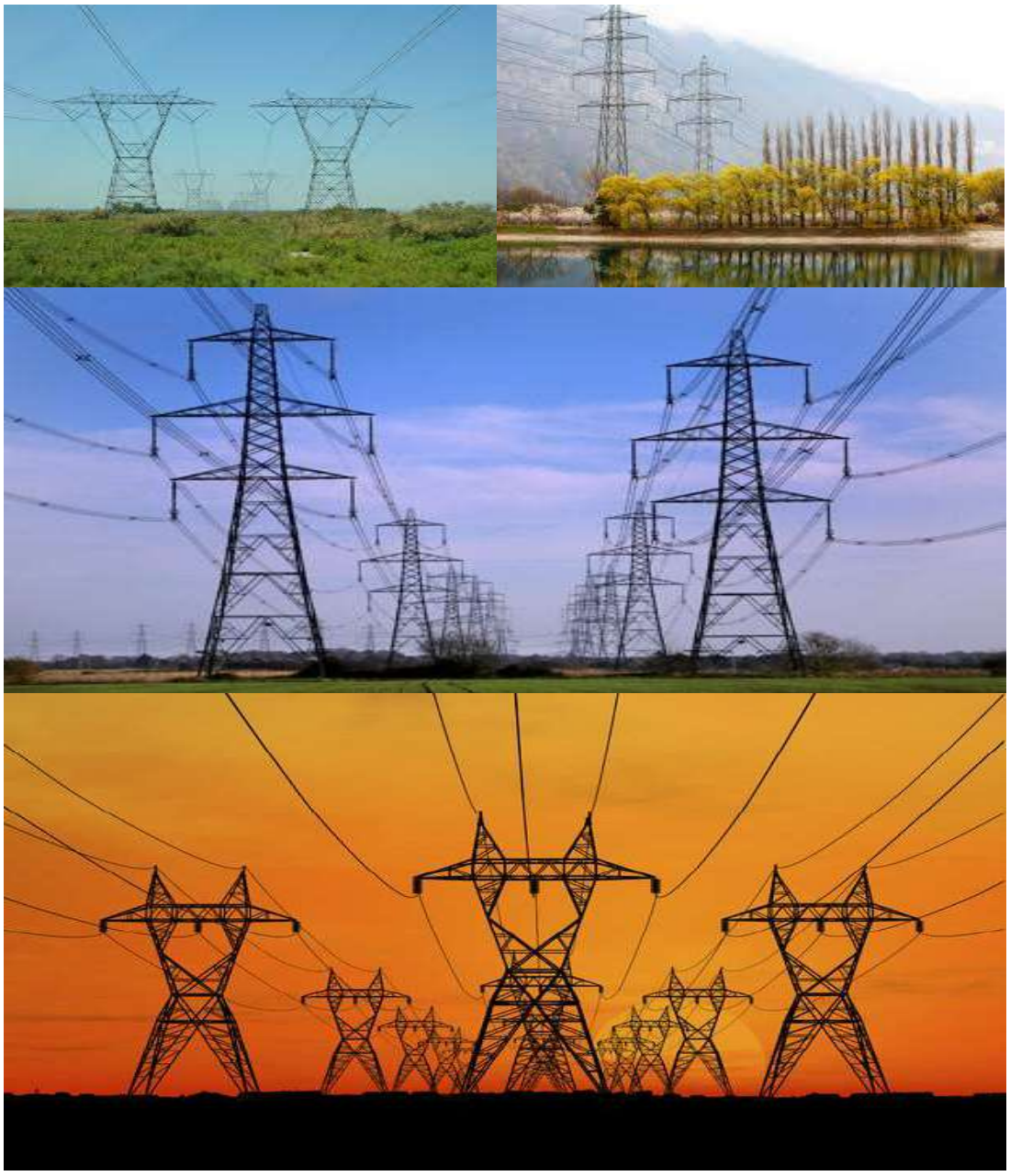
APPENDIX G

ENVIRONMENTAL MANAGEMENT PROGRAMME

APPENDIX G1: Generic EMPr: Powerline

APPENDIX 1

GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

TABLE OF CONTENTS

List of tables

List of Figures

INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended, (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of overhead electricity transmission and distribution infrastructure requiring EA in terms of NEMA, i.e. with a capacity of 33 kilovolts or more. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realisation of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information and is **not legally binding**	Definitions, acronyms, roles & responsibilities and documentation and reporting.
B	1	Pre-approved generic EMPr template	Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure, which are presented in the form of a template that has been pre-approved. The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template **is not required** to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA. To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr

Part	Section	Heading	Content
			template contained in Part B: Section 1, and understands that the impact management outcomes and impact management actions are **legally binding**. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and actions have been either pre-approved or approved in terms of Part C. This section **must be** submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C is applicable to the site, it **is required** to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP, and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.

Part	Section	Heading	Content
			This section applies only **to additional** impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in Part B: section 1.
Appendix 1			Contains the method statements to be prepared prior to commencement of the activity. The method statements are **not required** to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
  - a 'responsible person',
  - a method for implementation,
  - a timeframe for implementation
- For monitoring
  - a responsible person
  - frequency
  - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the corridor in which the proposed overhead electricity transmission and distribution infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps must identify features both within the planned working area and any known sensitive features in the surrounding landscape within 50m from the development footprint. The overhead transmission and distribution profile must be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions must be used.

Sub-section 3 is the declaration that the applicant/proponent or holder of the EA in the case of a change of ownership must complete, which confirms that the applicant/EA holder will comply with the pre-approved generic EMPr template in Section 1 and understands that the impact management outcomes and actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover applicable details with regard to:

(i) Construction procedures;
(ii) Plant, materials and equipment to be used;
(iii) Transporting the equipment to and from site;
(iv) How the plant/ material/ equipment will be moved while on site;
(v) How and where the plant/ material/ equipment will be stored;
(vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
(vii) Timing and location of activities;
(viii) Compliance/ non-compliance; and
(ix) Any other information deemed necessary by the Project Manager.

"slope" means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

"solid waste" means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

"spoil" means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

"topsoil" means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil; and

"works" means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: *Guide to roles and responsibilities for implementation of an EMPr*

Responsible Person (s)	**Role and Responsibilities**
Developer's Project Manager (DPM)	Role The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent. Responsibilities - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	Role The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS

Responsible Person (s)	Role and Responsibilities
	is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr. Responsibilities - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	Role The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non- compliance with the Performance Specifications as set out in the EA and EMPr. The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required. Responsibilities

Responsible Person (s)	Role and Responsibilities
	The responsibilities of the ECO will include the following: - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer	Role

Responsible Person (s)	Role and Responsibilities
(dEO)	The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities. <u>Responsibilities</u> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<u>Role</u> The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where

Responsible Person (s)	Role and Responsibilities
	specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities. Responsibilities - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	Role Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria: Responsibilities - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA,

Responsible Person (s)	Role and Responsibilities
	EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all overhead electricity transmission and distribution infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. At a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints

received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions , as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in (**section 4.11**) below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in (**section 4.10**) above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes must be included in the EMPr file and be submitted to the CA at intervals as indicated in the EA.

An Environmental Audit Report must be prepared monthly. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of overhead electricity transmission and distribution infrastructure. There is a list of aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contactor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All staff must receive environmental awareness training prior to commencement of the activities; – The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; – Refresher environmental awareness training is available as and when required; – All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; – The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a)Safety notifications; and b) No littering. – Environmental awareness training must include as a minimum the following: a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response	**Contractor & cEO**	**Contractor to provide Training Programme** **Induction course** **Refresher** **Daily toolbox talks** **Courses to be provided by suitably qualified persons and in a language and medium understood by the workers** **Erect signage and place posters**	**From pre-construction and throughout the duration of the construction period**	**dEO & ECO**	**Monthly**	**Records of training and awareness creation (e.g. training material, training programme, completed attendance registers, etc.)**

procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand.						

5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; – Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; – Sites must be located where possible on previously disturbed areas; – The camp must be fenced in accordance with ***Section 5.5: Fencing and gate installation***; and – The use of existing accommodation for contractor staff, where possible, is encouraged.	**Contractor**	**Site Establishment Method Statement to be provided by the Contractor**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Approved method statement** **Evidence of site establishment in accordance with method statement (photographic records)**

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited.	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Training** **Method Statement for barricading**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Pre-construction survey report** **Approved method statement** **Inspection of barricading (photographic records)** **Visible signage (photographic records)** **Proof of training**

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; – Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; – In circumstances where private roads must be used, the	**DPM & Contractor**	**Signed agreements with landowners** **Mapped access roads** **Inspection of conditions of private roads** **Rehabilitation Method Statement to include temporary access roads** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visible signage (photographic records)** **Proof of training** **Related entries into Public Complaints Register** **Inspection of access roads (photographic records)** **Approved method statement**

condition of the said roads must be recorded in accordance with ***section 4.9: photographic record***; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; – Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands – Access roads must only be developed on pre-planned and approved roads.						

