volume and activity content ix) Provide for and ensure only treated liquid releases to be diverted to the cooling water discharge system of the nuclear power station in compliance with the NNR's regulated Authorised Annual Discharge Quantities (AADQs). x) Ensure that all conventional waste is properly disposed of and removed from the site to a permitted landfill site, or where applicable to an appropriately licensed waste recycling facility. xi) Provide for appropriate recycling of waste, e.g. disposal of waste oils to an oil recycler.	Applicant Applicant Applicant Applicant	
7.2.14 VISUAL IMPACT AND AESTHETICS			
Legal Requirements National Environmental Management Act, 1998 (Act 107 of 1998)			
a) Negative impact on wildlife due to light pollution	i) Protect wildlife from artificial light at night by implementing and applying the following measures: ○ Reduce exterior lighting to the minimum necessary for essential functions; ○ Use only long-wavelength lights (where practical) for exterior lighting; ○ Use directional fittings for exterior lights that direct light downward, not up or to the sides; and ○ Screen interior lighting with blinds, curtains, etc., to prevent exterior light pollution.	Applicant with specialist guidance	
b) Visual impact due to light pollution	i) Provide for a Lighting Plan to include the following lighting solutions/ principles ○ Direct lights so as not to shine beyond the site onto adjacent residential areas, roads and / or into the air; ○ Provide light fittings with shields to eliminate sight of the light source from sensitive nearby land users e.g. nearby communities; ○ Direct light where possible to prevent light spill, e.g. use down lighting of	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	areas preferred to up lighting; o Direct perimeter lights to downwards and inwards; o Specify emitted light colour to be a low pressure sodium (yellow), preferably not mercury halide (blue-white) or fluorescent lights, as these attract insects and considerable depletion of the insect populations will result over time; o Use only long-wavelength lights (red or orange) for exterior lighting; o Prohibit flood lighting the entire main structure but incorporate concealed lights high on the structure to shine downwards, so as to render darker areas on the building elevations less visually noticeable structure; o No light fittings should spill light upwards or be directed upwards from a distance towards the area or building to be illuminated; and o The lighting plan should strive to maximise the energy efficiency, including a hierarchy of lights that are essential to those that are switched on only when needed. i) Implement and maintain the Lighting Plan.	Applicant	
7.2.15 NOISE MANAGEMENT			
Legal Requirements Environment Conservation Act, 1989 (Act No. 73 of 1989) Government Notice No. R 154 of 1992 (National noise control regulations) National Environmental Management Act, 1998 (Act No. 107 of 1998)			
a) General	i) Implement a Noise Control Management Plan with associated Noise Monitoring Programme (based on SANS 10103:2004). **{Method Statement} / {SOP}**	Applicant	
7.2.16 SECURITY, SITE ACCESS AND ACCESS CONTROL			
Legal requirements National Key Points Act, 1980 (Act No. 102 of 1980) National Water Act, 1998 (Act No. 36 of 1998) Fencing Act No. 31 of 1963 National Environmental Management: Biodiversity Act 10 of 2004 Environment Conservation Act No. 73 of 1989 Sea Birds and Seals Protection Act No. 46 of 1973 National Nuclear Regulator Act, 1999 (Act No. 47 of 1999)			
a) No-go zones and 200 m corridors	i) See Section 7.2 for dune access, no-go areas and 200 m and 100 m corridors. ii) Maintain a “No-go” buffer zone of at least 200 m width surrounding all	Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	sensitive bird breeding sites. iii) Refrain from disturbing mobile dunes and thus declare and retain mobile dunes as a "No-go" area, apart from designated access tracks. iv) Prohibit permanent access roads/walkways through the mobile dunes between the power station and the HV yard. Access during operation will be by 4x4 vehicles, but without permanent access roads.	Applicant Applicant	
b) Wetland disturbances	i) Maintain buffer zones and demarcated setbacks into defined in the site master plan and "no-go" areas outside of the minimum disturbance area required for operation. Avoid impact on the sensitive coastal environment, including the coastal wetlands as well as Langefontein; and declare these areas and their associated buffer zones as "No-go" areas. ii) Buffer the sensitive wetlands and streams by a minimum of 100 m, the western edge of the Langefontein wetland by 200 m and provide a buffer of at least 150 m from the upstream edge of each coastal seep; and provide for such to be incorporated and considered in site layout, utilisation and stormwater management planning (refer to Section 7.2.3 for further details). iii) Dedicate and demarcate "no-go" areas on-site and off-site with suitable signage and fencing (where necessary).	Applicant Applicant Applicant	
c) Breeding bird disturbance	i) Where practicably possible maintain a "no-go" buffer zone of at least 200 m width surrounding all sensitive bird breeding sites.	Applicant	
d) Access control	i) Ensure adequate signage is provided along the major roads as allowable by the relevant authorities and at the entrance of the site. ii) Clearly communicate access policy for the properties to the staff and public, using notice boards on access gates and by directly communicating with the nearby communities. (Refer to Section 7.2.16 for specifications related to special access permissions). iii) Provide and declare the access gateways and what use they are intended for; control access at all these gateways. iv) Raise awareness and clearly communicate any public safety risk to the public, using appropriate safety and precaution signage erected in applicable areas, radio broadcasts, and notice boards and/or by directly communicating with the nearby communities (meetings, flyers). v) An access control procedure is to be developed. It should state how access to site can be obtained and how it is to be controlled such that the identity of who (visitors and staff) is on site and when can be determined at all times. vi) Engage proactively with relevant authorities to introduce and maintain active	Applicant Applicant Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	policing of the marine exclusion zone as a deterrent to poachers. vii) Engage proactively with local authorities/ SAPS/ Community Policing Forums to ensure that job seekers do not settle in the vicinity of Construction Villages or the construction terrain or site.	Applicant	
e) Nuclear / Radiation	i) Develop, implement and maintain a Radiation Protection Programme which complies with all legislation and other requirements the National Nuclear Regulator may have. ii) Continue with the radiation monitoring programme for chokka squid.	Applicant Applicant and specialist	Eskom Radiation Protection Environmental Surveillance Standard
f) Prohibitions	i) Prohibit / control access to portions of the property that are to remain undeveloped; and ensure that it is used for conservation research or non-destructive recreational and/or educational purposes only. ii) Prohibit use of any deviation from approved access roads or transportation routes unless written approval has been received therefore from the Power Station Manager. iii) Prohibit vehicular traffic in or close to any wetland and it's associated buffer zone.	Applicant Applicant Applicant	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93
7.2.17 SAFETY			
Legal Requirements Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) National Veld and Forest Fire Act, 1998 (Act No. 84 of 1998)			
a) Emergency preparedness and response	i) Inform all staff of the hazards on the site and provide suitable training on how to protect themselves, others and the environment from such hazards; how to react and what to do in an emergency. ii) Develop and implement an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency; which includes but is not limited to fires, spills, and contamination of ground and surface water, accidents to employees and damage to services. **[Ongoing and where necessary], {Method Statement} / {SOP}** iii) Include contact details of all relevant emergency services and response teams and neighbouring land owners/ users/ managers in the Emergency Preparedness Plan; keep and display such contact details in appropriate places; and ensure that these are regularly checked und updated if necessary. iv) Appoint an on-site emergency response team, train key staff in emergency response and make all staff aware of the emergency procedures. **[Ongoing]**	Applicant Applicant Applicant Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	v) Work closely with the local emergency services departments in order to ensure that required services are sufficient in the area; particular due to increased population and traffic on roads; for providing support in case of making fire breaks and site emergencies; and for assistance with evacuation procedures during operation.	Applicant	
	vi) Maintain a register of and compile reports on all incidents, accidents, 'near miss', etc., which includes the action taken after the event has occurred; and inform at least the Site Manager / Power Station Manager as well as the ECO of the event.	Applicant	
	vii) Notify any relevant authorities immediately and keep detailed record of such notifications, should any serious incident occur, including e.g.: o The local Emergency Services Department for all incidents that may affect the local community and road users; o The Department of Environmental Affairs for incidents that likely have a detrimental effect on the environment; o The Department of Labour for reportable incidents as defined in the Occupation Health and Safety Act (Act No 85 of 1993); o The SA Police Service, for accidents on public roads; and o The Department of Water Affairs for any emergencies that affect water resources.	Applicant	
	viii) Develop, implement and maintain emergency evacuation procedures in case of a nuclear incident. **{EOP}**	Applicant	
b) General	i) Take appropriate and effective precautions and all reasonable measures to ensure the safety of people on site and in the surrounding Owner Controlled area.	Applicant	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93 ESKOM POLICY: Eskom Vehicle Safety Specification, ref 32-345
	ii) Address community safety & community safety concerns related to operation activities.	Applicant	
	iii) Maintain all vehicles used on site in a roadworthy and leak free condition and maintain all equipment in a safe working condition and such that any accidental emissions, spills, explosions, etc. are avoided.	Applicant	
	iv) Erect and maintain appropriate safety and environmental risk precaution signs prior to commencing with construction activities.	Applicant	
c) Fire prevention and response	i) Responsible parties will be liable for any damage caused by fires resulting from their operation, negligence or lack of protection of the site from veld fires (e.g. the failure to maintain fire breaks).	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	ii) Include a fire emergency preparedness plan for fighting accidental fires in the Emergency Preparedness Plan (refer to Section 7.2.17.a).	Applicant	
	iii) Implement and maintain a Fire Management Plan (FMP) and liaise regularly with the local Fire Protection Association (FPA)	Applicant	
	iv) Define, implement and maintain proper firebreaks around the entire site footprint (permanent), satellite facilities (permanent) and where appropriate on-site (temporary or permanent), to prevent accidental fires spreading to, from or across the site; and ensure that this is done in accordance with the requirements of Veld and Forest Fires Act.	Applicant	
	v) Fire-fighting equipment for each construction / operational / demolition team and/or area must be readily available on site; bearing in mind that these should be approved by the local Fire Prevention Officer, ECO, Safety and/or Health Officer.	Applicant	
	vi) Avail and maintain appropriate fire-extinguishers on all vehicles carrying flammable materials. Ensure that all vehicles on site and all vehicles entering site that are carrying flammable materials are fitted with appropriate fire extinguishers that are inspected/maintained in accordance with an appropriate schedule.	Applicant	
	vii) Keep a register and inspection log of all firefighting equipment; and inspect and check firefighting equipment regularly and record such inspection on the inspection log that is retained on-site. **{Method Statement} / {SOP}**	Applicant	
	viii) Prevent accidental fires through proper sensitisation of staff towards the associated risks, dangers and damage of property.	Applicant	
	ix) Inform and/or involve neighbouring land owners/ users/ managers should there be a risk of a fire spreading to their land.	Applicant	
d) Prohibitions	i) Prohibit the transportation of persons on the back of vehicles unless in accordance with the Eskom Policy.	Applicant	ESKOM POLICY: Vehicle and Driver Safety Management, ref 32-93
	ii) Prohibit the use of open fires and random “braais” on-site, strictly, unless they are effectively contained and designated areas which do not pose a fire hazard threat to vegetation.	Applicant	
	iii) The use of branches of trees, shrubs or any vegetation for fire making purposes is strictly prohibited.	Applicant	
e) Decommissioning	i) Develop, implement and follow a site-specific decommissioning plan for the nuclear power station in accordance with all the most current requirements of the National Nuclear Regulator, environmental authorities and any other	Applicant	

ASPECT	MITIGATION MEASURE	RESPONSIBILITY	COMMENTS
	relevant authorities and/or stakeholders.		

7.3 Decommissioning Phase

In general, the same measures that apply during construction will also apply during decommissioning and similar environmental impacts can be expected. Thus, mitigation measures as for the construction phase can be applied to the decommissioning phase, with the proviso that mitigation measures be interpreted in the context of the decommissioning activities.

Decommissioning is conservatively at least 70 years in the future, since construction will take nine years and the power station will be designed with a 60 year life span (assuming that its operational life span is not further extended by upgrades or replacement of equipment). It is highly likely, given current indications within Eskom that Koeberg Nuclear Power Station's life will be extended, that the same will happen with Nuclear-1. It will therefore be very difficult to provide activity-specific mitigation measures, since technology and decommissioning methods may change significantly in the next 70 to 80 years. Therefore a more detailed decommissioning EMP should be developed closer to the decommissioning phase.

It is assumed, for the purpose of this EMP, that the main objective of decommissioning will be to return the power station site to a "greenfield" condition, i.e. to return the site roughly to a pre-development state.

The most important objective of decommissioning will be to:

i) remove all radioactive waste and other radioactive material from the power station;
ii) demolish the buildings;
iii) remove all associated infrastructure; and
iv) rehabilitate disturbed areas of the site with natural vegetation.

If the above-mentioned is achieved, then it will be possible to leave a public conservation asset after decommissioning, since the remainder of the land not affected by the power station footprint would have been subjected to at least 70 years of conservation management and could be assumed to be in an ecologically excellent state by then. It is therefore essential, should Eskom wish to sell the land after decommissioning, that the land be placed under the management (or preferably ownership) of a conservation body. In this respect, possible liabilities associated with radioactive substances and other forms of waste on the site need to have been dealt with at this stage.

It is recommended that Eskom begin negotiations for the post-decommissioning conservation of the land timeously (at least 10 years) prior to the start of decommissioning.

8 METHOD STATEMENTS AND STANDARD OPERATING PROCEDURES

While the EMP is considered to be comprehensive, it does not necessarily prescribe all the environmental compliance requirements and methods in detail. Furthermore, additional information might be gathered or become available as the project develops. For certain aspects or activities, the contractors will thus be required to develop and implement Method Statements to explain and document the specific and detailed methods which will be used to comply with and implement the EMP. In a similar vein, Eskom will develop Safe Operating Procedures (SOP) that amongst other are based on or give effect to certain EMP specification during the operational and/or decommissioning phases of the project.

8.1 Method Statements

Eskom will require contractors to develop and submit Method Statements for a range of work aspects, including for example for certain managerial, technical, health, safety and environmental aspects of construction activities. However, in the context of this EMP and thus specific to environmental management, Method Statements are required to indicate and describe in detail how contractors will implement and achieve compliance with environmental legislation, Library of Specifications (**Section 7**) and general good management practice, whilst undertaking construction activities. Method Statements may be required for any identified activity or group of activities (or aspects) for which it is considered necessary to implement a detailed method to mitigate potential environmental impacts or incorporate EMP requirements in the day-to-day environmental management of construction activities.

This EMP specifies for which construction activities or aspects the contractors are required to develop and submit Method Statements (refer to **Section 8.1.1** below) and the procedures and content requirements for Method Statements (refer to **Section 8.1.2**). However, this does not preclude the development and implementation of additional Method Statements for environmental management aspects, provided that these do not conflict with the EMP.

8.1.1 Required Method Statements

Specifications for Method Statements that are required are tagged as such in the Library of Specifications (**Section 7**). A consolidated preliminary list of these compulsory Method Statements that are required from the Contractor in terms of this EMP is provided in **Annexure D**. These cover, for example, but are not necessarily limited to, categories of activities such as:

ii) Location, layout and preparation of the construction camp(s);
iii) Location, layout and preparation of cement/concrete batching facilities including the methods employed for the mixing of concrete and the management of runoff water from such areas;
iv) Storm water management;
v) Contaminated water management plan, including the containment of runoff and polluted water;

vi) Environmental incident response (including details of methods for fuel spills and clean-up operations); and
vii) Solid waste management (general and hazardous) and removal of waste from site (excluding nuclear waste).

Note that additional Method Statements may be identified and required by an environmental authority, Eskom and/or the Environmental Control Officer (ECO) as the project unfolds, in which case the list in **Annexure D** may require amendment. In this case Eskom shall consult with the DEA regarding such amendment and if required request their approval thereof in writing.

8.1.2 Procedures and content

The Contractor shall submit all required Method Statement in writing to the ECO and the Site Manager (SM) for approval. On receipt, the SM shall review and approve the Method Statement in consultation with the ECO. The SM shall then send the approved Method Statement to the Eskom Project Manager (PM) for authorisation and registration. Once authorised, the PM shall forward a copy of the authorised Method Statement to the SM, EM and ECO. The PM is therefore responsible for the authorisation of all Method Statements. The Contractor shall only implement a Method Statement once he/she has received the PM's written authorisation thereof.