5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Use existing gates provided to gain access to all parts of the area authorised for development, where possible; – Existing and new gates to be recorded and documented in accordance with **section *4.9: photographic record***; – All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; – At points where the line crosses a fence in which there is no	**DPM & Contractor**	**Signed agreements with landowners** **Mapped access roads and gates** **Inspection of access gates** **Method statement**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Inspection of access gates (photographic records)** **Related entries into Public Complaints Register**

suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; – Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; – Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; – Original tension must be maintained in the fence wires; – All gates installed in electrified fencing must be re-electrified; – All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities; – Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora; – Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. – All fencing must be developed of high quality material bearing the SABS mark; – The use of razor wire as fencing must be avoided; – Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; – On completion of the development phase all temporary fences are to be removed; – The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.		**for fencing and gate installation** **Training**				**Approved method statement**

5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; – The Contractor must ensure the following: a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. – Ensure water conservation is being practiced by: a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged.	**Contractor & cEO**	**Monitoring of water abstraction volumes** **Inspection of water abstraction point** **Training**	**From registration of use with DWS (if applicable) and throughout the period during which water is abstracted**	**dEO & ECO**	**Daily (dEO) & Monthly (ECO)**	**Proof of registration from DWS (if applicable)** **Monitoring records of water use** **Visual inspections (photographic records)**

5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; – All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; – Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.	**Contractor & cEO**	**Method statement for managing storm water and runoff** **Inspection of cement/ concrete batching areas and settlement ponds** **Training**	**Pre-construction & construction phases**	**ECO**	**Monthly**	**Approved method statement** **Visual inspections (photographic records)** **Disposal records** **Proof of training**

5.8 Solid and hazardous waste management

Impact management outcome: Waste is appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All measures regarding waste management must be undertaken using an integrated waste management approach; – Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; – A suitably positioned and clearly demarcated waste collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; – Hazardous waste must be disposed of at a registered waste disposal site; – Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	**Contractor & cEO**	**Method statement for waste management** **Service agreements with waste service providers** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Approved method statement** **Waste management and disposal records** **Visual inspections of waste management facilities (photographic records)** **Proof of training**

5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; – In the event of a spill, prompt action must be taken to clear the polluted or affected areas; – Where possible, no development equipment must traverse any seasonal or permanent wetland – No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; – Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; – There must not be any impact on the long term morphological dynamics of watercourses or estuaries; – Existing crossing points must be favored over the creation of new crossings (including temporary access) – When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: a) Water levels during the period of construction;	**Contractor & cEO**	**Inspections of watercourses** **Rehabilitation Method Statement to include watercourses within powerline corridor** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visual inspections of watercourses within powerline corridor (photographic records)** **Approved method statement** **Proof of training**

No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.						

5.10 Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
General: – Indigenous vegetation which does not interfere with the development must be left undisturbed;	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)**	**Pre-construction, construction & operational phases**	**dEO & ECO**	**Daily (dEO) & Monthly (ECO)**	**Pre-construction survey report** **Permits on**

– Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; – Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; – Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; – The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; – Trees felled due to construction must be documented and form part of the Environmental Audit Report; – Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; – Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; – A daily register must be kept of all relevant details of herbicide usage; – No herbicides must be used in estuaries; – All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to ***Section 5.3: Access restricted areas***. **Servitude:** – Vegetation that does not grow high enough to cause interference with overhead transmission and distribution		**Method Statement for managing Species of Conservation Concern (SCC)** **Method Statement for managing alien invasive species** **Management programme for managing alien invasive species during the operational phase** **Applications for permits (if applicable)** **Identification of felled trees** **Daily register of herbicide usage** **Training**				**record (if applicable)** **Records of felled trees** **Records of herbicide usage** **Visual inspections (photographic records), including relocated species** **Approved method statement** **Proof of training**

infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; – Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder – Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; – Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280; – Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation; – In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered.						

5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; – The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; – Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; – Nesting sites on existing parallel lines must documented; – Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; – Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; – No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; – No deliberate or intentional killing of fauna is allowed; – In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up,	**Contractor & cEO**	**Agreements with landowners** **Report capturing findings of site walk through (pre-construction survey)** **Method Statement for managing SCC** **Applications for permits (if applicable)** **Training**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Pre-construction survey report** **Permits on record (if applicable)** **Related entries into Public Complaints Register** **Visual inspections (photographic records)** **Proof of training**

being electrocuted and causing power outages; and – No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits.						

5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in ***Section 5.3: Access restricted areas***; – Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; – All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Barricading & signage** **Applications for permits (if applicable)** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Pre-construction survey report** **Permits on record (if applicable)** **Inspection of barricading and visible signage (photographic records)**

remove/collect such material before development recommences.						**Visual inspections (photographic records)** **Records of chance finds** **Proof of training**

5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; – All unattended open excavations must be adequately fenced or demarcated; – Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; – Ensure structures vulnerable to high winds are secured; – Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	**Contractor & cEO**	**Barricading & signage** **Training** **Method Statement for managing excavations**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Inspection of barricading and visible signage (photographic records)** **Related entries into Public Complaints Register** **Visual**

						inspections (photographic records) **Approved method statement** **Proof of training**

5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Mobile chemical toilets are installed onsite if no other ablution facilities are available; – The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; – Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from	**Contractor & cEO**	**Schedule for cleaning toilets** **Service agreements with sanitation service providers** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Disposal records** **Visual inspections (photographic records)** **Proof of training**

toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; – A copy of the waste disposal certificates must be maintained.						

5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Undertake environmentally-friendly pest control in the camp area; – Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; – The Contractor must ensure that information posters on AIDS	**Contractor & cEO**	**Posters** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visual inspections of facilities and posters (photographic records)**

are displayed in the Contractor Camp area; – Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; – Free condoms must be made available to all staff on site at central points; – Medical support must be made available; – Provide access to Voluntary HIV Testing and Counselling Services.						**Proof of training**

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; – The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; – All staff must be made aware of emergency procedures as part of environmental awareness training; – The relevant local authority must be made aware of a fire as soon as it starts;	**Contractor & cEO**	**Emergency Response Action Plan** **Emergency contact list** **Training**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Approved Emergency Response Action Plan on record** **Emergency contact list displayed**

– In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see ***Hazardous Substances section 5.17***).						**Proof of training**

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; – All hazardous substances must be stored in suitable containers as defined in the Method Statement; – Containers must be clearly marked to indicate contents, quantities and safety requirements; – All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; – Bunded areas to be suitably lined with a SABS approved liner; – An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;	**Contractor & cEO**	**Method statement for managing hazardous substances** **HCS Control Sheet & registers for MSDS** **Provide Personal Protective Equipment (PPE)** **Signage** **Fire-fighting equipment** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Approved method statement** **Records (e.g. HCS Control Sheet, copies of MSDS, PPE register, spills)** **Visual inspection of storage areas, signage, spill kits, etc. (photographic records)**

– All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); – All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; – Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; – The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; – The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); – The floor of the bund must be sloped, draining to an oil separator; – Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; – All empty externally dirty drums must be stored on a drip tray or within a bunded area; – No unauthorised access into the hazardous substances storage areas must be permitted; – No smoking must be allowed within the vicinity of the hazardous storage areas; – Adequate fire-fighting equipment must be made available		**Inspection of storage areas**				**Disposal records** **Proof of training**

at all hazardous storage areas; – Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; – An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; – The responsible operator must have the required training to make use of the spill kit in emergency situations; – An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; – In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to ***Section 5.7*** for procedures concerning ***storm and waste water management*** and ***5.8*** for ***solid and hazardous waste management.***						

5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; – During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; – Leaking equipment must be repaired immediately or be removed from site to facilitate repair; – Workshop areas must be monitored for oil and fuel spills; – Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; – The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; – Water drainage from the workshop must be contained and managed in accordance ***Section 5.7: storm and waste water management***.	**Contractor & cEO**	**Vehicle & Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Updated Maintenance Schedule** **Visual inspection of storage areas, signage, spill kits, etc. (photographic records)** **Disposal records** **Proof of training**

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Concrete mixing must be carried out on an impermeable surface; – Batching plants areas must be fitted with a containment facility for the collection of cement laden water. – Dirty water from the batching plant must be contained to prevent soil and groundwater contamination – Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; – A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; – Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; – Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; – Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to ***Section 5.20: Dust emissions***) – Any excess sand, stone and cement must be removed or	**Contractor & cEO**	**Method statement for managing batching plants** **Inspection of batching areas and cement storage areas** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Approved method statement** **Visual inspections (photographic records)** **Proof of training**

reused from site on completion of construction period and disposed at a registered disposal facility; – Temporary fencing must be erected around batching plants in accordance with ***Section 5.5: Fencing and gate installation***.						

5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will	**Contractor & cEO**	**Dust monitoring** **Dust suppression schedule** **Signage displaying speed limits** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Updated dust suppression schedule** **Dust monitoring results** **Related entries into Public Complaints Register** **Visual**

cease altogether until the wind speed drops to an acceptable level; – Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; – Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; – Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; – Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; – For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.						**inspections (photographic records)** **Proof of training**

5.21 Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Any blasting activity must be conducted by a suitably licensed blasting contractor; and – Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.	**Contractor & cEO**	**Compliance with blasting-related legislation and standards** **Method statement for blasting** **Notifications** **Training**	**Prior to blasting up to safe completion of blasting**	**dEO & ECO**	**Monthly**	**Approved method statement** **Proof of notification of landowners** **Related entries into Public Complaints Register** **Visual inspections (photographic records)** **Proof of training**

5.22 Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; – All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; – Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; – Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff.Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.	**Contractor & cEO**	**Code of Conduct** **Noise monitoring** **Signage** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Noise monitoring results** **Related entries into Public Complaints Register** **Visible signage** **Proof of training**

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Designate smoking areas where the fire hazard could be regarded as insignificant; – Firefighting equipment must be available on all vehicles located on site; – The local Fire Protection Agency (FPA) must be informed of construction activities; – Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; – Two way swop of contact details between ECO and FPA.	**Contractor & cEO**	**Notification of FPA** **Emergency contact list** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Proof of notification of FPA** **Emergency contact list displayed** **Related entries into Public Complaints Register** **Proof of training**

5.24 Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; – All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; – Topsoil stockpiles must not exceed 2 m in height; – During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); – Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.	**Contractor & cEO**	**Inspection of stockpile areas** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Updated inspection register** **Visual inspections (photographic records)** **Proof of training**

5.25 Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– No vegetation clearing must occur during survey and pegging operations; – No new access roads must be developed to facilitate access for survey and pegging purposes; – Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; – The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO.	**DPM, DSS, Contractor & cEO**	**Pre-construction survey** **Mapped access roads** **Logging of tower locations** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Pre-construction survey report** **Records of survey and pegging** **Visual inspections of tower locations (photographic records)**

5.26 Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; – Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; – Management of equipment for excavation purposes must be undertaken in accordance with ***Section 5.18: Workshop equipment maintenance and storage***; and – Hazardous substances spills from equipment must be managed in accordance with ***Section 5.17: Hazardous substances***. – Batching of cement to be undertaken in accordance with **Section *5.19 : Batching plants***; – Residual cement must be disposed of in accordance with **Section *5.8: Solid and hazardous waste management***.	**Contractor & cEO**	**Method statements for:** • **Managing excavation** • **Managing spoil material** • **Managing batching plants** • **Managing hazardous substances** • **Managing hazardous waste** • **Rehabilitation** **Excavation Register** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statement** **Updated Excavation Register** **Visual inspections (photographic records)** **Proof of training**

5.27 Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; – In sensitive areas, tower assembly must take place off-site or away from sensitive positions; – The crane used for tower assembly must be operated in a manner which minimises impact to the environment; – The number of crane trips to each site must be minimised; – Wheeled cranes must be utilised in preference to tracked cranes; – Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact; – Access to tower positions to be undertaken in accordance with access requirements in specified in Section 8.4: Access Roads; – Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; – No levelling at tower sites must be permitted unless approved by the Development Project Manager or	**Contractor & cEO**	**Method statement for rehabilitation** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statement** **Visual inspections (photographic records)** **Proof of training**

Developer Site Supervisor; – Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; – Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; – Excavated slopes must be no greater that 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; – Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; – Only existing disturbed areas are utilised as spoil areas; – Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; – Surface water runoff is appropriately channeled through or around spoil areas; – During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; – The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation; – The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season.						

5.28 Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; – The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; – Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; – In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used; – Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by	**Contractor & cEO**	**Notification of affected landowners** **Wayleaves for crossings railway line, roads and other infrastructure and services (as relevant)** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Proof of notification** **Proof of wayleaves** **Visual inspections (photographic records)** **Related entries into Public Complaints Register**

using a helicopter; – Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing; – No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing; – Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner; – Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.						

5.29 Socio-economic

Impact management outcome: Socio-economic development is enhanced.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Develop and implement communication strategies to facilitate public participation; – Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; – Sustain continuous communication and liaison with neighboring owners and residents – Create work and training opportunities for local stakeholders; and – Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.	**Contractor & cEO**	**Grievance Redress Mechanism (GRM)** **Share contact details of ECO with stakeholders**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Documented GRM** **Proof of communication** **Related entries into Public Complaints Register**

5.30 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in ***sections 5.17: management of hazardous substances*** and ***5.18 workshop, equipment maintenance and storage***; – Hazardous storage areas must be well ventilated; – Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; – Emergency and contact details displayed must be displayed; – Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; – Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; – Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; – Structures vulnerable to high winds must be secured;	**Contractor & cEO**	**Method statement for temporary closure of site** **Training**	**Construction phase**	**dEO & ECO**	**Before and during site closure**	**Approved method statement** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

– Wind and dust mitigation must be implemented; – Cement and materials stores must have been secured; – Toilets must have been emptied and secured; – Refuse bins must have been emptied and secured; – Drip trays must have been emptied and secured.						

5.31 Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; – All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 – All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; – Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition;	**DPM, DSS, Contractor & cEO**	**Rehabilitation Method Statement** **Pre-construction survey – established baseline** **Signage** **Training**	**Throughout the duration of the construction period, as relevant to the concurrent or progressive reinstatement and rehabilitation of affected areas. Up to end of defects liability period. Rehabilitation will also extent into the operational phase.**	**dEO & ECO**	**Monthly**	**Approved method statement** **Pre-construction survey report** **Visible signage** **Related entries into Public Complaints**

– Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; – Rehabilitation of tower sites and access roads outside of farmland; – Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; – Stockpiled topsoil must be used for rehabilitation (refer to Section ***5.24: Stockpiling and stockpiled areas***); – Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; – Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; – Subsoil must be ripped before topsoil is placed; – The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; – Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; – Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; – Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. – Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: a) Annual and perennial plants are chosen;						**Register** **Visual inspections (photographic records)** **Proof of training**

b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area						

6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Name of applicant: LTM Green Energies (Pty) Ltd

Tel No: 021 0013758

Fax No:

Postal Address: PO Box 363 Newlands Cape Town

Physical Address: Suite 212 2nd Floor Kildare House The Oval 1 Oakdale Road Newlands Cape Town

7.1.2 Details and expertise of the EAP:

Name of EAP: Donavan Henning from Consulting

Tel No: 011 781 1730

Fax No: 011 781 1731

E-mail address: donavanh@nemai.co.za

Expertise of the EAP (Curriculum Vitae included): *Refer to Appendix 2*

7.1.3 Project name: **Proposed Grootvlei 600MW Solar Plant, Battery Energy Storage Systems & Grid Connection Project north west of Ventersdorp, JB Marks Local Municipality, North West Province.**

7.1.4 Description of the project:

Electricity generation sources need to be diversified to ensure security of supply and reduction in the carbon footprint created by the current heavy reliance of South Africa (SA) on coal to produce electricity. LTM Green Energies (Pty) Ltd (the "Applicant") has proposed the development of Grootvlei 600MW Solar Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project north west of Ventersdorp within the JB Marks Local Municipality in the North West Province (the "Project"). The electricity generated by the Project will be transmitted through Option 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In-Loop Out (LILO) of the Pluto – Watershed 275kV power line and Option 2 that comprises of 2.8km 132 kV line from the new facility 33kV substation facility 33kV substation to the Makokskraal Substation. The technical details of the proposed project are captured in **Table 2** below.

The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows and/or other renewable energy markets within SA.

Table 2: *Technical details of the proposed PV Plant*

No.	Component	Description / Dimensions
1.	Height of PV panels	± 2.5m
2.	Area of PV Array	± 490 ha
3.	Number of inverters required	Approximately 240x 2.5MW inverters
4.	Area occupied by inverter / transformer stations / substations	• Area occupied by inverter stations =0.35ha • Area occupied by Operation and Maintenance infrastructure = ± 0.1 ha • Area occupied by facility (step-up/Collector) substation = 0.2 ha Area occupied by the onsite substations = 0.1 ha
5.	Capacity of on-site substation	Up to a maximum of 600 MW, 6.6kV/275kV
6.	Area occupied by buildings and BESS	• Area occupied by Operation & Maintenance infrastructure =± 0.1 ha Area occupied by BESS = 0.35 ha
7.	Area occupied by both permanent and construction laydown areas	• Construction areas = 0.25 ha • Operation & Maintenance infrastructure = ± 0.1 ha Total combined = ± 0.35 ha
8.	Area occupied by buildings	1.5 ha
9.	Length of internal roads	± 15km
10.	Width of internal roads	• Internal roads will have a 5m road width. Access road will have a 14m reserve and road width of 8m.
11.	Proximity to grid connection	Grid Connection: Route 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In-Loop Out (LILO) of the Pluto – Watershed 275kV power line; and Route 2 that comprises of 2.8km 132 kV line from the new facility 33kV substation facility 33kV substation to the Makokskraal Substation.
12.	Height of fencing	Up to 3m
13.	Type of fencing	Type will vary around the site, welded mesh, palisade and electric fencing

7.1.5 Project location:

The locality map is provided below.

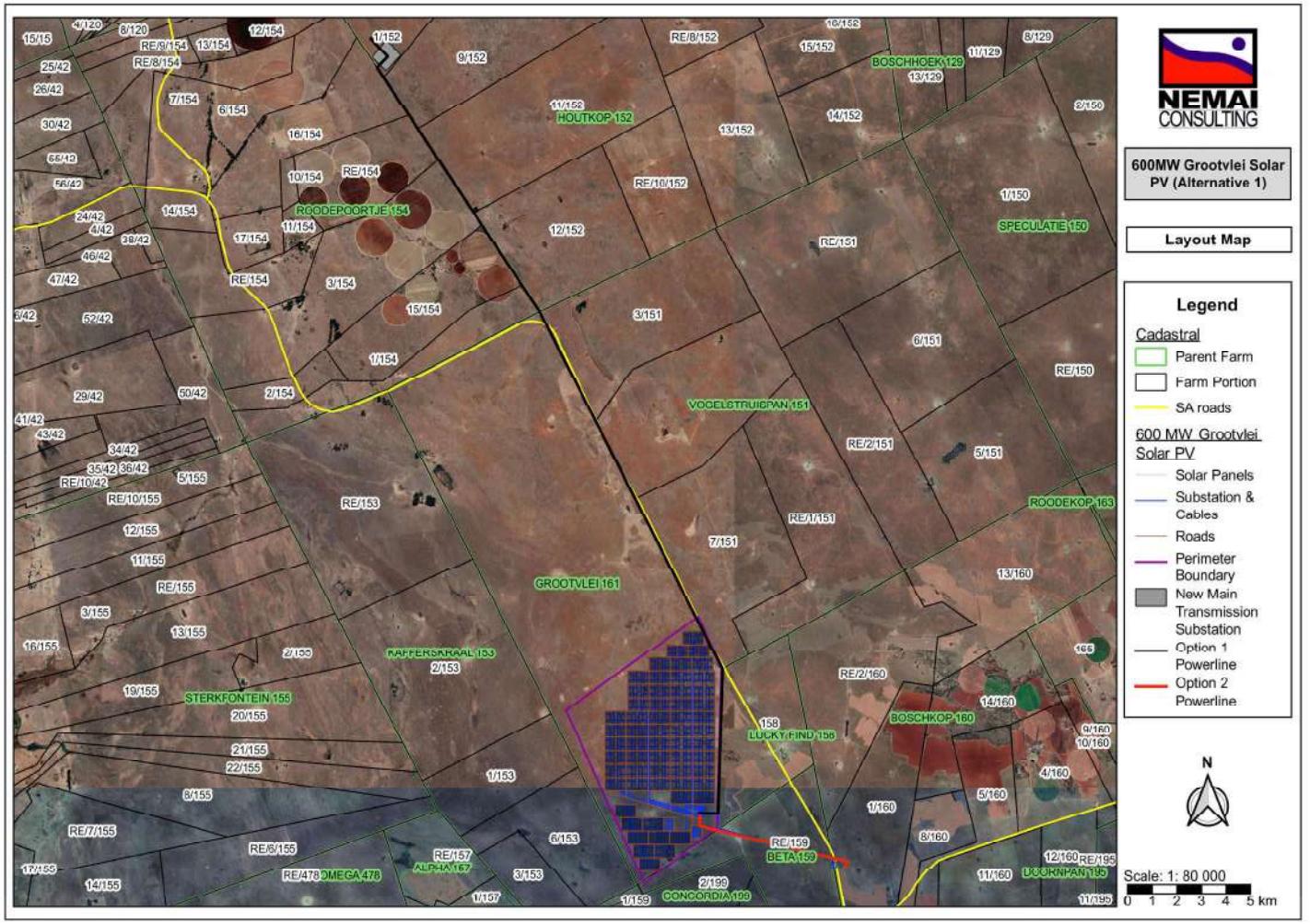


Figure 1: *Locality map of overall Project Area*

The coordinates of the power line are tabulated below.