The Method Statement shall clearly state the following information:

- Timing of activities;
- Construction procedures;
- Materials to be used and how and where they will be acquired, transported, stored, contained and used;
- Spill management procedures (e.g. spill containment, spill clean-up kit and procedure, action to be taken if containment is not possible, etc.);
- Equipment to be used and how it would be brought to the site (from the manufacturer or supplier) and taken from the site (for re-use or disposal);
- Staffing requirements;
- Compliance / non-compliance with the environmental specifications (concerns assessment compliance and instituting corrective action if non-compliance is detected);
- Mandated codes and standards to be followed;
- The system to be implemented to ensure compliance with the above; and
- Other information deemed necessary by the Contractor, SM and/or ECO.

The Contractor shall submit Method Statements in a timeframe specified by the SM/ PM (typically 14 working days) prior to the projected commencement of work on an activity, to allow the SM and ECO time to study and approve the Method Statement. The PM shall strive to review and authorise the Method Statement within 7 working days of receipt thereof.

The Contractor may not commence with any activity covered by the Method Statement until it has been authorised, except in the case of emergency activities and then only with the consent of the SM or ECO.

Once a Method Statement is authorised, it is considered as binding on the Contractor. The Contractor must therefore ensure that all activities to which the authorised Method Statement applies is carried out accordingly.

Due to changing circumstances, on advice of the ECO and on instruction from the SM or his delegate it may be necessary to modify Method Statements. In such cases, the proposed modifications must be reviewed by the SM and ECO. The SM and/or ECO may require changes to a Method Statement if it does not comply with the specification or if the stated methodology carries an unreasonable or unacceptable environmental risk. The Contractor may only implement a revised Method Statement once he receives formal written authorisation from the PM to do so. The Contractor must also obtain written approval from the SM (or ECO) for any deviation from a Method Statement.

The Contractor, PM and ECO shall retain records of any amendments to any Method Statement and the Contractor shall ensure that the most current version of all Method Statements are being used. The Contractor shall keep the latest version of approved Method Statements readily available on the site and shall communicate such version to all relevant employees and subcontractors.

Approval of the Method Statement does not absolve the Contractor from his/her obligations or responsibilities in terms of the contract.

Annexure E explains Method Statements and provides a template Method Statement sheet.

8.2 Environmental Operating Procedures

Environmental Operating Procedures (EOPs), once approved, must be incorporated into and form part of the nuclear power station's Environmental Management System. As such they bind Eskom and its employees in terms of their commitment to sound environmental management.

Similar to Method Statements, EOPs provide detail on 'how' specific environmental requirements will be developed, implemented, maintained and/or adhered to.

9 MONITORING

The purpose of monitoring is to ensure that the conditions set out in the EMP are implemented as required and to determine whether environmental quality conforms to defined criteria. Regular audits of the EMP implementation during construction, preferably at quarterly intervals and audits of the EMS during the operational phase (annually) should be undertaken.

9.1 Dune geomorphology

The dynamics of mobile and vegetated dunes is well-understood at the Thyspunt sites, and no periodic monitoring or measurements of dunes is required to gather further background information.

Mobile dunes in the vicinity of any construction activities must be monitored by a suitably qualified ECO to confirm whether there are any obstructions to the movement of sand. Monthly visits are required. Any ad-hoc issues that crop up such as obstruction of moving dunes must be addressed.

Vegetated dunes in the vicinity of any construction activities must be monitored on a monthly basis by a suitably qualified ECO to address any ad-hoc issues that crop up. The vegetated dunes in the vicinity of the completed structure must be monitored at 3-monthly intervals by a suitably qualified dune specialist to check that there is no destabilization. The monitoring frequency can be reduced to six-monthly after 3 years and annually after 6 years.

9.2 Geotechnical suitability

It is imperative that dewatering efficiency is monitored at all times to ensure excavated slope integrity. No other monitoring requirements are necessary.

9.3 Hydrology

1. Define specific hydrological (stormwater) monitoring points on site in accordance with the requirements detailed in **Section 9.3**.
2. Monitor the stormwater quality at the abovementioned monitoring points in accordance with the requirements detailed in **Section 9.3**.
3. Report on the stormwater quality monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by an authority]**
4. Address any issues identified during the abovementioned stormwater quality monitoring.

9.3.1 Management Objectives

The objectives of the monitoring programme are:

- To minimise the potential for contamination of soils and water courses through effective soil and stormwater management;
- To minimise the potential for land and water contamination due to substances utilised, stored or removed from site during operational activities; and
- To monitor the effectiveness of management measures and mitigation measures stipulated in the EIR.

9.3.2 Monitoring points

Specific monitoring points can only be defined on site. The non-perennial streams should be monitored upstream from the activities and again downstream and at least at two points in the ponding areas on all sites.

9.3.3 Monitoring Parameters

Determinants of key relevance are detailed in **Table 9.1**.

Table 9.1: Determinants of key relevance

Key Determinant	Relevance
Physical Quality	
Electrical conductivity	General indication of change of water quality
pH	Has a bearing on the solubility of the metals that occur
Turbidity	Indicates the cloudiness of the water
Chemical Quality	
ICP Metal Scan	Excessive amounts can make the water poisonous for marine and aquatic environment
BTEX	Benzene, Toluene, Xylene, Ethyl Benzene (Also known as Volatile Organic Compounds)
Nutrients	Stimulate eutrophication if present in excess
Radioactive isotopes	Possible radioactive contamination

9.3.4 Monitoring Frequency

The recommended sampling frequency is detailed in **Table 9.2**.

Table 9.2: Minimum and recommended number of samples

Sampling Point		Minimum per Point		Recommended per Point	
Name	GPS Coordinates *	Number of Samples (per Year)	Sampling Frequency	Number of Samples (per year)	Sampling Frequency
Thyspunt Ponding Area		2	When possible in wet season	4	Quarterly (if it had rained)
Thyspunt Non-perennial Streams		4 (2 upstream and 2 downstream of activity)	When possible in wet season	12	Bi-monthly

* To be determined

Monitor dewatering efficiency to ensure excavated slope integrity. **[At all times]**

1. Prevent soil and groundwater contamination (most notably that of the primary aquifer) by seawater resulting from sea water ingress during dewatering by implementing and maintaining appropriate measures and procedures, including but not necessary limited to the following:
    - Record the water level in the monitoring boreholes weekly for at least one full hydrological cycle to establish the impact of the rainy and dry seasons on the water level;
    - Undertake routine groundwater monitoring to monitor the impact on the primary aquifer by saline water intrusion before and after de-watering; and to check whether the measure are effective, and if not come up and implement a plan for corrective intervention and/or procedures.

    {Method Statement} / **{SOP}**.

2. Continue to implement the comprehensive groundwater monitoring programme. This has been ongoing since 2010. This programme must be implemented in accordance with the requirements detailed below. **[continue until the end of the project life cycle]**
3. Report on the groundwater monitoring results to the ECO, Environmental Monitoring Committee, Department of Environmental Affairs and the Department of Water Affairs. **[At a frequency of every 3 to 6 months, or any other frequency prescribed by a statutory authority]**
4. Address any issues, such as groundwater contamination, that are identified during the abovementioned groundwater monitoring.

9.4.1 Management Objectives

Pre-construction monitoring must focus on the following:

- **Groundwater levels**. This will provide valuable information on seasonal trends and response to extreme weather conditions, i.e. high rainfall events and droughts.
- **Wetlands/ seeps**. These must be monitored to determine interaction with groundwater and the possible long-term effect (quality, water level/ flow rate, as applicable) of groundwater control measures.
- **Groundwater quality**. This must include monitoring of selected radionuclides, macro-groundwater quality and trace elements.

9.4.2 Monitoring Programme

Eskom will develop and implement a comprehensive groundwater monitoring programme by taking into consideration the specific needs of the site:

- Baseline information on aquifer behaviour for at least a two-year period before construction commences;

- Information on groundwater quality at the site in order to obtain time series groundwater quality data of the selected constituents, to verify selection of management actions and to determine the effectiveness of those actions;
- A reference database from which remediation programmes can be developed, if required; and
- A legally defendable database against which any possible future claims against Eskom regarding environmental contamination or human health risk can be measured.

The following programme is recommended:

- Commence prior to commissioning of plant (the monitoring started in 2010 must continue), and continue during operational phase and beyond as relevant authorities may specify **[Ongoing];**
- Adhere to a reporting frequency of 3 to 6 months **[Ongoing];**;
- Install both shallow (primary aquifer) and deeper (secondary aquifer) monitoring boreholes at the site equipped with automatic groundwater level/ temperature recorders;
- Install a barometric logger at the boreholes to record the barometric pressure variation in order to correct the groundwater level data for barometric variation; and
- Take samples for macro- and micro-chemical, stable isotope and selected radionuclide analysis.

9.4.3 Monitoring Parameters

In addition to monitoring the physical geohydrological characteristics such as water level, barometric pressure and temperature; the following macro- and micro-chemical, stable isotope and selected radionuclide analysis is to be included:

- A full suite of cations (Na, K, Ca, Mg, NH4);
- A full suite of anions (Cl, SO4, NO3, NH3, PO4, HCO3);
- Heavy metals (Fe, Mn, Cr, Zn, Co, Pb, Cu, Cd);
- Trace elements (F)

9.4.4 Radionuclides (e.g. U, Th, Cs, Sr, Ra, 3H 14C, and any additional determinants required for assessment of aggressiveness of the water).Other water monitoring

Monitor treated wastewater that will be discharged into the marine environment to ensure that it complies with all the conditions for discharge

9.5 Air quality

Develop an ‘off site’ Air Quality Monitoring Programme;

1. Develop, implement and maintain a comprehensive air quality monitoring programme which includes measurements of levels in worker areas and areas of the community in accordance with the requirements detailed below.
2. Report on the air quality monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency of every 3 to 6 months]**

3. Address any air pollution issues that are identified during the abovementioned air quality monitoring.
4. Implement and maintain an 'on site' Air Quality and Dust Control and Monitoring Programme, to meet the requirements of the abovementioned Air Quality Management Master Plan;
5. Monitor atmospheric releases and ensure that such releases are maintained within legislated and *Air Quality Management Master Plan* target limits.

The monitoring programme needs to include the following:

- Parameters to be monitored;
- Monitoring locations;
- Monitoring interval;
- Data and data analysis requirements for monitoring reports; and
- Reporting interval.

Table 9.5: Recommended air quality impact monitoring programme

Recommended monitoring & equipment	Duration of monitoring	Reporting frequency	Management objectives
Dust monitoring should take places using non-filter based automatic monitors (i.e. DustTrak, DustScan, and Topas) or filter based on-line monitors. Samplers/monitors should be placed at the residential boundary closest to the construction site. Monitoring measures outlined in the South African National Standards, SANS 1929:2004 will be included: • Baseline sampling; • Control site sampling; • Dust deposition gauges (provides long term data); • High volume samplers (quantitative data over 24 hr periods);	Throughout construction phase	Quarterly	On-going compliance evaluation, on-going estimation of contribution to airborne particulate concentrations to background levels, and evaluation of the effectiveness of dust control measures implemented during the construction period. Control should be based on the air quality limits given in the air quality specialist study.

• Continuous particle monitors (provides data relevant to short term events); • Size-selective samplers (samples dust in size fractions); and • Personal exposure samplers (worn by workers).			

9.6 Flora

The monitoring should include in the following:

- Monitor rehabilitated areas to ensure that rehabilitation with indigenous species is carried out effectively and has long-term sustainability;
- Monitor the area around the site to ensure a coastal corridor is created in an appropriate manner and is retained and maintained in the long-term;
- Monitor site clearing to ensure that where possible all Red Data species affected by development are relocated or successfully grown on in a nursery and returned to the wild;
- Address all flora related issues identified during the abovementioned rehabilitation and flora monitoring; and
- Monitor re-vegetated areas until the vegetation is stabilised.

9.7 Wetlands

1. Develop and implement a comprehensive wetland monitoring programme which includes evaluation of the efficacy of mitigation measures in accordance with the requirements below.
2. Report on the wetland monitoring results to the ECO, Environmental Monitoring Committee and Department of Environmental Affairs. **[At a frequency as detailed below]**
3. Address wetland impact issues that are identified during the abovementioned wetland monitoring.

Implementation of a monitoring programme that allows the efficacy of mitigation measures to be evaluated during both the construction and operational phases of the proposed nuclear power station is strongly recommended as an essential condition of any development approval at this site.

Monitoring and evaluation would both allow the possibility of alteration of activities, within the constraints of an already-approved and possible constructed development, such that:

- unforeseen impacts could be addressed; and
- where specific mitigation measures proved ineffectual, alternative measures need to be introduced.

Perhaps more realistically, though, monitoring and evaluation provides an opportunity for refinement of both the impact assessment and the specification of mitigation measures, for any future phases of the nuclear power station development that may possibly be considered at this site.

Monitoring data will, if the programme is appropriately designed, highlight impacts to wetlands that have not been identified in this Nuclear-1 EIA, for example where the significance of surface/ groundwater interactions affected by activities in this portion of the site have been underestimated. Moreover, where mitigation measures have failed, or alternatively been too intense for the impact actually experienced, their evaluation can inform the assignment of mitigation measures for future applications for nuclear power station development at this site.

Table 9.7 outlines a monitoring programme for wetland systems. This programme should be integrated with monitoring recommendations made by the faunal, botanical and geohydrological specialists, and the results of the monitoring programme and its implications for wetlands and other ecosystems, should be evaluated on a regular basis.

It should be noted that the monitoring programme should be implemented at least one full year before construction on the site starts, to allow comparative pre-impact data.

Table 9.7: Recommended wetland impact monitoring programmes for all sites

Recommended monitoring programme	Rationale	Target wetlands at the Thyspunt Site	Frequency and duration of monitoring	Reporting frequency	Management objectives
Monitoring of water depth / depth to water table and soil moisture in key wetlands over time	This will set a pre-construction baseline and allow identification of impacts after construction and establish with high certainty the extent of groundwater dependency of the different wetlands	• Langefonteinvlei and southern counterpart– monitoring points should be located upstream and downstream of the wetlands; • Selected dune slack wetlands in the mobile (Oyster Bay) dunes • Selected depressional wetlands immediately north of the Oyster Bay dune field; and • Selected coastal seep wetlands	Recommend that well points / boreholes make allowance for installation of a water level recording device, to allow collection of data at more frequent intervals than allowed by physical site visits. Soil moisture monitoring devices are also recommended in Visser et al (2011). Data should be collected over at least one full year before dewatering plans are finalised and must continue until at least the end of the first three years of the operational phase.	Annual (baseline) Monthly (construction phase)	No change in wetland hydroperiod with drawdown; no change in wetland soil moisture regime
Monitoring of water quality – major nutrients; EC	This will allow identification of impacts associated with contaminated seepage from various activities associated with the NPS site, including stormwater runoff	• Key coastal seep wetlands in vicinity of site and control wetlands further away; • Langefonteinvlei; and • Selected valley bottom wetlands in Slang River catchment.	Monthly baseline data collection over at least one year Weekly data collection during construction phase Monthly data collection for first three years of operational phase	Annual (baseline) Monthly (construction phase)	No change in natural water quality fluctuations

Recommended monitoring programme	Rationale	Target wetlands at the Thyspunt Site	Frequency and duration of monitoring	Reporting frequency	Management objectives
Plant zonation	Mapping of plant zonation at selected wetland sites should allow tracking of changes in wetland function associated with diversion of flows, and allow measurement of the efficacy of groundwater infiltration and dispersion mitigation measures Monitoring of climate change impacts will also be enabled.	Control and potentially affected coastal seeps	Annual - ongoing for first five years of operational phase (due to assumed slow response rate).	Annual	No change in wetland zonation or shrinkage / expansion of wetland edge
Monitoring of selected radioactive isotopes in coastal seeps and Langefonteinvlei – surface water and selected plant tissue.	There is no background data for radioactive isotopes for this site, against which to gauge possible future contamination.	Langefonteinvlei and selected coastal seeps	Two-monthly for one year (baseline) – annual after five years of operational phase	Annual	No change over time from baseline conditions

9.8 Vertebrate fauna

1. Develop and implement the following faunal monitoring programmes and / surveys on the nuclear power station site to inform effective environmental management
   - Seabird breeding population survey;
   - Survey of formerly inadequately surveyed animal groups, *viz*, reptiles and small mammals; and
   - Sensitive species.

2. Develop and implement a comprehensive vertebrate monitoring programme which includes monitoring sensitive faunal populations in accordance with the requirements detailed in this section.

An appropriate monitoring and auditing programme should be put in place to track the efficacy of the mitigation measures. Monitoring requirements must be built into the auditing procedures of the EMPs for the construction, operational and decommissioning phases, but input during the design phase is also important for the demarcation of sensitive areas. The programme should include monitoring directed specifically at sensitive faunal populations. The recommended programmes are outlined in **Table 9-8**.