Table 3: *Powerline Route Coordinates*

Description	Coordinates
Powerline Option 1	
• 26°14'4.68"S 26°35'48.48"E; • 26°14'4.97"S 26°35'58.79"E; • 26°12'48.81"S 26°36'1.81"E; • 26° 7'32.41"S 26°32'38.79"E; • 26° 7'26.46"S 26°32'45.42"E; and • 26° 7'17.53"S 26°32'35.31"E	
Powerline Option 2	
• 26°14'4.72"S 26°35'48.29"E • 26°14'11.44"S 26°35'48.26"E • 26°14'30.00"S 26°37'14.63"E • 26°14'32.76"S 26°37'13.76"E	

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features in the surrounding landscape. The overhead transmission and distribution profile shall be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions shall be used.

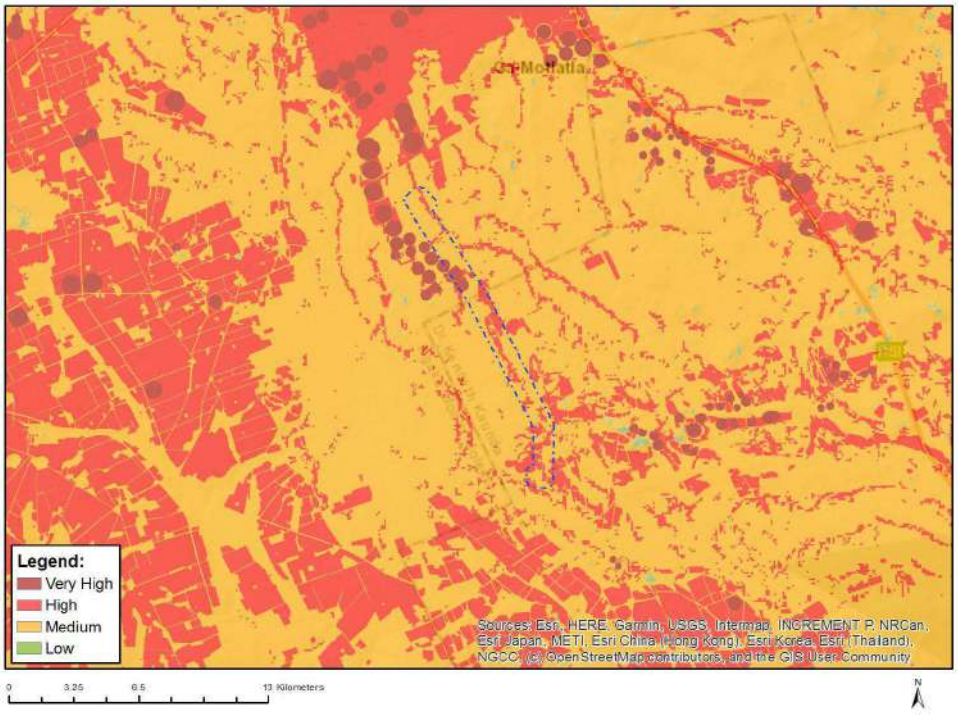
A summary of the proposed development site's environmental sensitivities is tabulated below, based on the national web based environmental screening tool. It is noted that these sensitivities are regarded as indicative, as the site's sensitivity was confirmed through the specialist studies undertaken as part of the EIA.

7.2.2.1 Powerline Option 1

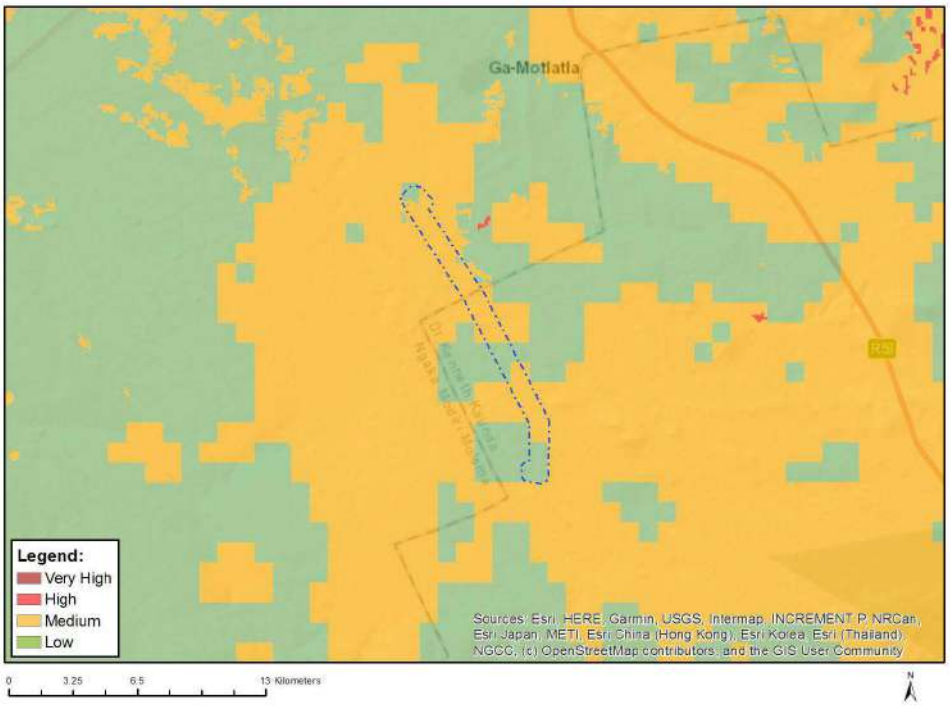
Table 4: *Screened Environmental Sensitivity*

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

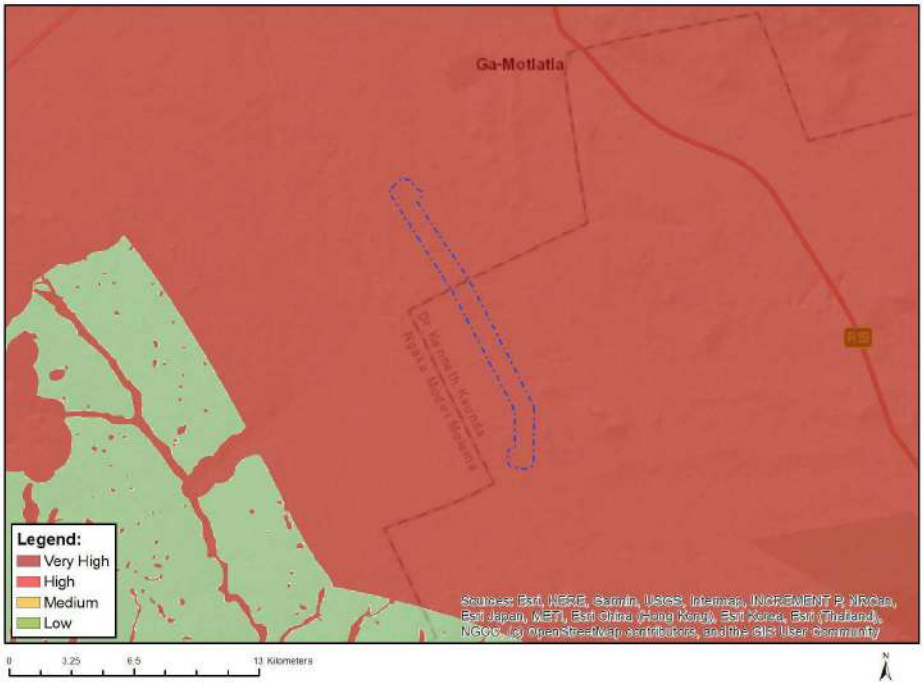
MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



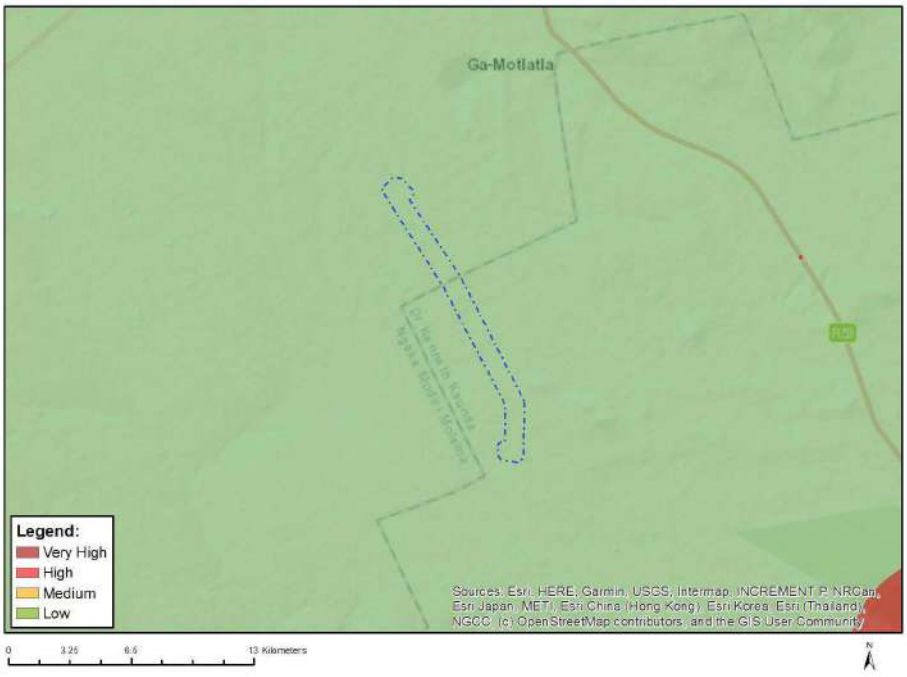
MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



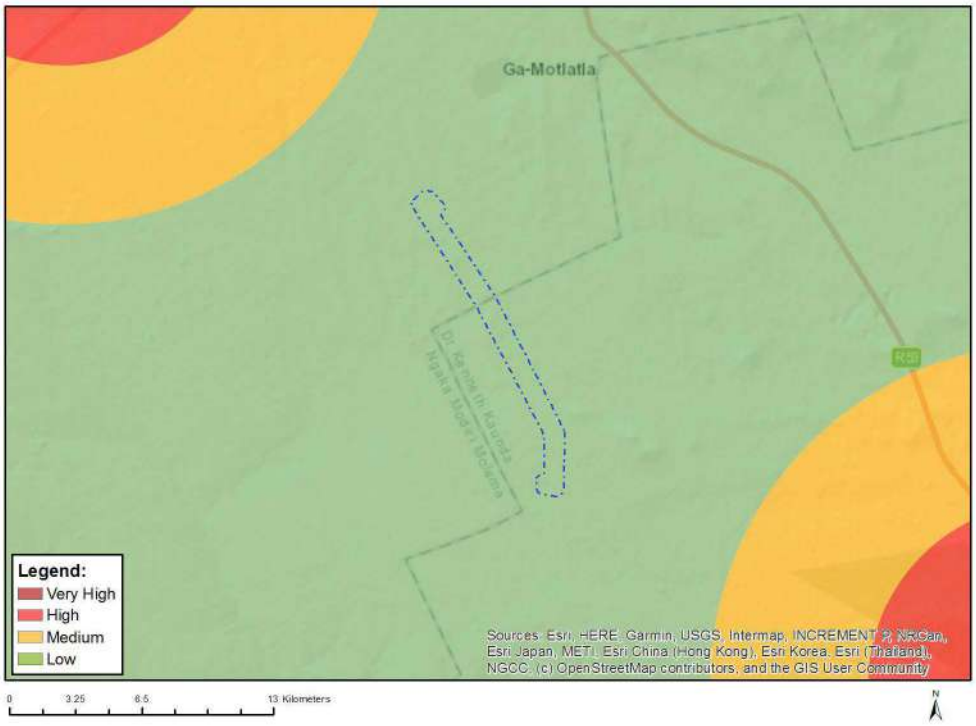
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

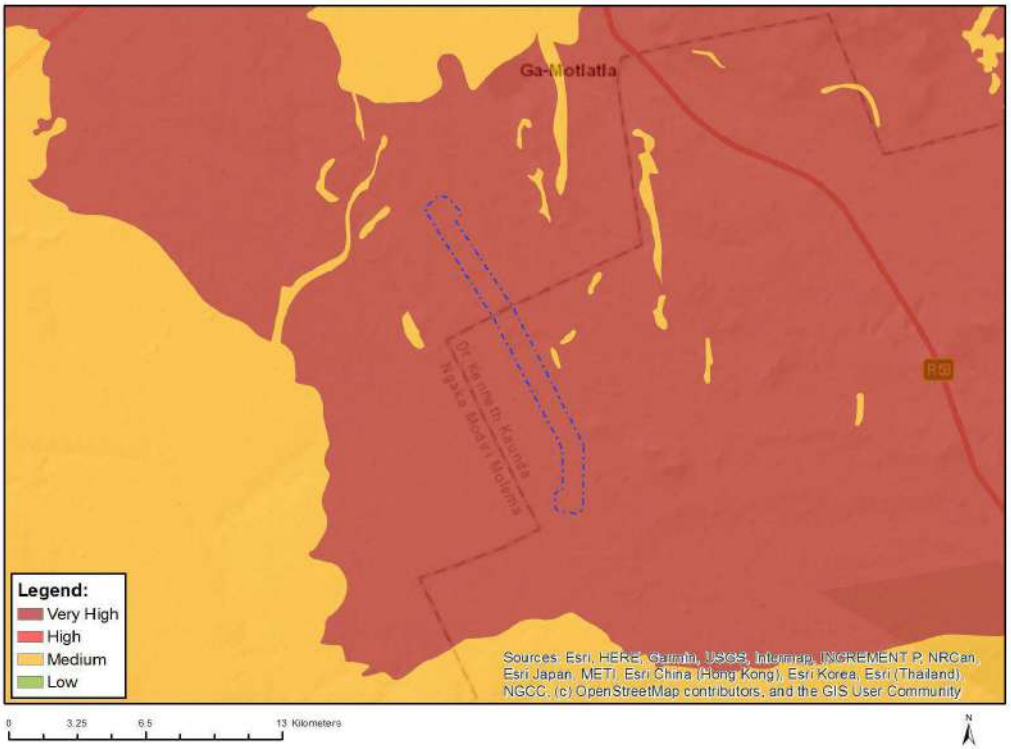


MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

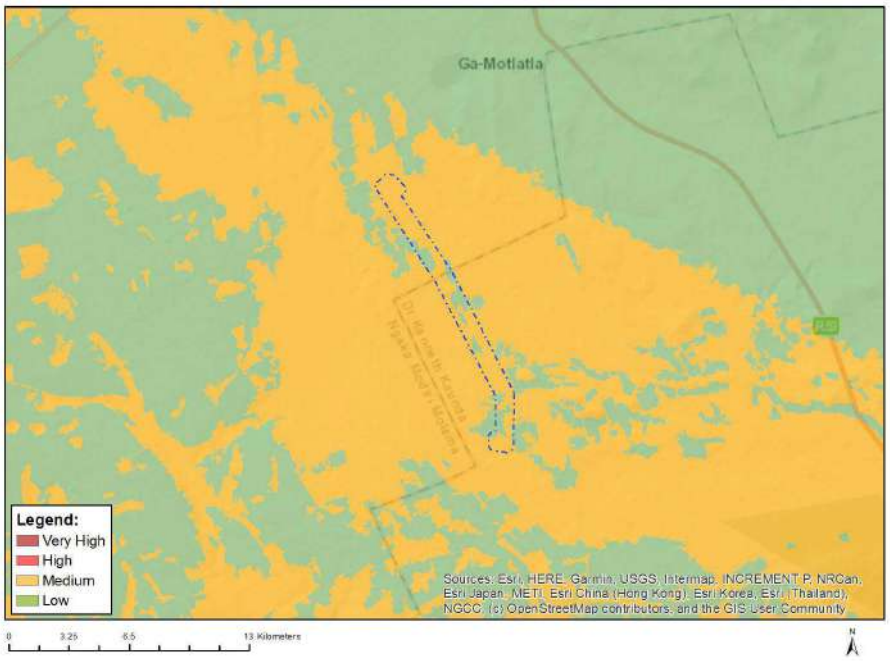


MAP OF RELATIVE DEFENCE THEME SENSITIVITY

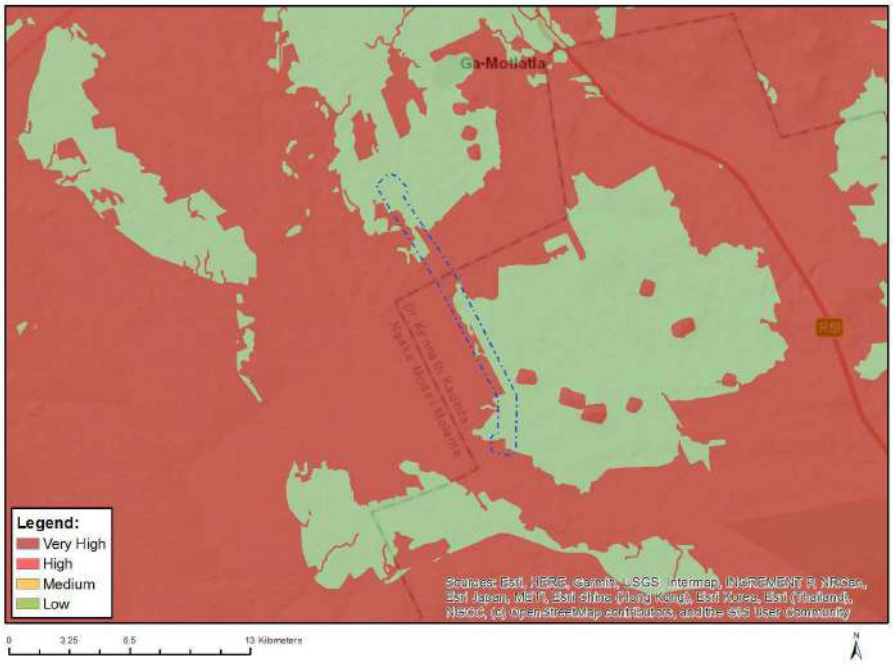
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