Table 9.8: Recommended monitoring and evaluation programme

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
1) Condition of wetlands near to footprint	Construction phase, plus three years	Quarterly	Maintenance of pre-development wetland ecology.
2) Size and breeding success of local breeding colonies of seabirds	Commence prior to construction phase and continue during operational phase; ongoing	Annual	No reduction in colony size and average breeding success rate.
3) Mortality associated with transmission lines and high voltage yard	Commence after construction and continue until problems solved	Monthly	Reduction of frequency of bird mortality to low levels.
4) Mortality associated with roads	Commence at beginning of construction phase and continue until problems solved	Monthly	Reduction of frequency of roadkills to low levels.
5) Population strength of selected sensitive species, e.g., Blouberg Dwarf Burrowing Skink	Commence prior to construction and continue during operational phase; ongoing	Annual	Stabilization or improvement of populations, post construction.

Notes:

- The “reporting frequency” is the frequency at which survey results must be written up and presented to the Environmental Control Officer (ECO).
- The frequency of actual field surveys is not specified here. Survey protocols may be influenced by the relevant specialists who are consulted to do the monitoring.
- The breeding colonies in monitoring programme #2 are those at Koeberg harbour. ***Note that monitoring must begin prior to the construction phase so that a baseline for monitoring can be established.***
- Monitoring programmes 3 and 4 should be the responsibility of the on-site ECO.
- The sensitive species in monitoring programme #5 are those identified in 3.1.2 (above). ***Note that monitoring of these species must begin before site clearance so that a baseline for monitoring can be established.***

In addition to the specific monitoring programmes recommended above, it is recommended that the Environmental Monitoring Committee include experienced and respected members of the scientific community and local residents who have specific expertise in environmental matters. The function of this committee would be to assist the ECO in achieving his objectives. Refer to Section 4.2.2 for further details.

Develop the monitoring programmes and control measures with reference to inter alia information provided by the IUCN SSC Invasive Species Specialist Group http://www.issg.org/.

Develop and institute a monitoring programme to detect alien invasive species as early as possible.

9.9 Invertebrate fauna

9.9.1 Aims

The main aim of an effective invertebrate monitoring program should be twofold: to monitor invertebrate numbers and assemblage composition over time and to relate any significant changes to the impacts associated with the particular project. Secondly, to use the monitoring program as a tool to mitigate impacts on the natural invertebrate habitats by diverting impacts from sensitive habitats and species.

The difficulty is to distinguish between ‘natural’ changes invertebrate numbers and assemblage composition and changes caused by the impacts of the project. Cause-effect can easily be mistakenly assumed unless the monitoring program is carefully planned.

9.9.2 Target Invertebrate Groups

It is not practical to include all invertebrates groups into a monitoring program. Despite the prevalence of invertebrates, very little is known about a significant number of these animals. Most invertebrate groups are poorly known ecologically; many species remain unnamed. Consequently, it is important to select specific target groups that will fulfil the aims of the monitoring program designed for the project. Such invertebrate groups should have as many of the following characteristics as possible:

- Be easily identifiable;
- Its ecology well known;

- Should be represented by significant numbers in the study area;
- Should be species rich;
- Should be sensitive to changes in its habitat and environmental conditions; and
- Target invertebrate groups must be easy to collect consistently with repeatable, scientific collection methods.

The assemblage of target invertebrate groups should include species that are taxonomically diverse, from all trophic levels in the ecosystem and representative of the keystone species of all the invertebrate habitats of the project area to be monitored.

9.9.3 Proposed Invertebrate Groups for Monitoring

Based on the results obtained during this invertebrate study, as well as personal invertebrate monitoring experience, the following invertebrate groups are proposed to be included in the monitoring program:

- Baboon spiders and trapdoor spiders (Arachnida: Mygalomorphae);
- Scorpions (Arachnida: Scorpiones)
- Damselflies and Dragonflies (Insecta: Odonata)
- Beetles (Insecta: Coleoptera);
- Antlions and relatives (Insecta: Neuroptera);
- Butterflies (Lepidoptera: Hesperiidae, Lycaenidae, Pieridae, Papilionidae and Nymphalidae); and
- Ants (Hymenoptera: Formicidae)

9.9.4 Collection methods

The invertebrate groups proposed for inclusion in the monitoring program (1.2.1, above), are ecologically, morphologically and taxonomically diverse. As such, a diverse number of collection methods are necessary in order to successfully monitor their numbers and assemblage structures over time. These collection methods include the following:

- Pitfall trapping (both baited and un-baited);
- Sweep netting;
- Handheld netting;
- Light trapping;
- UV light searches;
- Active searches of group specific niches; and
- Yellow tray trapping.

Each of the above listed collection methods are chosen for their repeatability, effectiveness in targeting one or more of the target invertebrate groups and cost effective, practical application in the field.

9.9.5 Experimental Design

To effectively design the long-term invertebrate monitoring program, a final layout of the project's infrastructure and areas of habitat destruction is needed. There is no

sense in having long-term monitoring points in areas that are designated for project infrastructure and consequently destruction of the invertebrate habitats of that area. However, a few general experimental design objectives are essential and not bound to specific layout plans.

9.9.6 Seasonal Field Investigation Timing

The effectiveness of the invertebrate monitoring program will depend greatly on the timing of the field investigation period. The best period for invertebrate sampling in the study area region is during the summer months – invertebrates are mostly active when heat and moisture is present in their environment. The field investigation for the invertebrate monitoring program is therefore proposed for a two-week period during the early to mid-summer period; the first two weeks in December are ideal. It is important that the field investigation be completed during the same time each year; it eliminates some of the seasonal variation that confounds results of ill-timed field surveys.

9.9.7 Status Quo Sampling

Once the final layout of the project has been approved, the experimental design can be finalised and the first phase invertebrate sampling can be executed. It is imperative that the status quo of the invertebrates is sampled **before any construction activities commence**. The most important component of an effective invertebrate monitoring program is the sampling of the area before any of the impacts associated with the project influences the invertebrates of the project area. The data collected during this first sampling period acts as a benchmark against which all changes can be measured during subsequent yearly sampling bouts. Without this benchmark dataset, it becomes increasingly difficult to discern natural changes in invertebrate numbers and assemblage structures from changes resulting directly or indirectly from impacts caused by the project.

9.9.8 Reference collection

It is necessary to build up a reference collection of the invertebrates sampled during the monitoring program. It will ensure that species identifications are refined over time and that fewer identification anomalies are included in the final datasets used during the monitoring of invertebrates. Such a reference collection may be housed on sight or at an appropriate alternative; curation of the collection needs to be under the auspices of a trained entomologist or experienced museum official. The reference collection will have significant value as a training tool and as baseline scientific dataset.

Please note that where suggested mitigation falls more appropriately under a different discipline (e.g. dust would be best dealt with by the air quality specialist), despite its significance for invertebrate populations, the relevant specialist would be better able to determine appropriate monitoring methods and frequency and such recommendations have been made in other specialist reports.

9.10 Marine systems

Develop and implement a comprehensive marine systems monitoring programme in accordance with the requirements detailed in **this section**
The monitoring programme must include monitoring the following:

- Impacts on marine species (particularly chokka squid), both in terms of possible radiological releases and the impacts of construction. Radiological monitoring must be commenced prior to the start of the construction phase to establish reliable baseline values.
- The success of re-establishment of benthic communities in areas that have been disturbed by construction activities (e.g. the laying of outfall pipes for the desalination plant, marine spoil disposal and cooling water pipes)

The following variables / aspects must be monitored:

Thermal pollution
Both the benthic and intertidal habitats should be sampled before construction, after construction, but before the onset of the operational phase, annually during operation and then for a minimum of five years after closure of the power station. Both benthic and intertidal sites predicted to be impacted (i.e. based on oceanographic modelling of the thermal plume) should be paired with comparable control sites. If suitable sites exist both sheltered and exposed rocky shores should be considered. At Thyspunt surveys should be conducted to monitor for the presence of egg capsules of the Chokka squid *Loligo vulgaris.* Note: the use of indicator species is not recommended as the densities of marine invertebrates often varies dramatically through time, while changes in overall community composition are far more relevant. While sampling need not be repeated in different seasons it is important that annual monitoring take place at the same time each year.

Spoil disposal sites
Prior to disposal of spoil at sea, benthic communities at the disposal site, and in the areas predicted to be affected by spoil in the first ten years following disposal (Prestedge *et al.* 2009a) should be sampled for at least two years. Following disposal of spoil, these sites should be sampled at the same time of the year as the initial samples for at least ten years. Importantly, communities establishing on the actual spoil site should be monitored to establish to what extent these communities recover through time.

Radiation emissions
An environmental surveillance programme should be implemented to monitor for land and marine (on and off-shore) radiation emissions in accordance with the requirements of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999). The design of such a programme should follow the Eskom Radiation Protection Environmental Surveillance Standard, and should include organisms such as the chokka squid *Loligo vulgaris* as it is consumed commercially.

Sewage effluent quality
A routine monitoring programme of water exiting the cooling water outlets should be established to ensure that sewage effluent entering the sea meets the standards set by the Department of Water Affairs (DWA).

Organic, bacterial and hydrocarbon pollution of groundwater
Should pollution of groundwater be detected, monitoring of seawater quality in the area of groundwater discharge should commence immediately to ensure the safety of public health.

Table 9.3: Recommended marine impact monitoring programmes for all sites

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
Thermal pollution	Benthic and intertidal habitats should be sampled before construction, after construction, but before the onset of the operational phase, annually during operation and then for a minimum of five years after closure of the power station	Annual	Both benthic and intertidal sites predicted to be impacted (i.e. based on oceanographic modelling of the release plume) should be paired with comparable control sites. If suitable sites exist both sheltered and exposed rocky shores should be considered. At Thyspunt surveys should be conducted to monitor for the presence of egg capsules of the Chokka squid *Loligo vulgaris.*
Spoil disposal sites	Two years prior to disposal and at least 10 years after disposal	Annual	Re-establishment of benthic communities on spoil disposal sites and in surrounding affected areas.
Radiation	Establish background radiation prior to construction and during construction and operation	Annual	Radiation levels in marine organisms preferably no higher than natural background levels or low enough not to cause any health impacts
Sewage effluent quality	Throughout operation of the sewage treatment plant	Annual	Effluent meets General Standard in terms of the National Water Act, 1998 and any project-specific legal requirements e.g. Water Use License of the sewage treatment plant
Groundwater pollution	Throughout construction, operation and decommissioning	Monthly (construction) Annual (operation)	No negative health or environmental impacts due to deterioration of groundwater quality

Note:
- The use of indicator species is not recommended as the densities of marine invertebrates often varies dramatically through time, while changes in overall community composition are far more relevant.
- *Organisms which are recommended for inclusion in a radiation monitoring programme are* the chokka squid *L. vulgaris and abalone Haliotis midae* at Thyspunt, as both are harvested commercially.

9.11 Oceanography

The International Atomic Energy Agency (IAEA 2003) recommends that the following monitoring networks should be considered when constructing a nuclear power station:

Tsunami warning system
Parts of the world considered to be in high risk areas for tsunamis have both regional and national tsunami warning systems. There is however no specific warning system for the South African coastline. It is unlikely that this will be implemented given the low risk of seismic activity in the Southern Atlantic Ocean.

Construction and Operation Environmental Monitoring
It is recommended that the environmental management plan developed for the project include the methodology for monitoring key oceanographic parameters during construction and operation.

During construction this should include monitoring the levels of total suspended sediments within the water column during all marine works and spoil disposal operations. During operation ambient temperature and concentrations of co-discharges should be frequently measured.

9.12 Social Conditions

Public and Social Services and Service Infrastructure Use and Impact - Ensure that the implementation process is carefully monitored and that any disruptions are immediately identified and appropriately managed.

Construction village - Monitor the situation once the housing units are occupied.

Monitor the situation with respect to influx of job seekers after the occupation of the staff village and housing projects, and involve the relevant role-players in such process.

Economic impact - Apply high-quality risk management and monitoring.

Include social issues on the agenda and terms of reference of the Environmental Monitoring Committee to.

Eskom will initiate the establishment of a Social Monitoring and Steering Committee. Monitoring of social conditions as indicated in **Table 9-4** is recommended.

Table 9.4: Recommended social impact monitoring programmes for all sites

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
The establishment and management of the social impact by a Social Monitoring and Steering Committee	On-going for a minimum period of six months during the pre-commissioning phase and continue during the entire duration of construction, as well as a minimum period of six months from commencement of the operational phase.	Quarterly or as defined by the Terms of Reference of the Committee	The introduction and establishment of a "Social Monitoring and Steering Committee", comprising representation from all interested and affected parties, who should discuss, manage, address and resolve social issues, needs and problems on a continuous and sustained basis.

9.13 Visual Impacts

Monitor the implementation and maintenance of visual mitigation measures to ensure that these meet all the relevant specifications of the EMP that formed part of the EIR, and undertake such monitoring with the requirements detailed in this section.

The magnitude and significance of a visual impact of a structure in a particular view will vary from person to person, since visual impact appreciation is a subjective matter. However, visual mitigation measures are aimed at reducing the visibility of the power station infrastructure (irrespective of the viewer) rather than eliminating the visual impact to the observer. This is as a result of the large scale of the project's elements.

All proposed mitigation measures are therefore considered to be effective in reducing the visual impact. Mitigation by way of screening by vegetation will take a longer time to be effective. This measure is reliant on regular maintenance to ensure effective growth.

Table 9.5: Recommended visual impact monitoring programmes for all sites

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
Monitor compliance with the visual mitigation measures provided in this EMP.	Construction and operation.	Regular compliance checks in accordance with the ECO schedule.	To ensure that mitigation measures are effective, current and are maintained at the level required.

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
Monitor the vegetation establishment on new landforms, the performance of safety and security lighting, the overall visual image of the nuclear power station. Improvements may involve the management of revegetated cut or fill slopes to provide the visual integration with the surrounding landform and other related aspects	Operation phase	Annually.	Maintain and modify where required to effectively mitigate visual impacts of the nuclear power station and associated infrastructure.

9.14 Heritage and archaeology

Land clearance and bulk excavation must be monitored for possible heritage finds, unless the archaeologist has good reasons to consider it acceptable for certain activities to continue at a specified reduced monitoring frequency (e.g. in areas of low sensitivity).

Since heritage practitioners have no quantifiable data about the extent of the "National Estate"[10] even at a regional level, there is no yardstick that can be used to measure the effectiveness of a mitigation programme. In terms of the heritage specialist's standards, if the archive of information and materials derived from rescue sampling can be used by others in dissertations, research publications or dissemination of public knowledge, then mitigation is deemed to be partially successful.

Unfortunately, it is more feasible to maintain a schedule of loss of heritage rather than a schedule of successful mitigation. Nevertheless the following measures are suggested as a means of judging the effectiveness of mitigation. Ideally heritage casualties should be less than the number of heritage sites that are actively conserved – a site conserved for every one that is destroyed should be a minimal goal to aspire to.

[10] The National Estate is defined by the National Heritage Resources Act, 1999 as those heritage resources of South Africa that are of cultural significance or other special value for the present community and for future generations and fall within the sphere of operations of heritage resources authorities.

Table 9.6: Recommended heritage impact monitoring programmes for all sites

Recommended monitoring programme	Duration of monitoring	Reporting frequency	Management objectives
The audit/ identification of heritage resources on the nuclear power station sites	During construction phase.	On-going, as and when required.	In order to measure the success of mitigation, as much as possible needs to be known about population diversity and age of heritage sites. The test excavation survey that was completed in 2011 is a substantial start to this process.
A record of heritage findings found buried in sediments during the construction stage should be maintained.	During the process of construction	On-going, as and when required.	Critical contribution towards judging the amount of palaeo- and archaeo-heritage that lies buried on the property. It would also assist in establishing an overall conservation goal

9.15 Overall site management

1. Introduce a monitoring system in accordance with the monitoring requirements indicated in various sections of this report and the monitoring programme that is provided as separate chapter to this EMP; as well as any monitoring requirements imposed by authorities through authorisations and licenses.
2. Maintain all records relating to monitoring and auditing in respect of the nuclear power station development and operation for inspection by any relevant authority, the Environmental Monitoring Committee, the ECO or Eskom's Environmental Audit Team. **[As necessary]**

9.16 Geology

The US Code of Federal Regulations recommends the installation of microseismic monitoring networks at nuclear power stations. Local networks should be deployed during the siting process to rate sites according to their seismic hazard potential. After the siting process, microseismic monitoring should continue so as to re-confirm the suitability of the selected site. Seismic monitoring should also continue during

operation of the nuclear power station, and even after decommissioning re-use of the site is considered.