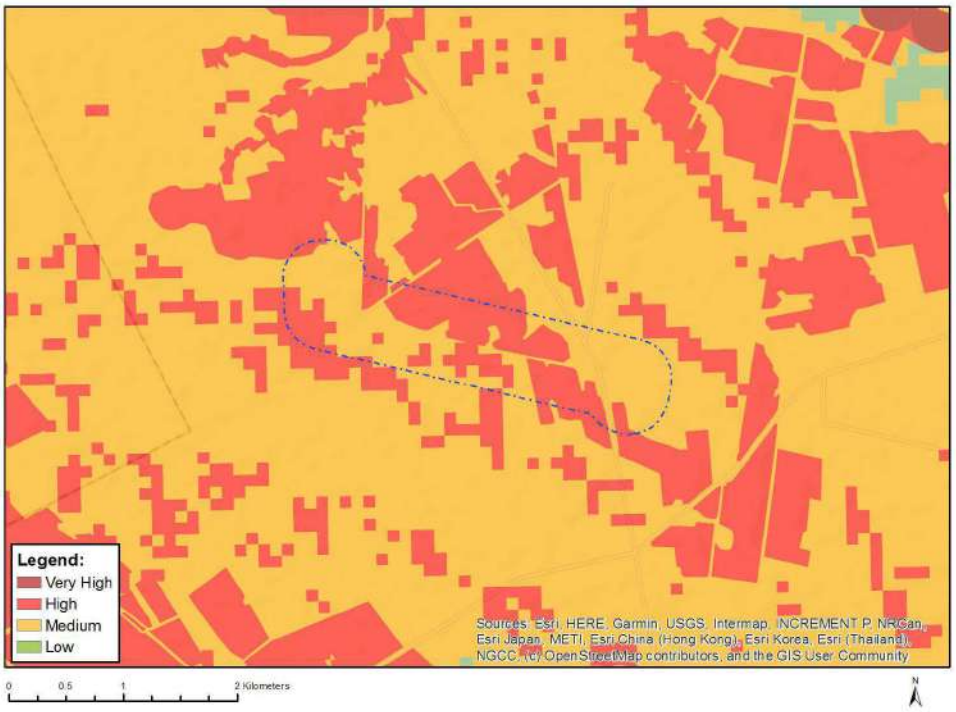


7.2.2.2 Powerline Option 2

Table 5: *Screened Environmental Sensitivity*

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

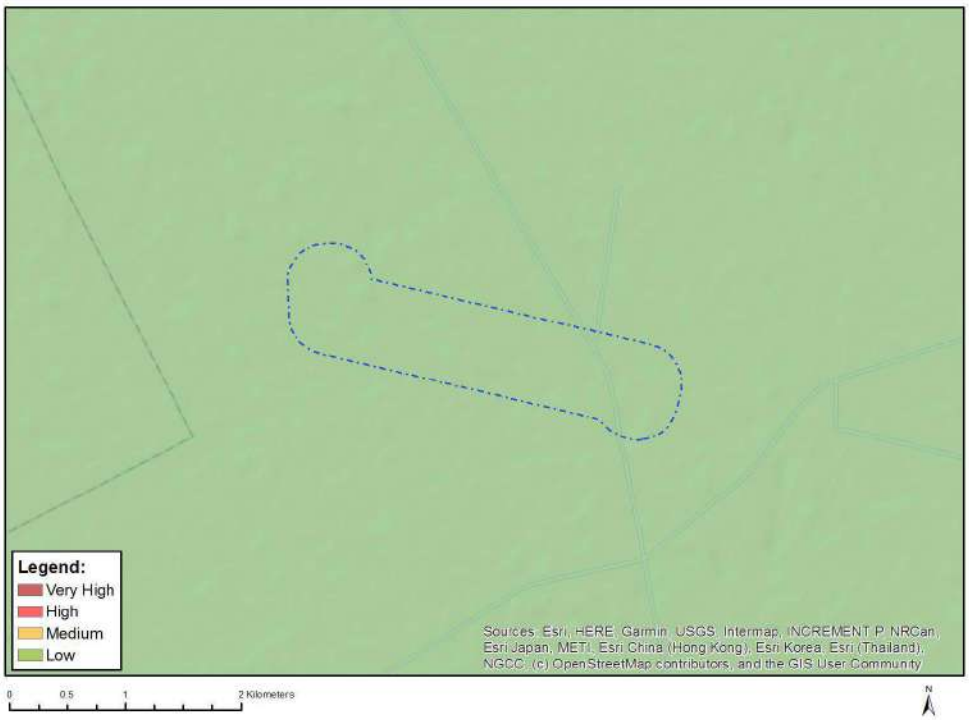


MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

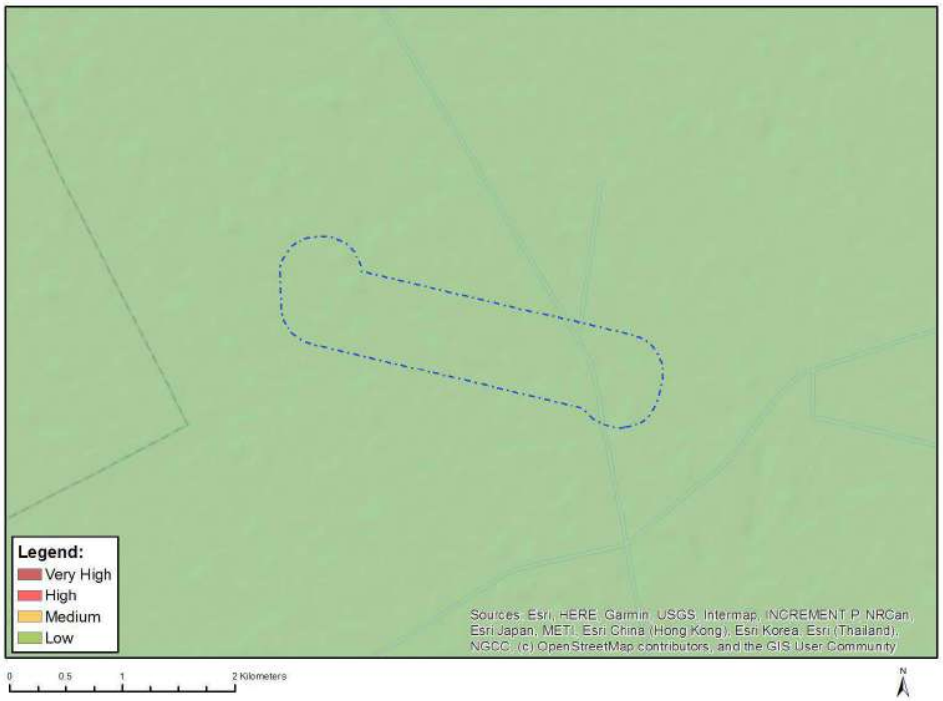
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

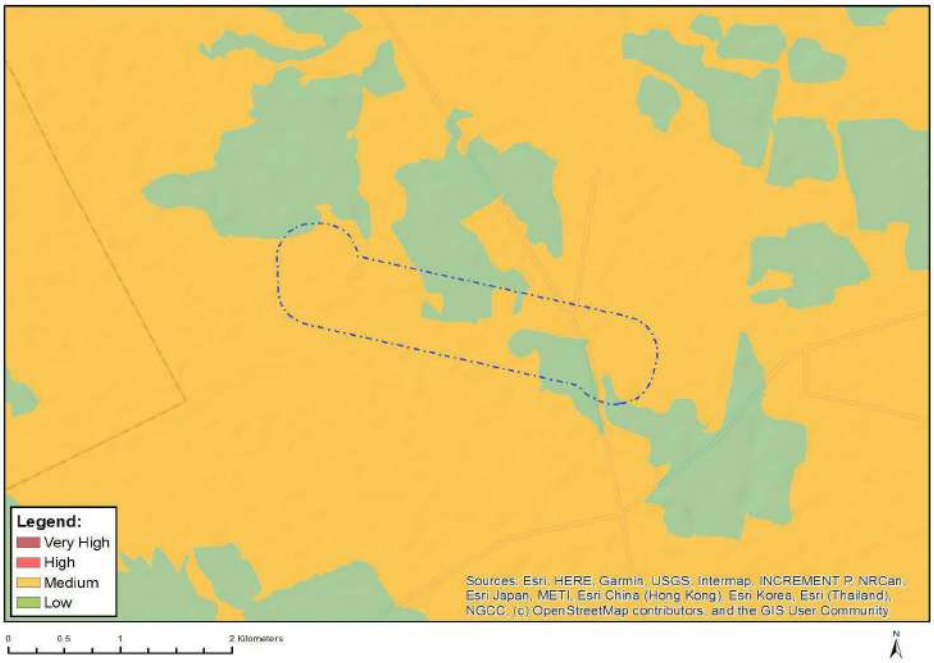


MAP OF RELATIVE DEFENCE THEME SENSITIVITY



MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

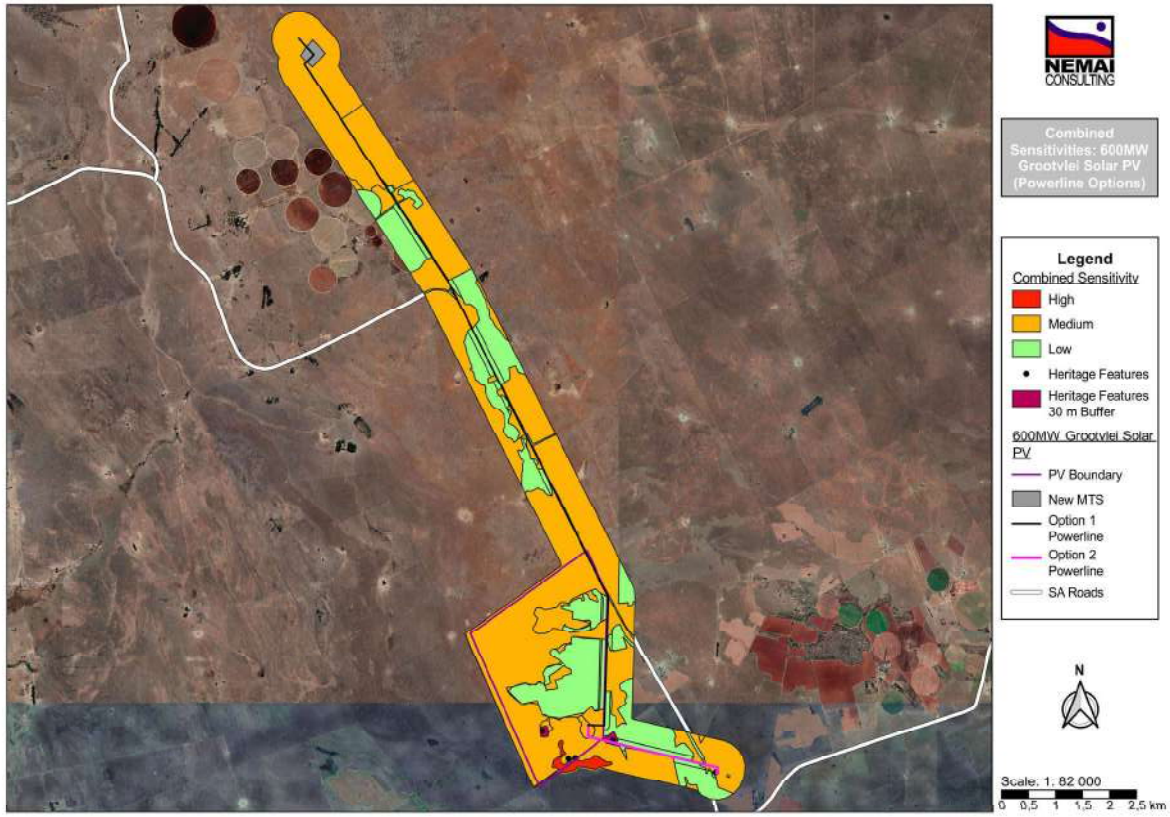


Figure 2: *Sensitivity map based on specialist studies*

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

---------- ----------

Signature Proponent/applicant/ holder of EA Date:

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

Note that sensitive features are addressed in the EMPr for the overall Solar PV Plant.

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

Method Statements to be prepared by the Contractor

APPENDIX 2: CV of EAP

Curriculum Vitae

Queries: Donavan Henning
☎ +27 11 781 1730
+27 82 891 0604
🖷 +27 11 781 1731
✉ donavanh@nemai.co.za

1 Personal Particulars

Date of Birth:	1976-12-06
Name of Staff:	Donavan Henning
Years of Experience:	20
Nationality:	RSA

2 Position in the firm and within the organization of this assignment

Registered Environmental Assessment Practitioner.

3 Education

Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained
RAU (1995 – 1997)	B.Sc. Zoology and Biochemistry
RAU (1998)	B. Sc. Hons. Zoology
RAU (1999 – 2000)	M. Sc. Freshwater Ecology

4 Membership of professional bodies

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1217).
- South African Council for Natural Scientific Professions (SACNASP) (400108/17).

5 Relevant Experience - Energy

1.	**Project Name:**	**KIVU56**
	Client:	Symbion Power Lake Kivu LTD
	Location of Project:	Rubavu District, Western Province, Rwanda
	Duration (Start & Completion Dates):	Feb 2020 – Nov 2020
	Brief Description of work:	
	The KIVU56 project is located on the eastern shores of Lake Kivu, Rwanda. Methane gas is extracted from the waters of Lake Kivu and used to run engines that generate electricity. The electricity is passed onto the Rwandan national grid and used throughout the country. Nemai Consulting was appointed to ensure that the project conforms to the International Finance Corporation's 2012 Performance Standards on Environmental and Social Sustainability.	

2.	**Project Name:**	**Matjhabeng Solar PV Project**
	Client:	SunElex Energy (Pty) Ltd
	Location of Project:	Odendaalsrus, Free State Province, RSA
	Duration (Start & Completion Dates):	Jul – Nov 2018
	Brief Description of work:	
	SunElex Energy (Pty) Ltd has proposed the development of the Matjhabeng 400 MW Solar Photovoltaic Plant with 80 MW (320 MWh) Battery Energy Storage System, which is located north and south of the town of Odendaalsrus in the Free State Province. The proposed Solar Photovoltaic Plant will be developed to serve the Matjhabeng Local Municipality's energy requirements and will generate power for delivery to the local/national grid. The electricity generated by the Solar Photovoltaic Plant will be injected into the existing Eskom 132kV distribution system.	

3.	**Project Name:**	**75MW Beaufort West Photovoltaic Project**
	Client:	Beaufort West Photovoltaic (Pty) Ltd
	Location of Project:	Beaufort West, Western Cape, RSA
	Duration (Start & Completion Dates):	Nov 2020 – Jul 2021
	Brief Description of work:	

	Beaufort West Photovoltaic (Pty) Ltd has proposed the development of the Beaufort West Photovoltaic (PV) Project in the Western Cape, with a total generation capacity of not exceeding 75MW renewable solar energy. The associated infrastructure includes access roads, overhead power lines, substation and control building(s). The electricity generated by the PV Park will be transferred to the national Eskom grid. The Project will connect to existing Droërivier Substation beside the N12 through a ±14.9km single circuit twin conductor 132 kV line.

4.	**Project Name:**	**uMkhomazi Water Project Phase 1**
	Client:	Department of Water and Sanitation
	Location of Project:	Bulwer, KwaZulu-Natal Province, RSA
	Duration (Start & Completion Dates):	Aug 2013 - Present
	Brief Description of work:	
	EIA as part of Feasibility Study for the uMkhomazi Water Project Phase 1. Project components include large storage dam, tunnel, balancing dam, raw water pipeline and **hydropower facilities** (Baynesfield HPP - 3 MW power potential; Smithfield Dam HPP- 2.6 MW power potential).	

5.	**Project Name:**	**Hydropower Plant within Hydraulic Network at Zoekfontein Site**
	Client:	Rand Water
	Location of Project:	Zoekfontein, Gauteng Province, RSA
	Duration (Start & Completion Dates):	Feb 2012 – April 2014
	Brief Description of work:	
	Environmental Impact Assessment for the construction of an 8 MW hydropower station alongside the Zoekfontein Control Works downstream of the Vaal Dam.	

6.	**Project Name:**	**Impompomo Hydropower Plant**
	Client:	Blue World Power & Energy
	Location of Project:	Mpumalanga, RSA
	Duration (Start & Completion Dates):	2018
	Brief Description of work:	
	Environmental Screening for a hydropower plant on the Mpompomo Falls in Mpumalanga. The scope of works include the Impompomo powerhouse (hydropower plant), powerlines from Impompomo hydropower plant to Barberton, penstock from Mpompomo Top Weir and Mpompomo Top Weir.	

7.	**Project Name:**	**Neptune-Poseidon Transmission Line**
	Client:	Eskom
	Location of Project:	Eastern Cape, RSA
	Duration (Start & Completion Dates):	2009 - 2011
	Brief Description of work:	
	EIA and public participation for a 200 km transmission line, with alternatives, with 3000 affected parties and landowners.	

8.	**Project Name:**	**Anderson Dinaledi Transmission Line**
	Client:	Eskom
	Location of Project:	North-West, RSA
	Duration (Start & Completion Dates):	2011 - 2013
	Brief Description of work:	
	EIA and public participation for an 80 km transmission line, with alternatives, through a the Magaliesburg Nature Conservation Area.	

9.	**Project Name:**	**Makalu B (Igesi) Substation and Associated Transmission Loop-In Lines**
	Client:	Eskom
	Location of Project:	Free State, RSA
	Duration (Start & Completion Dates):	2016 - 2018
	Brief Description of work:	
	EIA and public participation for a new substation and 2 x 275 kV line loop-ins from the Lethabo – Makalu Lines.	

APPENDIX G2: Generic EMPr: Substation Infrastructure

GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

TABLE OF CONTENTS

List of Tables

List of Figures

INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of substation infrastructure for the transmission and distribution of electricity requiring EA in terms of NEMA. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realization of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information and is **not legally binding**	Definitions, acronyms, roles & responsibilities and documentation and reporting.
B	1	Pre-approved generic EMPr template	Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved. The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template **is not required** to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA. To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA

Part	Section	Heading	Content
			will comply with the pre-approved generic EMPr template contained in Part B: Section 1, and understands that the impact management outcomes and impact management actions are **legally binding**. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and impact management actions have been either pre-approved or approved in terms of Part C. This section **must be** submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C is applicable to the site, it **is required** to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The

Part	Section	Heading	Content
			information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding. This section applies only **to additional** impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in Part B: section 1.
Appendix 1			Contains the method statements to be prepared prior to commencement of the activity. The method statements are **not required** to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
  - a 'responsible person',
  - a method for implementation,
  - a timeframe for implementation
- For monitoring
  - a responsible person
  - frequency
  - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template once signed and dated is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in Regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the property or farm in which the proposed substation infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

Sub-section 3 is the declaration that the applicant (s)/proponent (s) or holder of the EA in the case of a change of ownership must complete which confirms that the applicant/EA holder will comply with the pre-approved 'generic EMPr' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"**hazardous substance**" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

(i) Construction procedures;
(ii) Plant, materials and equipment to be used;
(iii) Transporting the equipment to and from site;
(iv) How the plant/ material/ equipment will be moved while on site;
(v) How and where the plant/ material/ equipment will be stored;
(vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
(vii) Timing and location of activities;
(viii) Compliance/ non-compliance; and
(ix) Any other information deemed necessary by the Project Manager.

"slope" means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

"solid waste" means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

"spoil" means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

"topsoil" means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

"works" means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered Interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: *Guide to roles and responsibilities for implementation of an EMPr*

Responsible Person(s)	**Role and Responsibilities**
Developer's Project Manager (DPM)	<u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent. <u>Responsibilities</u> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.