The following monitoring must be implemented:

1. Implement an appropriate permanent seismic monitoring system (consider including installation of strong-motion accelerographs on rock outcrops at the site); and
2. Continue with seismic monitoring (even after decommissioning, regardless of whether re-use of the site is considered).

9.17 Noise

Develop and implement a *Noise Control Management Plan* with associated *Noise Monitoring Programme (based on SANS 10103:2004)*. **{Method Statement}** / **{SOP}**

10 CONFIRMING COMPLIANCE, NON-CONFORMANCE AND CORRECTIVE ACTION

10.1 Confirming Compliance

10.1.1 Compliance Monitoring

A monitoring programme shall be put in place not only to ensure conformance with the EMP, but also to monitor any environmental issues and impacts that have not been accounted for in the EMP that are, or could, result in significant environmental impacts for which corrective action is required. As part of the contract or work specifications, Eskom will stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. A Monitoring Programme is found in Section 9 of this EMP.

The PM shall ensure that the required monitoring is carried out.

The aim of the monitoring and auditing process is to check the implementation of the environmental specifications routinely, in order to:

- Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications;
- Ensure adequate and appropriate interventions to address non-compliance;
- Ensure adequate and appropriate interventions to address environmental degradation;
- Provide a mechanism for the lodging and resolution of public complaints;
- Ensure appropriate and adequate record keeping related to environmental compliance;
- Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, in order to enhance the efficacy of environmental management on site; and
- Aid communication and feedback to the relevant authorities.

The SM, with the assistance from the ECO, shall monitor compliance with the EMP and carry out monitoring activities as identified by any specialist or any other monitoring deemed necessary by Eskom, or reasonably requested by the Environmental Monitoring Committee.

All instruments and devices used for the measurement or monitoring of any aspect of this EMP must be calibrated at appropriate intervals and appropriately operated and maintained.

10.1.2 Record keeping and reporting

Accurate and comprehensive record-keeping and reporting shall take place throughout the life-cycle of the Nuclear-1 Project and at various appropriate levels of the organisational hierarchy.

(a) Eskom's internal records

While contractors shall keep their own records, Eskom has assigned the role of implementing and retaining 'internal' records in terms of EMP compliance during the construction phase, as a key function of the Site Manager (SM). As such and in terms of this EMP, the SM shall keep the following documentation in good order to record compliance with the EMP:

- Results of routine and non-routine monitoring;
- Notification, records and reports of emergencies, EMP or environmental non-compliance incidents and 'near-miss" incidents; and
- Record of complaints (including all environmental complaints) received from the public and how these were responded to.

The SM shall ensure that the following information is recorded for all incidents/ complaints on a standard incident investigation template:

- Nature of incident/complaint, including a description of the environmental impact;
- Root causes of incident/complaint;
- Party/ parties responsible for causing incident/complaint;
- Immediate actions undertaken to stop/ reduce/ contain the causes of the incident/complaint;
- Additional corrective or remedial action taken and/ or to be taken to address and to prevent reoccurrence of the incident/complaint;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;
- Procedures to be undertaken and/ or penalties to be applied if corrective or remedial actions are not implemented;
- Any changes to operating procedures and/or infrastructure required in similar areas to prevent a recurrence;
- Copies of all correspondence sent to relevant authorities regarding the incident / complaints; and
- Copies of all correspondence received regarding complaints/ incidents.

Incidents involving employees and/ or the public that will be reported are those:

- That could potentially cause negative sentiment and perception towards the project and/ or Eskom;
- Environmental complaints and correspondence received from the public to the SM or PSM; and
- Incidents that cause harm or may cause harm to the environment must be reported to the ECO
- Eskom shall (and the contractor, as dictated by the context) shall maintain a record of all hazardous waste disposal manifests and certificates of safe disposal detailing the nature of the hazardous waste disposed of, the hazardous waste classification and the location of the site at which such waste will be disposed.

The above records will form an integral part of the SM's records during the construction and operational phase. These records must be made available for scrutiny by authorities and environmental auditors when requested. In addition, a log of all permits and permit conditions as well as copies of these permits once obtained, shall be kept and updated as necessary and must form part of the power station's operational Environmental Management System legal register. .

(b) Reporting to external parties

The ECO shall prepare regular monitoring and/or audit reports to reflect the EMP compliance status, findings, issues and recommended actions for addressing non-compliances and submit these to the project team, the relevant environmental authorities (DEA, provincial and local environmental authorities) and through the CLO to the Environmental Monitoring Committee. Two report types are envisaged, namely:

- Routine Environmental Compliance Reports – i.e. 'checklist'/'corrective action plan' type reports.

  These will be typically in table format and cover compliance based on a checklist of environmental specifications against non-compliance issues and associated corrective action plans. The frequency of these reports may vary depending on requirements, but will be typically on a monthly basis. The report may be supplemented by a photo record.

- Environmental Performance Audit Reports

  These will provide an audit-type account of management planning and management of Nuclear-1 project overall environmental performance and compliance with the EMP and relevant environmental legislation. While a thorough site visit will be undertaken as part of each audit, the report will mainly cover the period since the previous audit report. The Environmental Performance Audit Reports should include comments and recommendations on overall site environmental management (where things are working well, where they are not working well and what can be done to improve), as well as looking ahead at potential issues and how to mitigate any impacts. Various documents such as the latest 'corrective action plan', photo record, incident and 'near miss' records, public complaints register, etc. may be appended to the report. The frequency of these reports may vary depending on requirements, but will typically be quarterly to every six months.

10.2 Addressing Non-compliance

10.2.1 Construction Phase

The Contractor shall effectively address and/or remedy all EMP non-compliances at his/her own cost.

Eskom will address any such non-compliances or transgressions on behalf of the Contractor in accordance with mechanisms set out in the 'overall' contract. Non-compliance will be addressed via written early warning notifications, non-compliance penalties and appropriate work stop orders as described in the subsections below. At the discretion of the SM, ECO and/or the environmental authorities, remedial actions may have to be presented and accepted before work can continue.

The type and extent of the corrective measures required to address non-compliance would depend on the nature of the transgression and the Contractor's history in terms of repeat non-compliance with environmental obligations with respect to a particular issue.

(a) Early warning notifications

Although not a requirement in terms of this EMP, the SM and/or ECO may at their own discretion issue early warning notifications to the contractor once they become aware of a potential non-compliance and or transgression. The SM and ECO shall inform each other of any notification they have issued. It is recommended that such warnings are issued as soon as possible and that records of any such notifications are kept by all three parties, i.e. the Contractor, SM and ECO.

(b) Non-compliance penalties

In terms of this EMP, it is recommended that the SM, in consultation or on the advice of the ECO, shall issue penalties (e.g. 'spot fines') deductible from the Contractor's payment certificates, if the Contractor infringes environmental specifications set out in this EMP. The decision on when to impose a penalty will be at the discretion of the SM and/or ECO and will be final. The Contractor shall be advised in writing of the nature of the infringement and the amount of the penalty. The Contractor shall be liable for the fine and it remains his/her responsibility to recover the fine from the relevant employee or sub-contractor. The Contractor shall also take the necessary steps (e.g. training) to prevent a recurrence of the infringement.

The Contractor is also advised that the imposition of penalties does not replace any legal proceedings the authorities, landowners and/or members of the public may institute against the Contractor. In addition to a penalty, the Contractor shall be fully liable and required to make good any damage caused as a result of the infringement at his own expense.

Penalties shall be set depending upon the severity of the infringement. For each subsequent similar offence, the penalty may, at the discretion of the SM be doubled in value to the maximum value to be determined in the contract (i.e. typically in accordance with FIDIC CCC).

A list of typical EMP non-compliance incidents for which penalties may incur and associated fine value is included as a Penalty Schedule in **Annexure I**. Eskom may amend this schedule provided that the amended list is formally issued to the Contractor prior to an incident for which a penalty is imposed.

Infringements for which spot fines will be imposed on the contractor are, for example but not limited to:

- Accessing any areas outside the designated working areas without permission;
- Clearing and/or levelling areas outside of the designated working areas without permission;
- Spillage onto the ground or water bodies of oil, diesel, etc;
- Picking/damaging plant material;
- Injuring/killing animals/birds;
- Untidiness and litter at the construction site;
- Poor waste management on site;

- Making fires on site;
- Discharging effluent and/or contaminated stormwater onto the ground or into surface water;
- Repeated contravention of the specifications or failure to comply with instructions;
  - Interfering in the mitigation actions of any EMP;
  - Defacing any plant, rock or item of cultural heritage e.g. spray painting onto rocks; and
- Damage to public or private property or any identified heritage sites.

The SM and Contractor shall retain records of all penalties issued for the duration of the contract.

When deciding on the nature of any punitive actions, the effective implementation of the environmental specification is dependent on the quality of the working relationships that between the key role-players, specifically the SM, the Contractor and the ECO. Accordingly, an excessive response to non-compliance, particularly for a minor or unintentional transgression, may cause significant environmental degradation in the long term due to its effect in eroding the Contractor commitment to meeting environmental responsibilities. Other mechanisms, like an expanded environmental induction programme, may prove more effective than purely punitive measures in controlling non-compliance in the long term.

(c) 'Suspended work' orders

The SM at his own discretion, or on recommendation from the ECO, may also order the Contractor to place on-hold or suspend part or all the works if the Contractor repeatedly causes damage to the environment by not adhering to the EMP (i.e. more than three cases of infringements related to the same issue). The suspension will be enforced until such time as the offending actions, procedure or equipment is corrected. No extension of time will be granted for such delays and all related costs will be borne by the Contractor.

Work may also be placed on hold if a heritage artefact or feature or grave is uncovered or to prevent a potentially significant incident from occurring or spreading.

(d) Insistence on remedying damage or impact

In addition to the abovementioned interventions, Eskom shall insist and contractually bind the Contractor to make good any damage caused as a result of the infringement, at his own expense.

10.2.2 Operational Phase

EMP non-compliance and environmental transgressions by staff members during the operational phase of the project will be addressed and the through the corrective and preventative action system of the power station's Environmental Management System and, where relevant, through the power station's disciplinary procedures.

11 CONCLUSION

This revised draft EMP is aimed at meeting the requirements of the EIA Regulations and the guidelines issued in respect thereof. The document is in a draft form and available for review and comment by the public. The draft EMP has been substantially revised since the initial draft was published, to address issues and concerns raised by Interested and Affected Parties and to incorporate subsequent recommendations from specialist, as well as comments from Eskom, based on experience with implementation of EMPs on other large construction sites. After the current public review period the draft EMP will be finalised as the final 'draft EMP' for submission to the Department of Environmental Affairs (DEA), together with EIR.

It should also be noted that the EMP has been extensively workshopped at various integration meetings between the technical specialists and Eskom. This process facilitated the identification of relevant and practical mitigation measures and monitoring recommendations, which may be used by Eskom to ensure the fulfilment of the commitment to this EMP by the Contractor.

It is critical that this document be included during any sub-consultant tendering, to allow all potential bidders for this work to seriously consider and cost for such mitigation. This will ensure that the document receives the necessary buy-in that is required right from the outset of the project. In addition, the contents of the EMP should be used in the development of the operational phase EMS for the nuclear power station and ultimately to develop decommissioning and closure plans.

Penalties to be imposed for the transgression of environmental management measures are also noted, along with the roles and responsibilities of all stakeholders such as Eskom Nuclear Generation, the Environmental Auditing Team, the Environmental Control Officer, Project Manager, Site Manager, Power Station Manager, the (sub-)Contractors neighbouring landowners, interested and affected parties and the relevant environmental and project specialists.

In order to ensure environmental compliance, all parties taking part in the pre-construction, construction, operation and decommissioning of the nuclear power station facility shall be fully acquainted with the contents of the EMP. This will ensure that potential negative impacts are identified, avoided or mitigated.

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DOCUMENT CONTROL SHEET
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CLIENT	:	Eskom Holdings Limited
PROJECT NAME	:	Nuclear-1 EIA and EMP **PROJECT No. :** J27035
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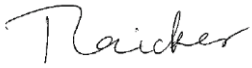
DATE **August 2015**	**SIGNATURE** 	**SIGNATURE** 	**SIGNATURE** 

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ANNEXURE A:
ENVIRONMENTAL AUTHORISATION

ANNEXURE B:
ESKOM ENVIRONMENTAL POLICY

Eskom	**Guideline**	

Title:	**ENVIRONMENTAL PROCEDURE:**	Unique identifier:	**32-96**
		Document type:	**EPC**
		Revision:	**0**
	Environmental Management Programme	Effective date:	**January 2007**
		Total pages:	**26**
		Revision date:	**January 2010**

COMPILED BY	FUNCTIONAL RESP	AUTHORISED BY
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This document should be read in conjunction with the Eskom Environmental Procedure, EPC 32-96.

1 Introduction

One of Eskom's environmental strategies is the development and implementation of an environmental management system (EMS). Linked to this is a requirement for the development and implementation of environmental management programmes (EMPs). Furthermore, Eskom's environmental land policy requires that all Eskom land be continually managed, through the control of operations and activities that take place on it, to ensure the sustainable utilisation of the asset. It also requires that all Eskom land be managed, operated, and maintained in terms of an established EMP.

An EMP is a plan of action that sets out a required environmental end state and sets out how activities that could have a negative impact on the environment will be managed and monitored and how impacted areas will be rehabilitated.

The main Eskom Environmental Procedure, EPC 32-96, should be consulted for all elements relating to the scope, normative references, etc.

2 Requirements

2.1 General

2.1.1 An EMP shall be developed and implemented, in terms of the relevant line division EMS for:

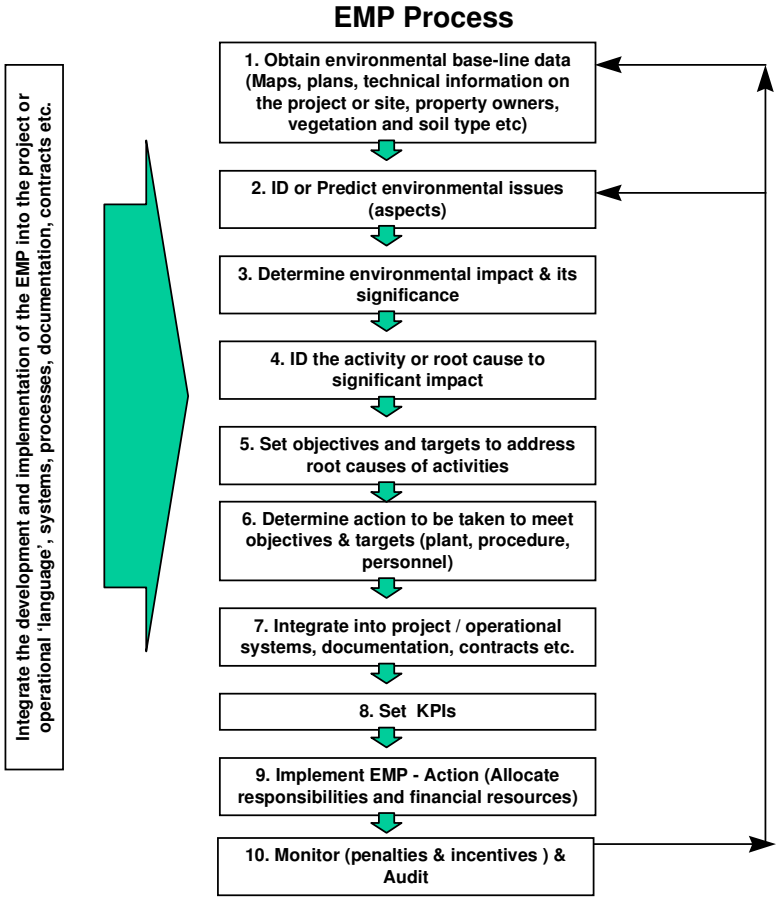
a) existing and future Eskom land (site, servitude); and

b) projects for which an environmental impact assessment (EIA) or screening was undertaken.

Applicable significant environmental issues are to be included in an EMP (see 2.12 for general environmental aspect). In the development and implementation of an EMP for existing Eskom land (site/servitude) or for a proposed project, the procedures in 2.2 to 2.11 should be followed to ensure compliance with Eskom's Environmental Land Policy and national environmental legislation.

2.1.2 Each Eskom division and subsidiary should establish key performance indicators (KPIs)/EMS for the development and implementation of EMPs. These indicators and actual performance figures should be reported for inclusion in Eskom's Annual Report where appropriate.

2.1.3 The line business unit (BU) managers shall be accountable for the coordinated development and implementation of the environmental management programmes in their respective areas in line with the set KPIs/EMS.



2.2 Collect environmental baseline data

a) This step involves the collection of baseline data or background information on:

1) the proposed project (technical and project management programme);

2) the existing land (site/servitude) and operations (technical and operational practices); and

3) the environment (and surrounding environment) of the proposed project of existing land (site/servitude) and operation.

b) Collection of data should start with obtaining existing information from:

1) past EIAs;

2) operational and maintenance records (including inspection reports);

3) incident investigation and audit reports;

4) geographical information systems (GIS); and

5) landowners and government departments.

c) Thereafter, gaps in data would have to be filled through specialist studies and field

sampling. For a power line route, this could involve a specialist on vegetation, bird interactions with power lines, soil types, and national heritage sites. For a site, specialist studies would be needed for soil types, vegetation control, and technical aspects of the site (that is, maintenance practices, oil traps, etc.).

d) This information should be collated in a format that will allow it to be stored and utilised in a convenient manner.

e) If an EIA had already been undertaken for the route or site, much of this baseline information can be obtained from that EIA report.

f) See Annex B for a generic list of baseline information required for specific sites.

g) Background information on the environment (land, air, water, local communities, and other interested and affected parties) should include issues that are applicable to the project or the existing site, and associated environmental impacts. It should cover the physical, biological, and social environments that could be or are adversely affected by the development or operation, respectively.

h) This baseline information is required to identify changes, through monitoring, as a result of the project or operational impacts. Baseline information studies will provide the "control" records against which all monitoring can be measured. The information will also be used in the development of EMP actions to avoid impacts or to restore areas.

2.3 Identify and/or predict the environmental aspects (Aspects Register)

2.3.1 Identify the environmental aspect (waste, oil spills, soil erosion, air and water emissions, vegetation control, landowner requirements, etc.) that need to be addressed, managed, controlled, or avoided through the adequate control of that activity resulting in the aspect.

2.3.2 For new developments and projects requiring an EIA, relevant statutory requirements shall be adhered to.

2.3.3 For an existing operation or site, the assessment to identify environmental issues could be from:

a) incident investigations and past experience (maintenance records, investigation reports, etc.);

b) a life-cycle assessment (LCA);

c) an EIA (for upgrades or changes to plant);

d) routine maintenance inspections/audits;

e) environmental due diligence;

f) an environmental risk assessment (ERA); and

g) an audit of the plant, site, or route.

2.3.4 A checklist, matrix, or some other assessment tool should be used to record the issues that were identified (see Annex C).

2.3.5 For both new projects and existing sites, a process of public participation should be undertaken to ensure that the concerns of interested and affected parties are taken into

consideration when compiling and implementing the EMP.

2.4 Determine the environmental impacts and their significance

2.4.1 The environmental impacts associated with each identified environmental aspect should be determined (that is, an oil spill is an environmental aspect, and its impact is the contamination of soil and water). Significance involves a value judgement by society concerning the importance of the effects of human activities. The primary concerns of the public are human health and safety. Thereafter, it is the concern for potential losses of important commercial species or commercially viable production and a high priority on species and areas of major recreational or aesthetic importance.

2.4.2 The significance of each impact that is predicted or identified should be quantified. The significance should be rated as high, medium, or low. In the determination of what is significant, techniques should be adopted that remove the subjectivity from the determination.

2.4.3 Significance can be determined with regard to:

a) the **nature** of the proposed or existing activity with regard to the causes of the effect;

b) the **extent** of the activity regarding whether the impact will be or is local or regional;

c) the **duration** of the activity's impact (short, medium, long, or even permanent);

d) the **intensity** of the activity's impact, classified in terms of the following: **low** – natural or social functions and processes are not affected; **medium** – the environment is altered, but the natural and social functions are able to continue in a modified way; and **high** – natural or social functions or processes are altered to such an extent that they will temporarily or permanently stop; and

e) the **probability** that the impact will actually occur in terms of the following: **improbability** – due to design or historical experience, the chance of impact occurring is very low; **probable** – where there is the possibility that the impact could occur; **highly probable** – in the case where it is more than likely that the impact will occur; and **definite** – here the impact will occur regardless of any preventative measures being implemented.

2.4.4 The criteria for significance should include the level of public concern and legal implications and impact on image should the impact occur.

2.4.5 The significance of the environmental impact could be to use it in conjunction with the cost benefit analysis (CBA) approach, which seeks to express impacts in monetary terms.

2.5 Identify the activity or root cause associated with the significant impact

2.5.1 Once all the significant environmental aspects have been identified based on the significance of their impacts, the activity that causes them should be identified. This is, in a sense, determining the root cause of the problem, and it is the root cause that one needs to manage and control to ensure that corrective and preventative measures are implemented through the EMP.

2.5.2 An impact is the result of a failure of plant/procedures/personnel to perform as expected (that is, no bund wall, wrong use of herbicides, uncontrolled management of storm water, ash and slurry plant inefficiency, personnel not trained, no operational procedure in place, etc.).

2.6 Set objectives and targets to address root cause

2.6.1 After identifying, determining, and quantifying the environmental aspects and their associated activities (the root causes) that need to be addressed in the EMP, translate them into specific management objectives and specific measurable targets.

2.6.2 When these objectives and targets have been set, ensure that they conform to statutory requirements.

2.6.3 The objectives and targets set should be based on a combination of the legal requirements, the significance of the identified environmental aspect and its impacts, technological options, alternatives, financial limitations, business requirements, and the views of interested and affected parties.

2.6.4 The objectives should be specific and the targets measurable. These objectives and targets should address the identified root cause as identified in 2.5.

2.6.5 When objectives and targets are set, they should be linked to measurable environmental key performance indicators (KPIs) for measuring, monitoring, and auditing purposes.

2.7 Determine actions to be taken to meet objectives and targets – project or operational actions

2.7.1 The action required to achieve the set objective and targets in order to address the root cause should be established. Solutions to problem areas should be quantified, that is, Eskom procedures or standards, specialists' reports and recommendations, and past successful solutions. The project actions could be one of the following:

a) **Plant:** that is, waste disposal site, storm water system, hazardous material store, rehabilitation of soil erosion areas, water treatment equipment, an oil trap, storm water berms, waste collection and separation site, new plant, screening vegetation and other forms of landscaping, etc. (This should include the actual location of plant and construction and operational procedures.)

b) **Procedures:** that is, the development of specific operational procedures for the carrying out of certain activities: to preserve archaeological sites, bush clearing, herbicide application, waste minimisation, water conservation, dust suppression, noise minimisation, etc. (The procedure should include responsibilities, reporting, monitoring, and conformance with permit requirements.)

c) **Personnel:** that is, training and skills development, awareness, incentives, penalties, etc.

2.7.2 The project actions are the key aspect of the EMP in that they are the actions taken that will achieve the required end state.

2.8 Integrate into project/operational systems, documentation, contracts

2.8.1 The actions in 2.7 should be integrated into applicable existing processes, systems, and documentation that are part of either the project for the development or of the existing operation.

2.8.1.1 For new development projects: the EMP action requirements should be integrated into the scope of work or work description as part of tender documents and subsequent contracts. A register (see Annex D) should be maintained identifying the EMP requirements and where they can be located within the contract documentation, that is, design specifications, procedures, work instructions, etc.

2.8.1.2 For existing sites: the EMP action requirements should become individual projects or specific responsibilities of an individual or team. For projects, the EMP shall be integrated into the scope of work or work description as part of the tender documents and subsequent contracts. A register (see Annex D) should be maintained identifying the EMP requirements and where they can be located within the operation.

2.8.2 In some cases, an EMP could be represented in a single document, but for full effectiveness, it should be integrated into the appropriate project or operational systems and documentation.

2.9 KPIs

2.9.1 Link performance of the EMP to existing business performance measures and reporting practices.

2.10 Implement EMP action

2.10.1 Once the EMP has been formulated, accountabilities set, and resources made available, the EMP should be implemented. This may, for a new project, be in terms of a single contract or many contracts with contractors and subcontractors.

2.10.2 For an existing site, it may be action undertaken by the responsible BU or individuals. It may also be in the awarding of contracts to undertake a specific project or part of operational and maintenance practices.

2.11 Monitoring and audit

2.11.1 Monitoring: the EMP will only be effective if there are mechanisms to measure and report on the KPIs. Together with the KPIs, there should be a monitoring programme in place to not only measure the EMP requirements, but also the environmental variables – that is, to measure not only conformance, but also environmental aspects and impacts that have not been accounted for in the EMP that are or could result in significant environmental impacts for which corrective action is required.

2.11.2 The monitoring should include evaluation of compliance with statutory and other legal (contract) requirements. The results of monitoring should be analysed and used to identify areas of good performance as well as those requiring corrective and preventive action.

2.11.3 Audit: to ensure the undertaking and conformance with the EMP requirements, an audit should be undertaken to close the EMP cycle. The audit can be used to identify non-conformances for which corrective action should be taken. The audit can also be used to identify findings that can be used to improve other EMPs.

2.11.4 Audit findings should result in updating baseline information and the assessment techniques used in the identification of environmental issues and impacts.

2.12 General environmental aspects to be addressed in an EMP

(Refer to respective division or Eskom subsidiary needs for specific aspects.)

2.12.1 Air quality

2.12.1.1 The negotiated CAPCO registration certificate requirements for power stations shall be adhered to.

2.12.1.2 The regulations issued in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983), section 6 (j) in respect of burning veld shall be adhered to.

2.12.1.3 In situations where firebreaks must be constructed to prevent fires spreading from the site as well as fires entering the site from adjacent land, these shall be constructed in accordance with the National Veld and Forest Fires Act, Act No 101 of 1998.

2.12.1.4 Vehicle drivers shall drive at moderate speed on site access roads to minimise or eliminate dust pollution. In urban areas, access roads shall be treated to reduce dust pollution (tar, concrete, chipstone, etc.).

2.12.1.5 Fumes (black smoke) emitted from vehicles and equipment/appliances shall be monitored and action taken to avoid causing a nuisance to the public.

2.12.1.6 Burning of waste material such as vegetation and old cleaning materials resulting from maintenance activities at a site is strictly prohibited.

2.12.1.7 Ash disposal areas shall be managed (rehabilitated) to minimise their potential for dust pollution.

2.12.2 Water quality

2.12.2.1 In accordance with the requirements of the Water Act, surface or groundwater shall not be polluted (oil, petrol, cleaning materials, herbicides, power station “dirty water” and ash, etc.) under any circumstances. Storm water shall be managed to ensure that it does not become polluted.

2.12.2.2 An adequate sewage facility (big enough capacity, no leaks, and emptied regularly in the case of a septic tank) shall be established, and the permit requirements of treatment equipment shall be adhered to.

2.12.2.3 Proper toilet facilities (possibly portable) shall be provided for field staff.

2.12.2.4 All hazardous substances at the site shall be adequately stored and accurately identified, recorded, and labelled (that is, polychlorinated biphenyls – PCB/Askarel). All waste to be disposed of at an appropriate waste facility.

2.12.3 Land management

2.12.3.1 The boundaries of the Eskom site shall be clearly identified and demarcated to ensure that the whole site is addressed in the EMP (the site usually extends far beyond the security fence).

2.12.3.2 The site’s title deed or deed of servitude shall be obtained, and the conditions contained therein shall be adhered to.

2.12.3.3 All bush clearing shall be undertaken in terms of an EMP and in conformance with legislation and Eskom policy and standard requirements.

2.12.3.4 Protected or endangered plant and animal species occurring on Eskom sites and servitudes shall be identified and protected from Eskom’s activities or plant. Permits shall be obtained from the relevant authority for the clearing of protected trees (see Environmental

Procedure – Land – Procedure for vegetation clearance and maintenance within overhead power line servitudes and on Eskom-owned land).

2.12.3.5 Eskom shall adhere to the legal requirements in terms of herbicide usage.

2.12.3.6 Fences and gates of property owners shall not be damaged when gaining access to the site. The condition of Eskom gates and locks shall be regularly monitored to ensure that they are secure (that is, to prevent animals getting in or out as well as to prevent access to the site by unauthorised personnel). Gates shall always be kept closed.

2.12.3.7 Access roads and site ground shall be monitored for deterioration and possible erosion. Soil erosion shall be prevented at all times. Proactive measures shall be implemented to curb erosion and to rehabilitate eroded areas.

2.12.3.8 During construction of new sites/power lines, concrete dumping/washing is to be done on the piles of ground removed from the foundation excavations, which shall then be placed back into the foundation excavations.

2.12.3.9 Weeds shall not be allowed to grow or spread. Invasive plants and weeds shall be identified and controlled to prevent their spreading.

2.12.3.10 All animal fatalities due to the site infrastructure such as bird collisions and small mammal electrocutions shall be identified, and appropriate action shall be implemented to minimise or eliminate the problem. Wildlife interactions shall be reported, recorded, and investigated in compliance with BU procedure, and after action has been implemented to solve the problem, they shall be followed up to assess the effectiveness of the remedial measures taken.

2.12.3.11 No fires shall be made for waste destruction. Firebreaks shall be constructed to prevent fires from spreading from or into the site. Regulations in respect of veld burning issued under the Conservation of Agricultural Resources Act, Act No 43 of 1983, section 6 (j) shall be adhered to. These shall align with the Forest Act, Act No 122 of 1984 and the National Veld and Forest Fires Act, No 101 of 1998.

2.12.3.12 A plan/programme for the landscaping of the site shall be considered. This shall cover the aesthetics of the site (screening of site using embankments, walls, and/or vegetation) and rehabilitation.

2.12.4 Community issues

2.12.4.1 A list of the neighbouring properties, property owners' names, addresses, and telephone numbers, and land use shall be drawn up.

2.12.4.2 A plan of action shall be concluded with the neighbouring property owners and the relevant authorities in the case of an emergency (veld fire, oil spillage, water contamination, etc.). Eskom contact names and telephone numbers shall be given to all neighbours, and vice versa.

2.12.4.3 Property owners and local residents shall be treated with respect and courtesy at all times.

2.12.4.4 The culture and lifestyles of the communities living in close proximity to the site and work sites shall be respected.

2.12.4.5 Removal (pilfering) of agricultural products (sugar cane, fruit, vegetables, stock, fire wood, etc.) and poaching are prohibited. Receipts shall be obtained for any merchandise purchased or received from landowners.

2.12.4.6 Environmental clauses shall be included in contract documents for all contractors (the services of contractors with proven track records of sound environmental performance shall be used).

2.12.4.7 Graves, archaeological sites, and sites of historical interest (as defined in the National Heritage Resources Act, Act No 25 of 1999) in close proximity to an Eskom site or other work sites shall be protected and treated with respect.

2.12.4.8 All complaints shall be reported, recorded, and investigated in compliance with the BU/procedure.

2.12.4.9 Eskom sites shall be evaluated in terms of their contribution to noise pollution, and actions shall be implemented to ensure conformance with legal requirements and taking into consideration the views of adjacent land users/landowners.

3 Supporting clauses

3.1 Scope

The purpose of this document is to ensure that:

a) there is a process to identify existing negative environmental impacts or to predict potential negative environmental impacts;

b) objectives and targets are set to ensure that negative impacts are mitigated and existing impacts rehabilitated;

c) resources and responsibilities are allocated to each target;

d) actions are implemented to mitigate the identified negative environmental impacts; and

e) monitoring programmes are developed to track the actions that have been implemented to ensure the effectiveness of the actions.

This procedure is applicable to Eskom Holdings (Pty) Limited and its divisions and wholly owned subsidiaries.

3.2 Definitions and abbreviations

For general definitions, refer to the Environmental Procedure. Definitions specific to this document are repeated below

BU	Business unit
CAPCO	Chief Air Pollution Control Officer
EIA	Environmental impact assessment
EMP	environmental management programme
Environmental management programme	A programme that seeks to achieve a required environmental end state and describes how activities that could have a negative impact on the environment will be managed and monitored and impacted areas rehabilitated.

3.3 Normative references

The following documents contain provisions that, through reference in the text, constitute requirements of this procedure. Latest versions apply.

At the time of publication, the editions indicated were valid. All controlled documents are subject to revision, and parties to agreements based on this guideline are encouraged to investigate the possibility of applying the most recent edition of the documents listed below.

Information on currently valid national and international standards and specifications can be obtained from the Information Centre and Eskom Documentation Centre at Megawatt Park.

SANS ISO 14015, *Environmental management – Environmental assessment of sites and organisations (EASO)*

3.4 Implementation date

The implementation date will be 1 January 2007.

3.5 Monitoring process

Reporting on EMP implementation is included in Eskom's Annual Report. This information is subject to internal and external audit.

3.6 Related documents

Environmental Land Policy EPL 32-97

Environmental Procedure – Land – Procedure for vegetation clearance and maintenance within overhead power line servitudes and on Eskom-owned land EPC 32-96

3.7 Authorisations

This document has been seen and accepted by the ELC and duly authorised by the General Manager Corporate Sustainability.

3.8 Revisions

Date	Rev	Compiler	Remarks
Dec 2005	2	Dave Lucas	Revised totally in terms of policy review process.

4 Annexes

Annex A

(Informative)

There are three main categories of documentation that one should have access to for EMP development. These three sets of documents provide the link between Eskom's activities and the legal requirements that have to be complied with.

- Eskom Legal Register that links Eskom activities to the relevant legal requirements
- Specific pieces of legislation as made mention of in the Legal Register above
- The relevant Eskom control documentation that is based on ensuring compliance with legislation through controlling how activities need to take place

The link to relevant Eskom environmental documentation and legislation can be found at the following link: http://teknowrep/cs/.

A.1 Eskom-controlled documentation

Many of the standards and procedures are being combined into an overall Control Document for the Environmental Procedure. It contains all supporting documentation and clauses required for environmental procedures in Eskom and should be referenced in all documentation forming part of the procedure. All requirements and clauses shall apply to all supporting documentation unless specifically mentioned.

Access to the relevant environmental documentation can be gained through the following link: http://teknowrep/cs/.

Eskom environmental documentation

- SHE Policy
- Environmental Liaison Committee (ELC) Reporting Procedure
- ELC Terms of Reference
- Air Quality Management Policy
- Water Management Policy
- Climate Change Policy
- Environmental Land Policy
- Environmental Procedure, containing sections on the following:
  - Environmental management system
  - Environmental management programme
  - Waste management
  - Land management
  - Electro and magnetic fields
  - Due diligence
  - Reporting on environmental expenditure

Annex A

(Continued)

A.2 Environmental statutory requirements

Eskom Environmental Legal Register

These environmental legal registers have been developed based on the activities of Eskom and, in particular, those activities that have an impact on the environment. They are based on the relevant divisional aspect registers, which identify the aspects of the division's activities that have a significant impact on the environment.

The registers have been developed by Imbewu Legal Consultants to fulfil the ISO 14001 Environmental Management System Standard requirements for all divisions in Eskom.

The Eskom environmental legal registers can be found at http://teknowrep/cs/legal/.

The Eskom Environmental Legal Register consists of the following:

- Eskom Group Environmental Legal Register
- Corporate Sustainability (SHE) Legal Register
- Generation Environmental Legal Register
- Distribution Environmental Legal Register
- Finance Environmental Legal Register
- Transmission Environmental Legal Register
- Abbreviation Index and the Environmental Legal Commentary

All of these may be accessed directly from this main index or from the index of each of the registers.

The legal registers cover all South African national legislation and regulations and also refer to relevant international conventions, which are discussed in further detail in the Eskom Environmental Legal Commentary. Relevant Eskom policy documents have been referred to in the tables. It is important to note that the register covers generic legal obligations and that each facility will need to investigate its own site-specific legal requirements, for example, provincial legislation, local by-laws, permits, contracts, etc., to ensure that all legal obligations that are applicable to the particular facility are covered.

At the beginning of each aspect table, the generally applicable legal requirements that apply to that aspect are set out, for example, the requirements that are applicable to air emissions generally. Legal obligations relevant to particular components of the aspect, for example, carbon dioxide or dust emissions, are then dealt with separately.

The best way to access the applicable legal obligations is to select the aspect that one wishes to investigate by first going to the index of aspects in the Environmental Register, double-clicking on that aspect, and then perusing the legal obligations and guidelines set out in the table relating to that aspect. All of the phrases underlined in the tables on legal obligations (that is, the main source of the legal obligation, set out in abbreviated form, for example, NEMA for National Environmental Management Act) indicate that the text has been linked by Eskom to the relevant section of the particular Act or regulation included in the Eskom environmental legislation database.

A brief description of the essence of the legal provision and its relevance to Eskom is provided. Where further information has been included in the Legal Commentary on the particular obligation listed in the table, a link  is provided under the obligation directly to that point in the Legal Commentary.

Annex A

(Concluded)

The Legal Commentary should be read in conjunction with the tables summarising the applicable legal obligations. It is important to note that although hard copies of the Legal Register have been provided for ease of reference, the register has been specifically compiled for electronic use and so that the legal obligations could be directly linked to the actual legislation contained in the Eskom environmental database.

The legislation database is updated on a regular basis, depending on the nature and extent of changes in relevant legislation. The legal registers have been prepared to assist Eskom with compliance with generally applicable legal obligations and are intended as a guideline only. The legal registers are not a substitute for detailed legal advice on specific issues and do not cover all legal obligations. Should you require more detailed legal advice or have any queries in regard to the content or application of the registers, kindly contact Catherine Warburton at IMBEWU Enviro-Legal Specialists (Pty) Ltd on (011) 325-4928.

Environmental legislation

Eskom has access to a legal database (http://teknowrep/cs/legal/) to access relevant environmental legislation. This database only covers national legislation, provincial legislation, and some local legislation. Please consult your local authority to get by-laws applicable to your business unit.

Relevant external legal links

ECOLEX: Gateway to Environmental Law	A gateway to environmental law, (international site by UNEP, looking at international treaties, national legislation, court decisions, and literature)	This site has a good search engine.
SA Government	Official government documents	Sometimes difficult to find specific document.
Acts Online	Access to South African Acts	Simple to access specific acts; not sure how up to date the site is.

Annex B

(Normative)

B.1 Checklist for required power line baseline data

Power line name: ……...

Responsible person/BU: ……..

Assessor's name: …….. Unique no: ……

Assessment date: ……..

No	Item	Yes	No	Reference/location	Action
1	1:50,000 map with annotated power lines and towers				
2	Spanning plans/profiles				
3	Vegetation types				
4	Soil types				
5	General climate				
6	Vegetation control procedures/standards				
7	Herbicide procedures/standards				
8	Herbicide Register				
9	Bird Interaction Register				
10	Sections of power line fitted with bird markers/protectors/shields/guards				
11	Vegetation control contracts in place				
12	Affected landowners' property details, names, addresses, telephone numbers, and land use				
13	Lightning frequency				
14	Sensitive environmental areas				
15	Complaints/Communication Register				
16	Archaeological/historical sites				
17	Technical data on the power line				
18	Line slope analysis (slope and soil type and rainfall)				
19	Schedule of landowners' "special conditions"				
20					
21					
22					
23					
24					

Annex B

(Continued)

B.2 Checklist for baseline data required for land, substation, and radio repeater sites

Site name: ……

Responsible person: ……..

Assessor's name: …… Unique no: ……

Assessment date: ……

No	Item	Yes	No	Reference/location	Action
1	Map showing extent of Eskom property (servitude or property diagram)				
2	Layout map showing site layout on Eskom property				
3	Plans showing water supply, sewage discharge, oil traps/bund walls/canals/ holding dams, storm water drains, fire hydrants				
4	Register of All Hazardous Substances and their hazardous data sheets				
5	Waste Register (domestic, medical, hazardous, garden, building rubble)				
6	Herbicide Register				
7	Register of Legal Requirements				
8	Register of Operational Policies, Standards, Procedures, and Work Instructions				
9	Register of All Operations Taking Place on the Site				
10	Register of All Contracts in Place				
11	Soil type				
12	Problematic vegetation				
13	Adjacent property descriptions, landowners' names, addresses, telephone numbers, and land use				
14	Environmental emergency plan				
15	Title deeds of property				
16	Special conditions in terms of land use zoning and landowners' "special agreements"				
17	Firebreak statutory requirements and programme				
18					
19					
20					
21					
22					

Annex B

(Continued)

B.3 Checklist for baseline data required for power station sites

Site name: ……

Responsible person: ……..

Assessor's name: …… Unique no: ……

Assessment date: ……

No	Item	Yes	No	Reference/location	Action
1	Map showing extent of Eskom properties (property diagrams)				
2	CAPCO registration certificate				
3	Water quality requirements (permits)				
4	Registration certificate of waste site				
5	Copies of title deeds of properties				
6	All lease contracts of Eskom land with third parties				
7	Special conditions in terms of land use zoning and landowners' "special agreements"				
8	Layout map showing site layout on Eskom property and associated plant and activities				
9	Plans/schematic drawings showing coal stockyard, coal bunkers and mills, coal conveyors, dumping of coal discards				
10	Plans showing location and drainage at precipitators, hoppers, ash and slurry plant, ash pipelines/conveyors, ash disposal areas				
11	Plans showing location and drainage at turbine lubricating store and processing plant, transformer oil purification and processing plant, bulk oil and lighting up plant, clean and dirty oil stores				
12	Plans showing water systems, that is, potable water treatment plant, demineralisation plant, condensate polishing plant, chemical laboratories and stores, storm water drainage system, blowdowns, dirty water effluent dam/station drain dams, clean water dams, intermediate/emergency dams, storm water disposal systems, sewage plant, raw water reservoir, diversion of streams				

Annex B

(Concluded)

No	Item	Yes	No	Reference/location	Action
13	Plans showing plantations, nursery yard, rehabilitated and landscaped areas, recreational areas, degraded areas				
14	Plans showing power lines, airstrip, roads, parking areas, boundary fences, security fences, firebreaks, fire station and training area, medical centre, buildings, workshops, accommodation, leased areas, surrounding land use, waste collection and disposal areas				
15	Register of All Hazardous Substances and their hazardous data sheets				
16	Waste Register (domestic, medical, hazardous, garden, building rubble, oil, metals)				
17	Herbicide Register				
18	Register of Legal Requirements				
19	Register of Operational Policies, Standards, Procedures, and Work Instructions				
20	Register of All Operations Taking Place on the Site that Affect Environmental Performance				
21	Register of All Contracts in Place				
22	Soil type				
23	Problematic vegetation				
24	Adjacent property descriptions, landowners' names, addresses, telephone numbers, and land use				
25	Environmental emergency plans				
26	Firebreak statutory requirements and programme				
27	Climate and weather				
28	All environmentally-related permits and certificates and correspondence				
29	Environmental monitoring results, reports, and performance indicators				
30					
31					
32					
33					
34					
35					
36					
37					
38					

Annex C

(Normative)

C.1 Checklist for identification of environmental aspects and impacts on power line routes

Site name: ……

Responsible person: ……..

Assessor's name: …… Unique no: ……

Assessment date: ……

From tower no: …….. To tower no: ……

(Environmental issues identified shall be marked up on a sketch or map of power line.)

Checklist for issues to be identified

Aspect	Aspect	Aspect
Access road: • Centre line • Other	Bird interactions • Collisions • Electrocutions • Pollution • Nests • Need for remedial action	Storm water drainage • Natural • Berms • Channels • Pipes
Soil erosion • Tower position • Access road • River crossing • Other	Eskom gates • General condition • Closed and locked • Locks	Social activities under power line • Houses • Farming • Structures • Mining • Airfields • Power lines • Telephone lines • Other
Bush encroachment • Clearance • Fire risk	Construction material • Concrete • Steel works • Insulators • Conductor • General	Visual impact
Alien/invader vegetation • Access • Fire risk • Clearance • Spread		Soil type • Sandy • Clay • Rocks • Wet
Protection of natural vegetation	Fence crossings • General condition	Lightning
Archaeological/historical/ natural heritage/cultural sites	River crossings	Complaints or requests from landowners
Noise complaints	Risk to airfields and flight paths (crop spraying and game management)	Radio/TV interference

Annex C

(Continued)

C.2 Field checklist to identify environmental aspect to be corrected

			Impact			
Pole no	**Aspect**	**Description**	**N/A**	**High**	**Med**	**Low**

Annex C

(Continued)

C.3 Checklist for identification of environmental aspects and impacts at Eskom sites, land, substation, and radio repeater sites

Site name: ……..

Responsible person: ……..

Assessor's name: …… Unique no: ……

Assessment date: …….

(Environmental aspect identified should be marked up on this sketch.)

	Aspect	**Description**	**Impact**			
			N/A	**High**	**Med**	**Low**
	Erosion • HV yard • Security fences • Storm water • Access road					
	Vegetation control • HV yard • Security fences • Outside fence area • Firebreak • Other					
	Storm water • Outlet • HV yard • Terraces					

Annex C

(Continued)

			Impact			
	Aspect	**Description**	**N/A**	**High**	**Med**	**Low**
	Leaching of herbicides • Security fences • Outside Eskom property					
	Oil spills • HV yard • Oil dam • Storage area					
	Littering • General • Maintenance • Construction					
	Waste disposal • Waste separation • Bins • Site disposal • Contract for disposal					
	Water • Municipal • Storm water collection • Borehole					
	Sewerage • Municipal • Septic tank • French drain					
	Hazardous material store • Register • Data sheets • Ventilation • Storage					
	Security of oil dam • Security fence • Shade netting					
	Animal interactions • Security fence • HV yard (pollution/ nests) • Oil dam					
	PCB labelling					
	Firebreak					
	Oil trap					
	Landscaping					
	Visual impact					
	Complaints and requests by landowners					
	Noise pollution and complaints					
	Eskom fences and gates • General condition					

	• Closed and locked • Locks					

Annex C

(Continued)

C.4 Checklist for identification of environmental aspects and impacts at power station sites

Site name: ……

Responsible person: ……

Assessor's name: …… Unique no: ……

Assessment date: ……..

(Environmental aspect identified should be marked up on a site plan.)

			Impact			
	Aspect	**Description**	**N/A**	**High**	**Med**	**Low**
	Erosion • General site • Security fences • Storm water • Access roads					
	Vegetation control • General site • Security fences • Outside fence area • Firebreak • Leased land • Other					
	Storm water • Outlet • Internal pollution • Network					
	Leaching of herbicides • Security fences • Outside Eskom property					
	Oil spills • Oil and grit plant • Turbine lubricating store and processing plant • Transformer oil purification and processing plant • Bulk oil and lighting up plant • Silt traps • Oil traps • Oil storage areas • General site					

Annex C

(Continued)

			Impact			
	Aspect	**Description**	**N/A**	**High**	**Med**	**Low**
	Waste disposal • Waste separation • Bins • Holding/separation site • P/S waste site • Site disposal • Contract for disposal					
	Water • Cooling towers • Cooling water pump house • Potable water treatment plant • Demineralisation plant • Condensate polishing plant • Chemical laboratory and stores • Storm water drainage system • Storm water discharge • Borehole analysis • Blowdowns • Dirty water effluent dams/station drain dams • Clean water dams • Intermediate/ emergency dams					
	Sewerage • Plant • Maintenance • Capacity • Effluent					
	Hazardous material store • Register • Data sheets • Ventilation • Storage					
	General infrastructure • Security fences • Power lines • Airstrip • Roads • Parking areas • Boundary fence • Firebreaks • Fire station and testing area • Medical centre • Buildings • Workshops • Accommodation • Leased farm land					
	Animal interactions • Security fence					

	• Plant • Dams • Other					

Annex C

(Concluded)

			Impact			
	Aspect	**Description**	**N/A**	**High**	**Med**	**Low**
	PCB labelling					
	Firebreak					
	Landscaping					
	Visual impact					
	Complaints and requests by landowners					
	Noise pollution and complaints					
	Eskom fences and gates • General condition • Closed and locked • Locks					
	Air pollution • Stacks • Coal stockyard • Coal discards • Ash disposal • Waste site					
	Coal • Coal stockyard • Coal bunkers and mills • Coal conveyors • Coal discards					
	Ash • Ash dams • Ash water return dams • Ash water canals • Precipitators 7 hoppers • Particulate emissions • Ash crushers					
	Waste • General littering • Bins • Collection areas • Contracts • Disposal site • Hazardous • Domestic • Building • Garden • Medical • Oil • Metals					

Annex D

(Normative)

EMP Register

D.1 Environmental Management Programme Register

Site/power line: …… Compiled by: …… Date: …….. Revision date: ……

Activity/location	Environmental aspect	Impact (Y/N)	Significance (H/M/L)	Regulatory requirement	Action to be taken	Responsible person/team	Due date	References/ remarks	Date completed

Safety, Health and Environment (SHE) Policy

Guiding principles by which we operate

- We are committed to safety, health and environmental excellence and will conduct business with respect and care for people and the environment and, in so doing, will ensure that adequate resources are available for SHE management.
- We will ensure that SHE is an integral part of our operations and that no operating condition, or urgency of service, can justify endangering the life of anyone or cause injury or damage to the environment

Compliance to this policy and applicable regulations shall be the responsibility of every employee and contractor.

This statement is an extract from the Eskom Safety, Health and Environment (SHE) Policy: No 32-94. Rev 2 - August 2007

Jacob Maroga
Chief Executive

Eskom

With Energy, Anything is Possible

ANNEXURE C:
ENVIRONMENTAL LEGISLATION LIST

List of Legislation

This annexure represents a list of legislation that is considered to be applicable to the EMP and does not necessarily incorporate all legislation. Please refer to Chapter 6 of the EIR for an explanation of the legislation list in this annexure.

Acts and subservient regulations, and draft legislation applicable include:

- The Constitution of the Republic of South Africa ("the Constitution");
- Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000);
- Promotion of Access to Information Act, 2000 (Act No. 2 of 2000);
- National Nuclear Regulator Act, 1999 (Act No. 47 of 1999);
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003);
- National Environmental Management: Air Quality Act, 2003 (Act No. 39 of 2004);
- National Water Act, 1998 (Act No. 36 of 1998);
- The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);
- Sea-Shore Act, 1935 (Act No. 21 of 1935);
- The Maritime Zones Act, 1994 (Act No. 15 of 1994);
- National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008);
- The Conservation of Agricultural Resources Act (Act No. 43 of 1983);
- The National Heritage Resources Act (Act No. 25 of 1999);
- Hazardous Substances Act (Act No. 15 of 1973);
- Regulations for Transportation of Dangerous Goods and Substances;
- Non Proliferation of Weapons of Mass Destruction Act, 1993 (Act No. 87 of 1993);
- The National Key Points Act, 1980 (Act No. 34 of 2008);
- Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965);
- Disaster Management Act, 2002 (Act No. 57 of 2002);
- Electricity Act, 1987 (Act No. 41 of 1987);
- National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977);
- National Nuclear Regulator Act, 1999 (Act No. 47 of 1999);
- Nuclear Energy Act, 1999 (Act No. 46 of 1999);
- National Road Traffic Act, 1996 (Act No. 94 of 1996);
- The Civil Aviation Act, 2009 (Act No. 13 of 2009);
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);
- Physical Planning Act, 1991 (Act No. 135 of 1991);
- National Health Act, 2003 (Act No. 61 of 2003); and
- The National Radioactive Waste Disposal Institute Act, 2008 (Act No. 53 of 2008).

Policies, plans, regulations and treaties applicable include:

- The White Paper on the Energy Policy of the Republic of South Africa;
- The Radioactive Waste Management Policy and Strategy;
- Integrated Energy Plan (IEP);
- National Integrated Resource Plan (NIRP);
- Eskom's Integrated Strategic Electricity Planning (ISEP);
- Energy Efficiency Strategy of the Republic of South Africa;
- Energy Security Master Plan – Electricity (2007-2025);
- National Response to South Africa's Electricity Shortage;
- National Nuclear Disaster Management Plan;

- The Nuclear Non-Proliferation Treaty and domestic implementation arrangements, National Spatial Biodiversity Assessment (NSBA);
- National Biodiversity Strategy Action Plan (NBSAP);
- Provincial Growth and Development Strategy Green Paper;
- Integrated Development Plans (IDP) of relevant municipalities;
- Regulations for the safe transport of radioactive material (IAEA No TS-R-1) (ST-1 revised);
- Government Notice R.287, promulgated in terms of section 38(4) of the National Nuclear Regulator Act, 1999 (Act 47 of 1999);
- Government Notice R. 388, promulgated in terms of section 36 and section 47 of the National Nuclear Regulator Act, 1999 (Act 47 of 1999);
- Government Notice R.581, promulgated in terms of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999);
- National Nuclear Non-Proliferation Treaty enacted by the Nuclear Energy Act;
- The Basel Convention on Trans-Boundary Waste Transport;
- IAEA Convention on Nuclear Safety; and
- Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management.

ANNEXURE D:
PRELIMINARY LIST OF METHOD STATEMENTS

Preliminary List of Method Statements

During the Construction and Operation Phases of the project Method Statements should be developed to ensure effective and efficient mitigation. The flowing document represents the preliminary list of method statement that should be developed, as the project unfolds it may be necessary to develop more Method Statements and these should be added to the list.

1. Construction Phase

1.1. Air Quality

- Develop a method statement for addressing and management of Air quality issues identified through monitoring (EMP Section 7.1.1.a)
- Address any air pollution issues that are identified during the air quality monitoring.

1.2. Geology and Soils

- Develop a method statement for access tracks to the beach through the dunes (specifically avoiding bird roosting sites and promoting dune rehabilitation) (EMP Section 7.1.2.a)
- Define, design and include on the site master plan any necessary access tracks to the beach through the dunes in a way that minimises impact on dune and associated habitat (e.g. bird roosting sites), minimises the track footprint, prevents dune blow-out and allows for effective and complete dune rehabilitation.
- Develop a method statement for the construction of pylons and stringing of conductors with helicopters and 4x4 vehicles/ quad bikes on designated tracks (EMP Section 7.1.2.a)
- Provide and arrange for the construction of these pylons and the stringing of the conductors to be accomplished primarily by helicopters, with the assistance of 4x4 vehicles and quad bikes on designated tracks.
- Develop a method statement for the storage of topsoil separately, effectively and securely that limits erosion and dust (EMP Section 7.1.2.b)
- Store the topsoil separately (from general fill, rubble, etc.), effectively and securely in a designated area for later use in rehabilitation in stockpiles in a manner that would limit erosion and dust.
- Develop a method statement for the stabilisation of cleared areas to prevent and control erosion (EMP Section 7.1.2.c)
- Stabilise and manage cleared areas to prevent and control erosion by applying a suitable method of stabilisation.
- Develop a method statement for the clearance of vegetation (specifically to benefit from the stormwater absorption, erosion protection and dust control properties of the vegetation cover) (EMP Section 7.1.2.c)
- Areas to be cleared should be restricted to a minimum, sequentially and when necessary to avoid having large portions of land void of vegetation for long periods of time in order to benefit from the stormwater absorption, erosion protection and dust control properties of the vegetation cover.
- Develop a method statement for disposal of ‘non-hazardous’ spoil at deep offshore sites at a pumping rate of 2.06m/s (EMP Section 7.1.2.e)

- Dispose of ‘non-hazardous’ spoil in the ocean at a deep offshore site the distances from shore (6km offshore) and at a medium pumping rate of no more than 2.06m/s as recommended in the Oceanographic Assessment (Appendix E16 of the EIR) and the Marine Assessment (Appendix E15 of the EIR)

1.3. Water Management

- Develop a method statement to assess all project activities associated with water use requirements to ensure that the relevant Water Use License (WUL) is applied for and received prior to such a use commencing (EMP Section 7.1.3. b)
- Assess all project activities and associated water use requirements (e.g. treated wastewater discharge and water abstraction) well in advance in order to ensure the relevant Water Use License (WUL) is applied for where required; and ensure that such a WUL is in place and all associated conditions complied with prior to such use commencing.
- Develop a method statement for water that will be temporarily brought in (EMP Section 7.1.3.d).
- Install site services for water provision, as soon as possible before the main construction / operation activities commence but provided that the required approvals/licenses have been obtained, e.g.:
    - Connect to a water reticulation system, preferably tapping into a regional supply scheme rather than a local scheme;
    - Provide an on-site or local desalination plant and associated beach wells as soon as possible during early construction;
    - if groundwater abstractions wells are used during early construction, monitor groundwater levels to ensure that there is no impact on neighbouring water users, and/or
    - If water is temporarily brought in by tanker (during construction), ensure that it is provided by an appropriately licensed local water supplier.
- A method statement to remediate groundwater pollution immediately must be developed (EMP Section 7.1.3.e).
- Develop effective groundwater remediation procedures, and make the arrangements and take preparations required to put these in place, to allow for immediate implementation prior to any potential impact on groundwater quality (with only minor, insignificant levels of contamination allowed to be mitigated with natural attenuation).
- Develop a method statement for constructing a suitable a cut-off wall that effectively limits the radius of drawdown and minimises the impact on seasonal wetlands and/or groundwater quality (EMP Section 7.1.3.g).
- Provide for the dewatering of the construction area and subsequent excavated areas by constructing a suitable a cut-off wall that effectively limits the radius of drawdown and minimises the impact on seasonal wetlands and/or groundwater quality.
- Develop a method statement to ensure that the nuclear power station is positioned optimally within the corridor considered in the EIA and to the recommendations of the geohydrological modelling (EMP Section 7.1.3.g).
- Consider the abovementioned requirements for optimal siting (positioning) of the nuclear power station within the corridor considered during the EIA with the aid of geohydrological modelling / remodelling (by suitably qualified specialists) of the radius of the draw-down area.
- Develop a Storm Water Management Plan (EMP Section 7.1.3.k).

- Develop a method statement for the control of stormwater that ensures rainwater is diverted around and away from the construction impacted areas in a way that would retain such rainwater as uncontaminated (EMP Section 7.1.3.k).
- Design and construct storm water control berms (e.g. trench and/or earth barriers) to divert rainwater around and away from the construction impacted areas, operational areas and/or decommissioning impacted areas in a way that would retain such rainwater as uncontaminated.

1.4. Sewage Management

- Develop a method statement to ensure that the removal of sewage from chemical toilets and/or sewage sludge from package plants is done regularly and disposed of in a responsible manner (i.e. a municipal sewage treatment plant or an appropriately designed on-site sewerage treatment plant). The method statement should also ensure that toilets are emptied and maintained hygienically on a regular basis all the time; and that they are emptied before and left emptied over long weekends and builders' holidays (EMP Section 7.1.4.a and 7.1.12.h).
- Appoint a service provider to remove sewage from the chemical toilets and/or sewage sludge from package plants on a regular basis; and provide and ensure for this sewage / sewage sludge to be disposed of at a municipal sewage treatment plant or alternatively on an appropriately designed on-site sewerage treatment plant.
- Provide for and ensure that toilets are emptied and maintained hygienically on a regular basis all the time; and that they are emptied before and left emptied over long weekends and builders' holidays.
- Develop a method statement to ensure that sanitation facilities and associated systems effectively contain, treat and/or dispose of raw sewage and sewage sludges such that potential leakage or spillage is effectively prevented and that any 'clean' wastewater is discharged in accordance with all legal requirements (EMP Sectipn 7.1.13.f).
- Design, implement and maintain sanitation facilities and associated systems for containment, treatment and/or disposal of raw sewage and sewage sludges such that potential leakage or spillage is effectively prevented and that any 'clean' wastewater is discharged in accordance with all legal requirements (e.g. Water Use License).

1.5. Wetland Management

- Develop a Method Statement to ensure special protective measures (prevent / minimise the impact on these resources) of wetlands / streams in close proximity during construction of roads and associated bridges or culverts (EMP Section 7.1.5.a).
- Develop, implement and maintain special protective measures during construction of roads and associated bridges or culverts in close proximity of wetlands / streams to prevent / minimise the impact on these resources.

1.6. Flora Management

- Develop a Method Statement identifying and eradicating alien invasive vegetation systematically and fully in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (EMP Section 7.1.6.a).

- Identify and manage all declared aliens in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and eradicate alien invasive vegetation systematically and fully.

1.7. Site Remediation, Rehabilitation and Re-vegetation

- Develop and implement a Detailed Rehabilitation Plan (EMP Section 7.1.7.a).
- Develop a method statement for repairing damage to re-vegetated areas promptly (EMP Section 7.1.7.d).
- Repair any damage to re-vegetated areas promptly.

1.8. Socio-economic Environment Management

- Develop a method statement to ensure that construction workers are transported to and from the site in a way that reasonably minimises traffic impact (EMP Section 7.1.10.a).
- Ensure that construction workers are transported to and from the site in a way that reasonably minimises traffic impact; i.e. implement recommendations from the Traffic Impact Assessment, for example that the construction workers should be transported to and from the site by contracted buses.
- Develop a method statement for the transporting at night (EMP Section 7.1.10.a).
- Detailed traffic detours and logistics should be investigated in a comprehensive Construction Traffic Management Plan, which should include a specific plan for transporting at night.
- Develop a labour policy to facilitate the employment and skills training of locals and the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority (EMP Section 7.1.10.h).

1.9. Heritage Management

- Develop a method statement for communicating with the Heritage Specialist should any site inspections or emergency rescue work be required during construction (EMP Section 7.1.11.a).
- Clear communication plans should be in place to contact the Heritage Specialist should any site inspections or emergency rescue work be required during construction.

1.10. Overall Site Management, Site Development Plan

- Develop a method statement for establishing a Detailed Construction Site Utilisation Plan which shows the contractors construction area/site layout (EMP Section 7.1.12.e)
- Develop a method statement for installing services, such as drinking water, canteens, cooking areas, ablution and sewage facilities, as soon as possible after construction activities commence (EMP Section 7.1.12.h).
- Install services, such as drinking water, canteens, cooking areas, ablution and sewage facilities, as soon as possible after construction activities commence; and ensure this is done in accordance with the Site Facility and Services Master Plan, unless the Project Manager permits or directs otherwise.

- Develop a method statement outlining the filling procedure which prevents spillage and contains accidental spillage (EMP Section 7.1.12.k).
- For refuelling of heavy duty construction vehicles in situ on site from a bowser, a method statement outlining the filling procedure which prevents spillage and contains accidental spillage, is to be compiled and complied with. (This will also apply during the time period while the bulk fuel storage is under construction.) In cases of an emergency repairs or for refuelling stationary equipment (e.g. generator) in which case drip tray are to be used.
- Develop a method statement that ensures all construction vehicles are maintained appropriately and those that are using roads are road worthy in accordance with maintenance management plan. This method statement should also ensure that all vehicle maintenance (unless where on-site emergency repairs are necessary) takes place in a designated vehicle maintenance area/ workshop, which is provided with a roof, appropriate spill containment (bunding), waste water treatment facility, fire protection, etc (EMP Section 7.1.10.a and 7.1.12.k).
- Ensure that all construction / operational vehicles using public roads are maintained in a roadworthy condition and refrain from using non-roadworthy vehicles on public roads.
- Undertake all vehicle maintenance (unless where on-site emergency repairs are necessary) in a designated vehicle maintenance area/ workshop, which is provided with a roof, appropriate spill containment (bunding), waste water treatment facility, fire protection, etc.
- Develop a method statement for undertaking emergency repairs on stationary plant or vehicles. These should be undertaken in-situ only if there is good reason why these are impractical to carry out in a workshop; and if doing so, implement and adhere to appropriate spill prevention and containment measures (e.g. drain fuel / oil into drums, make use of drip-trays, cover the ground for part and tool lay-down areas with tarpaulins, construct temporary containment berms etc.) (EMP Section 7.1.12.k)
- Undertake stationary plant and vehicle emergency repairs in-situ only if there is good reason why these are impractical to carry out in a workshop; and if doing so, implement and adhere to appropriate spill prevention and containment measures (e.g. drain fuel / oil into drums, make use of drip-trays, cover the ground for part and tool lay-down areas with tarpaulins, construct temporary containment berms etc.)

1.11. Hazardous Materials Management

- Develop a method statement for safe material transportation, storage and handling (EMP Section 7.1.13.a)
- Develop and implement procedures for safe material transportation, storage and handling.
- Develop a method statement to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures (EMP Section 7.1.13.a).
- Develop and implement emergency procedures / protocols to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures.
- Develop a method statement to deal with all on-site purification of transformer oil (EMP Section 7.1.13.a).
- Provide suitable measures for all on-site purification of transformer oil.
- Develop a method statement for treating all empty and externally dirty containers that contained hazardous substances as hazardous material (i.e. store in bund, etc.) (EMP Section 7.1.13.a)
- Consider and treat all empty and externally dirty containers (e.g. tanks and drums) that contained hazardous substances as hazardous materials, e.g. by ensuring safe

storage in bunded areas or by providing other means to prevent any spillage from these; this is unless the containers have been appropriately and fully drained and cleaned to render them non-hazardous.

- Develop a method statement for dealing with spill clean-ups, taking staff safety and environmental protection appropriately into consideration. The method statement should also ensure that spill kits are provided and maintained at locations close to where hazardous substance are stored or used (EMP Section 7.1.13.b).
- Develop and implement a Spill Clean-up Procedure that takes staff safety and environmental protection appropriately into consideration.
- Provide stock and maintain appropriate complete emergency spill kits at locations close to where hazardous substance are stored or used and ensure full availability at all times.
- Develop a method statement to ensure that all waste water resulting from batching of concrete is treated to a quality that meets the relevant specification of the applicable Water Use License before re-use or discharge (EMP Section 7.1.13.c).
- Treat all waste water resulting from batching of concrete to a quality that meets the relevant specification of the applicable Water Use License before re-use (e.g. road wetting) and/or discharge.
- Develop a method statement for treating and/or disposing of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (EMP Section 7.1.13.d).
- Treat and/or dispose of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (e.g. Waste Management License, Water Use License), with full cooperation from the relevant authorities and full documentation on the quantities and methods of treatment and/or disposal.
- Develop a method statement for waste disposal e.g. storage, disposal, keeping of waste consignment certificates, etc. (EMP Section 7.1.3.h)
- Develop and implement a detailed on-site Waste Management Plan, prior to the relevant waste generating activities commencing, covering inter alia:
    - Identification, classification and keeping of a register of type of waste generated;
    - Planning for the construction / establishment / operation / decommissioning of a centralised waste management facility and/or designated waste management areas;
    - Procedures to be followed for waste separation at source as well as reduce, re-use, recycle, recover and treatment of waste prior to the disposal option;
    - Waste management procedures for waste disposal, e.g. storage, disposal, keeping of waste consignment certificates, etc.

1.12. Visual Management

- Develop a detailed rehabilitation design and plan of the road reserve showing stabilisation methods and a specification of planting type and species together with maintenance requirements; and do so with the engagement of a suitably qualified and experienced landscape architect and rehabilitation contractor (EMP Section 7.1.14.g)
- Design and stabilise all access roads to the main and satellite sites (e.g. the mast site) to visually fit into the surrounding landform and vegetation, as best as reasonably possible; as follows:
    - Design and/or shape cut and fill sections to blend with the adjacent landform and materials, thus adjusting the curves, slope angles and material (applying merely a standard curve, slope angle and/or material is not appropriate).
    - Develop, implement and maintain a detailed rehabilitation design and plan of

the road reserve showing stabilisation methods and a specification of planting type and species together with maintenance requirements; (a suitably qualified and experienced landscape architect and rehabilitation contractor should be consulted).

1.13. Noise Management

- Develop an Noise Control Management Plan with associated Noise Monitoring Programme (based on SANS 10103:2004) (EMP Section 7.1.15a).

1.14. Security, Site Access and Access Control

- Develop a method statement to ensure that the main development footprint and any satellite construction / operation sites are fenced off to allow site access control, prevent unauthorised access and prevent larger mammals from entering (EMP Section 7.1.16.f).
- Fence the main development footprint and any satellite construction / operation sites off to allow site access control, prevent unauthorised access and prevent larger mammals from entering (refer to fencing specification as provided in Section **Error! Reference source not found.**, Specification 6.)

1.15. Safety

- Develop an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency (i.e. fires, spills, and contamination of ground and surface water, accidents to employees and damage to services) (EMP Section 7.1.17.a)
- Develop and implement an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency; which includes but is not limited to fires, spills, and contamination of ground and surface water, accidents to employees and damage to services.
- Develop a method statement to ensure that a register and inspection log of all firefighting equipment is kept. The method statement should also ensure that regular inspection and checking of firefighting equipment is undertaken and such records are kept on-site (EMP Section 7.1.17.c)
- Keep a register and inspection log of all firefighting equipment; and inspect and check firefighting equipment regularly and record such inspection on the inspection log that is retained on-site.

2. Operation Phase

2.1. Air Quality Management

- Develop a method statement for addressing and management of Air quality issues identified through monitoring (EMP Section 7.2.1.a)
- Address any air pollution issues that are identified during the air quality monitoring

2.2. Geology and Soils

- Develop a method statement for accessing pylons for inspection, testing and maintenance purposes using 4x4 vehicles along appropriate tracks (EMP Section 7.2.2.a)
- Access to the pylons for inspection, testing and maintenance purposes must be achieved by 4x4 vehicles along tracks.

2.3. Water Management

- Develop a method statement to assess all project activities associated with water use requirements to ensure that the relevant Water Use License (WUL) is applied for and received prior to such a use commencing (EMP Section 7.2.3. b)
- Assess all project activities and associated water use requirements (e.g. treated wastewater discharge and water abstraction) well in advance in order to ensure the relevant Water Use License (WUL) is applied for where required; and ensure that such a WUL is in place and all associated conditions complied with prior to such use commencing.
- A method statement to remediate groundwater pollution immediately must be developed (EMP Section 7.2.3.e).
- Develop effective groundwater remediation procedures, and make the arrangements and take preparations required to put these in place, to allow for immediate implementation prior to any potential impact on groundwater quality (with only minor, insignificant levels of contamination allowed to be mitigated with natural attenuation).
- Develop a Stormwater Management Plan and associated stormwater management system

2.4. Sewage Management

- Develop a method statement to ensure that sanitation facilities and associated systems effectively contain, treat and/or dispose of raw sewage and sewage sludges such that potential leakage or spillage is effectively prevented and that any ‘clean’ wastewater is discharged in accordance with all legal requirements (EMP Sectipn 7.1.13.e).
- Maintain sanitation facilities and associated systems for containment, treatment and/or disposal of raw sewage and sewage sludges such that potential leakage or spillage is effectively prevented and that any ‘clean’ wastewater is discharged in accordance with all legal requirements (e.g. Water Use License).

2.5. Flora Management

- Develop a Method Statement identifying and eradicating alien invasive vegetation systematically and fully in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (EMP Section 7.2.6.a).
- Identify and manage all declared aliens in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and eradicate alien invasive vegetation systematically and fully.

2.6. Socio-economic Enviornment Management

- Develop a labour policy to facilitate the employment and skills training of locals and

the achievement of requirements for staff population demographic representation (e.g. BEE, women) as matter of priority (EMP Section 7.1.10.h).

2.7. Hazardous Materials Management

- Develop a method statement for safe material transportation, storage and handling (EMP Section 7.2.13.a)
- Develop and implement procedures for safe material transportation, storage and handling.
- Develop a method statement to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures (EMP Section 7.2.13.a).
- Develop and implement emergency procedures / protocols to quickly and effectively repair any hazardous substance leakages and follow effective spill clean-up procedures.
- Develop a method statement to ensure that areas of fuels storage and other flammable materials comply with standard fire safety regulations and any conditions of approval of the local Fire Prevention Officer as well as the Major Hazardous Installation Regulations (OHS Act) if required (EMP Section 7.2.13.a).
- Ensure that areas of fuels storage and other flammable materials comply with standard fire safety regulations and any conditions of approval of the local Fire Prevention Officer as well as the Major Hazardous Installation Regulations (OHS Act) if required.
- Develop a method statement to deal with all on-site purification of transformer oil (EMP Section 7.2.13.a).
- Provide suitable measures for all on-site purification of transformer oil.
- Develop a method statement for treating all empty and externally dirty containers that contained hazardous substances as hazardous material (i.e. store in bund, etc.) (EMP Section 7.2.13.a)
- Consider and treat all empty and externally dirty containers (e.g. tanks and drums) that contained hazardous substances as hazardous materials, e.g. by ensuring safe storage in bunded areas or by providing other means to prevent any spillage from these; this is unless the containers have been appropriately and fully drained and cleaned to render them non-hazardous.
- Develop a method statement for dealing with spill clean-ups, taking staff safety and environmental protection appropriately into consideration. The method statement should also ensure that spill kits are provided and maintained at locations close to where hazardous substance are stored or used (EMP Section 7.2.13.b).
- Develop and implement a Spill Clean-up Procedure that takes staff safety and environmental protection appropriately into consideration.
- Provide stock and maintain appropriate complete emergency spill kits at locations close to where hazardous substance are stored or used and ensure full availability at all times.
- Develop a method statement for treating and/or disposing of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (EMP Section 7.2.13.c).
- Treat and/or dispose of all contaminated soil and groundwater according to environmentally acceptable procedures or in accordance with any applicable authorisation (e.g. Waste Management License, Water Use License), with full cooperation from the relevant authorities and full documentation on the quantities and methods of treatment and/or disposal.
- Develop a method statement for waste disposal e.g. storage, disposal, keeping of waste consignment certificates, etc. (EMP Section 7.2.3.e)

- Develop and implement a detailed on-site Waste Management Plan, prior to the relevant waste generating activities commencing, covering inter alia:
    - Identification, classification and keeping of a register of type of waste generated;
    - Planning for the construction / establishment / operation / decommissioning of a centralised waste management facility and/or designated waste management areas;
    - Procedures to be followed for waste separation at source as well as reduce, re-use, recycle, recover and treatment of waste prior to the disposal option;
    - Waste management procedures for waste disposal, e.g. storage, disposal, keeping of waste consignment certificates, etc.

2.8. Noise Management

- Develop an Noise Control Management Plan with associated Noise Monitoring Programme (based on SANS10103:2004) (EMP Section 7.1.15a).

2.9. Safety

- Develop an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency (i.e. fires, spills, and contamination of ground and surface water, accidents to employees and damage to services) (EMP Section 7.2.17.a)
- Develop and implement an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency; which includes but is not limited to fires, spills, and contamination of ground and surface water, accidents to employees and damage to services.
- Develop a method statement to ensure that a register and inspection log of all firefighting equipment is kept. The method statement should also ensure that regular inspection and checking of firefighting equipment is undertaken and such records are kept on-site (EMP Section 7.2.17.c)
- Keep a register and inspection log of all firefighting equipment; and inspect and check firefighting equipment regularly and record such inspection on the inspection log that is retained on-site

ANNEXURE E:
METHOD STATEMENT TEMPLATE

INFORMATION FOR METHOD STATEMENTS

- Method Statements are to be completed by the person undertaking the work (i.e. the Contractor). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

- The Method Statement can only be implemented once approved by the Environmental Control Officer and Project Manager/Engineer.

- The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

- Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the Environmental Control Officer and the Project Manager/Engineer, denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

- This Method Statement must contain sufficient information and detail to enable the Environmental Control Officer and the Project Manager/Engineer to apply their minds to the potential impacts of the works on the environment. It should also show that the Contractor thoroughly understands what is required of him/her to undertake the works, and must make the necessary links to the relevant sections of the EMP for the PBMR DPP.

- The Contractor must realise that the time taken to provide a comprehensive, detailed Method Statement is well spent. Insufficient detail will result in delays to the works while the Method Statement is completed to the Environmental Control Officer's and Project Manager/Engineer's satisfaction.

Overleaf is a suggested template for a Method Statement sheet, to be completed for each activity requiring a Method Statement in terms of the EMP (or as per the discretion of the Environmental Control Officer and Project Manager/Engineer).

METHOD STATEMENT

Contract: …… **Date**: ……

Proposed Activity: (give title of the Method Statement and reference page of the EMP)

Work to be undertaken: (give a brief description of the works)

Location/Site where the work will be undertaken: (where possible, give an annotated plan and a full description of the extent of the work)

Start and End Date of the Work for which the Method Statement is required:

Start Date: ……	End Date: ……

Description of the work will be undertaken: (provide as much detail as possible, including annotated maps and plans where possible, of how the work will be completed. Use additional pages as required.)

DECLARATIONS

1) Contractor

I understand the contents of this Method Statement and the scope of work required of me. I further understand that this Method Statement may be amended on application to other signatories and that the Environmental Control Officer and Site Agent will audit my compliance with the contents of the Method Statement.

_____ _____
(signed) (print name)

Dated: _____

2) Environmental Control Officer

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ _____
(signed) (print name)

Dated: _____

3) Project Manager/Engineer

The works described in this Method Statement are approved.

_____ _____
(signed) (print name)

_____
(designation)

Dated: _____

ANNEXURE F:
PENALTY SCHEDULE

TYPICAL INCIDENTS INCURRING PENALTIES	VALUE
Failure to submit Method Statement at least two weeks prior to its use (per method statement)	R5,000
Failure to secure construction site from public access	R5,000
Failure to demarcate working areas and servitudes and/or maintain fences and/or demarcation tape.	R1,000
Failure to stockpile topsoil correctly as per section 7.1.2 of the EMP (per incident)	R2,000
Failure to stockpile materials in designated areas (per incident)	R500
Pollution of water bodies – including increased suspended solid loads (per incident) measured as per the requirements set out in section 9.3 of the EMP	R5,000
Discharging effluent and/or polluted stormwater onto the ground or into surface water (per incident)	R2,000
Failure to provide adequate sanitation, waste disposal facilities or services (per incident) as per requirements set out in the EMP	R1,000
Failure to demarcate construction area boundaries before commencing construction clearance and other activities (per incident)	R5,000
Venturing into or undertaking construction related activities within no-go areas, without formal written approval from the Eskom Site Manager (per incident)	R5,000
Insufficient education of employees regarding environmental matters and site housekeeping practices (per employee). Should registers of attendance of all contractor employees to environmental toolbox talks not be maintained a penalty will apply.	R2,000
Use of soil in an unspecified manner (per incident). Ensure compliance to section 7.1.2.	R500
Stockpile of soils and materials outside demarcated areas (per incident)	R1,000
Inappropriate mixing of cement/concrete and poor management of concrete slurry (per incident). Ensure compliance with section 7.1.12 and 7.1.13 of the EMP	R2,000
Untidiness and litter at camp (per incident)	R200
Unauthorised removal of indigenous trees, medicinal or other plants (per incident)	R2,000
Damaging/killing animals/birds as a result of negligence (per incident)	R 1,500
Failure to erect temporary fences as required (per incident)	R2,000
Failure to reinstate disturbed areas within the specified timeframe (per incident)	R2,000
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires (per incident)	R25,000
Failure to provide equipment for emergency situations (per incident)	R5,000
Defacing, painting or damaging natural or heritage features (per	R5,000

TYPICAL INCIDENTS INCURRING PENALTIES	VALUE
incident) – mandatory removal of employee from site	
Damaging cultural, historical and/or archaeological sites of importance (per incident) – mandatory removal of employee from site	R5,000
Failure to maintain basic safety measures on site as per requirements set out in the EMP as well as the OHS Act.	R1,000
Failure to obey site protection measures specified by the Eskom Site Manager (per incident)	R1,000
Failure to carry out required community liaison, damage to property etc, without prior negotiation and/or compensation and other social infringements (per incident)	R1,000
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling (per incident). Ensure compliance with Section 7.1.12 of the EMP.	R2,000
Failure to provide drip trays and/or empty them frequently (per incident)	R500
Inappropriate use of bins and poor waste management on site (per incident)	R500
Inappropriate off-site disposal of waste from site (per incident)	R10,000
Deliberate lighting of illegal fires on site (per incident)	R1,000
The eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities (per incident)	R200
Dust or excess noise on or emanating from the site (per incident) will be as follows: • Dust exceedances will be determined by a comprehensive Air Quality Monitoring Programme that will be developed (Refer to section 9 of the EMP for additional information). A deviation of 20% from the parameters specified in the plan will constitute an exceedance for which a penalty must be paid. • In terms of noise a Noise Control Management Plan with associated Noise Monitoring Programme (based on SANS 10103:2004) will be developed prior to construction. A deviation of 10% from values stipulated by the plan will constitute an exceedance for which a penalty must be paid.	R500
Inappropriate use of adjacent watercourses and water bodies – such as for unapproved water abstraction, washing of vehicles, wastewater disposal and use by employees for washing (per incident)	R1000
Maintain plant equipment as per the maintenance management plan method statement	R500
Construction vehicles not adhering to speed limits (per incident)	R200
Failure to maintain register of incidents in the incident register (per incident)	R1,000
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works (per	R50,000

TYPICAL INCIDENTS INCURRING PENALTIES	VALUE
incident)	
Any contravention with a Method Statement (per incident)	R5,000
Repeated contravention of the specifications or failure to comply with instructions (per incident)	R5,000

NOTE:

- The subjection and payment of a penalty does not absolve the contractor from fully remedying any transgression or environmental damage. Should the contractor fail to address his non-conformance, Eskom has the right to remedy the incident and recover the costs from the contractor.
- For each subsequent similar offence the penalty shall be issued as follows:
  - 1st offence = 1 x penalty
  - 2nd offence = 2 x penalty
  - 3rd offence = 3 x penalty
- Thereafter disciplinary action will be taken against the contractor and they may be removed from site.