Responsible Person(s)	Role and Responsibilities
Developer Site Supervisor (DSS)	Role The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr. Responsibilities - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	Role The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr. The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a

Responsible Person(s)	Role and Responsibilities
	variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required. <u>Responsibilities</u> The responsibilities of the ECO will include the following: - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;

Responsible Person(s)	Role and Responsibilities
	- Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer (dEO)	<u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities. <u>Responsibilities</u> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports;

Responsible Person(s)	Role and Responsibilities
	- Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	Role The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities. Responsibilities - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.

Responsible Person(s)	Role and Responsibilities
contractor Environmental Officer (cEO)	<u>Role</u> Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria: <u>Responsibilities</u> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice.

Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and

14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in (**section 4.11**) below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in (**section 4.10**) above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and

4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of substation infrastructure for the transmission and distribution of electricity. There is a list of aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contactor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All staff must receive environmental awareness training prior to commencement of the activities; – The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; – Refresher environmental awareness training is available as and when required; – All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; – The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a) Safety notifications; and b) No littering. – Environmental awareness training must include as a minimum the following: a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities;	**Contractor & cEO**	**Contractor to provide Training Programme** **Induction course Refresher** **Daily toolbox talks** **Courses to be provided by suitably qualified persons and in a language and medium understood by the workers** **Erect signage and place posters**	**From pre-construction and throughout the duration of the construction period**	**dEO & ECO**	**Monthly**	**Records of training and awareness creation (e.g. training material, training programme, completed attendance registers, etc.)**

c) Emergency preparedness and response procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand.						

5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; – Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; – Sites must be located where possible on previously disturbed areas; – The camp must be fenced in accordance with ***Section 5.5: Fencing and gate installation***; and – The use of existing accommodation for contractor staff, where possible, is encouraged.	**Contractor**	**Site Establishment Method Statement to be provided by the Contractor**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Approved method statement** **Evidence of site establishment in accordance with method statement (photographic records)**

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited.	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Training** **Method Statement for barricading**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Pre-construction survey report** **Approved method statement** **Inspection of barricading (photographic records)** **Visible signage (photographic records)** **Proof of training**

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; – Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; – In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with ***section 4.9: photographic record***; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; – Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or	**DPM & Contractor**	**Signed agreements with landowners** **Mapped access roads** **Inspection of conditions of private roads** **Rehabilitation Method Statement to include temporary access roads** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visible signage (photographic records)** **Proof of training** **Related entries into Public Complaints Register** **Inspection of access roads (photographic records)** **Approved method statement**

croplands – Access roads must only be developed on a pre-planned and approved roads.						

5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Use existing gates provided to gain access to all parts of the area authorised for development, where possible; – Existing and new gates to be recorded and documented in accordance with **section *4.9: photographic record***; – All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; – At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; – Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground;	**DPM & Contractor**	**Signed agreements with landowners** **Mapped access roads and gates** **Inspection of access gates** **Method statement for fencing and gate installation** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Inspection of access gates (photographic records)** **Related entries into Public Complaints Register** **Approved method statement**

– Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; – Original tension must be maintained in the fence wires; – All gates installed in electrified fencing must be re-electrified; – All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; – Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; – Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. – All fencing must be developed of high quality material bearing the SABS mark; – The use of razor wire as fencing must be avoided; – Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; – On completion of the development phase all temporary fences are to be removed; – The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.						

5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; – The Contractor must ensure the following: a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. – Ensure water conservation is being practiced by: a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged.	**Contractor & cEO**	**Monitoring of water abstraction volumes** **Inspection of water abstraction point (if applicable)** **Training**	**From registration of use with DWS (if applicable) and throughout the period during which water is abstracted**	**dEO & ECO**	**Daily (dEO) & Monthly (ECO)**	**Proof of registration from DWS (if applicable)** **Monitoring records of water use** **Visual inspections (photographic records)**

5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; – All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; – Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.	**Contractor & cEO**	**Method statement for managing storm water and runoff** **Inspection of cement/ concrete batching areas and settlement ponds** **Training**	**Pre-construction & construction phases**	**ECO**	**Monthly**	**Approved method statement** **Visual inspections (photographic records)** **Disposal records** **Proof of training**

5.8 Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All measures regarding waste management must be undertaken using an integrated waste management approach; – Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; – A suitably positioned and clearly demarcated waste collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; – Hazardous waste must be disposed of at a registered waste disposal site; – Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	**Contractor & cEO**	**Method statement for waste management** **Service agreements with waste service providers** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Approved method statement** **Waste management and disposal records** **Visual inspections of waste management facilities (photographic records)** **Proof of training**

5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; – In the event of a spill, prompt action must be taken to clear the polluted or affected areas; – Where possible, no development equipment must traverse any seasonal or permanent wetland – No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; – Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; – There must not be any impact on the long term morphological dynamics of watercourses or estuaries; – Existing crossing points must be favored over the creation of new crossings (including temporary access) – When working in or near any watercourse or estuary, the following environmental controls and consideration must be	**Contractor & cEO**	**Inspections of watercourses** **Rehabilitation Method Statement to include watercourses** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visual inspections of watercourses (photographic records)** **Approved method statement** **Proof of training**

taken: a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.						

5.10 Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
General: – Indigenous vegetation which does not interfere with the development must be left undisturbed; – Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; – Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; – Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; – The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; – Trees felled due to construction must be documented and	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Method Statement for managing Species of Conservation Concern (SCC)** **Method Statement for managing alien invasive species** **Management programme for managing alien invasive species during the operational phase**	**Pre-construction, construction & operational phases**	**dEO & ECO**	**Daily (dEO) & Monthly (ECO)**	**Pre-construction survey report** **Permits on record (if applicable)** **Records of felled trees** **Records of herbicide usage** **Visual inspections (photographic records), including relocated species**

form part of the Environmental Audit Report; – Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; – Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; – A daily register must be kept of all relevant details of herbicide usage; – No herbicides must be used in estuaries; – All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to ***Section 5.3: Access restricted areas***. Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.		**Applications for permits (if applicable)** **Identification of felled trees** **Daily register of herbicide usage** **Training**				**Approved method statement** **Proof of training**

5.11 Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– No interference with livestock must occur without the landowner's written consent and with the landowner or	**Contractor &**	**Agreements with landowners**	**Pre-construction, construction and**	**dEO & ECO**	**Monthly**	**Pre-construction**

a person representing the landowner being present; – The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; – Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; – Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; – No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; – No deliberate or intentional killing of fauna is allowed; – In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and – No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits.	**cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Method Statement for managing SCC** **Applications for permits (if applicable)** **Training**	**operational phases**			**survey report** **Permits on record (if applicable)** **Related entries into Public Complaints Register** **Visual inspections (photographic records)** **Proof of training**

5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in ***Section 5.3: Access restricted areas***; – Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; – All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.	**Contractor & cEO**	**Report capturing findings of site walk through (pre-construction survey)** **Barricading & signage** **Applications for permits (if applicable)** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Pre-construction survey report** **Permits on record (if applicable)** **Inspection of barricading and visible signage (photographic records)** **Visual inspections (photographic records)** **Records of chance finds**

						Proof of training

5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; – All unattended open excavations must be adequately fenced or demarcated; – Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; – Ensure structures vulnerable to high winds are secured; – Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	**Contractor & cEO**	**Barricading & signage** **Training** **Method Statement for managing excavations**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Inspection of barricading and visible signage (photographic records)** **Related entries into Public Complaints Register** **Visual inspections (photographic records)** **Approved**

						method statement **Proof of training**

5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Mobile chemical toilets are installed onsite if no other ablution facilities are available; – The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; – Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause;	**Contractor & cEO**	**Schedule for cleaning toilets** **Service agreements with sanitation service providers** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Disposal records** **Visual inspections (photographic records)** **Proof of training**

c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; – A copy of the waste disposal certificates must be maintained.						

5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Undertake environmentally-friendly pest control in the camp area; – Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; – The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area;	**Contractor & cEO**	**Posters** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Visual inspections of facilities and posters (photographic records)**

– Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; – Free condoms must be made available to all staff on site at central points; – Medical support must be made available; – Provide access to Voluntary HIV Testing and Counselling Services.						**Proof of training**

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; – The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; – All staff must be made aware of emergency procedures as part of environmental awareness training; – The relevant local authority must be made aware of a fire as soon as it starts; – In the event of emergency necessary mitigation measures to	**Contractor & cEO**	**Emergency Response Action Plan** **Emergency contact list** **Training**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Approved Emergency Response Action Plan on record** **Emergency contact list displayed** **Proof of**

contain the spill or leak must be implemented (see ***Hazardous Substances section 5.17***).						**training**

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; – All hazardous substances must be stored in suitable containers as defined in the Method Statement; – Containers must be clearly marked to indicate contents, quantities and safety requirements; – All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; – Bunded areas to be suitably lined with a SABS approved liner; – An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; – All hazardous chemicals that will be used on site must have	**Contractor & cEO**	**Method statement for managing hazardous substances** **HCS Control Sheet & registers for MSDS** **Provide Personal Protective Equipment (PPE)** **Signage** **Fire-fighting equipment** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Approved method statement** **Records (e.g. HCS Control Sheet, copies of MSDS, PPE register, spills)** **Visual inspection of storage areas, signage, spill kits, etc. (photographic records)** **Disposal**

Material Safety Data Sheets (MSDS); – All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; – Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; – The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; – The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); – The floor of the bund must be sloped, draining to an oil separator; – Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; – All empty externally dirty drums must be stored on a drip tray or within a bunded area; – No unauthorised access into the hazardous substances storage areas must be permitted; – No smoking must be allowed within the vicinity of the hazardous storage areas; – Adequate fire-fighting equipment must be made available at all hazardous storage areas;		**Inspection of storage areas**				**records** **Proof of training**

– Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; – An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; – The responsible operator must have the required training to make use of the spill kit in emergency situations; – An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; – In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to ***Section 5.7*** for procedures concerning ***storm and waste water management*** and ***5.8*** for ***solid and hazardous waste management.***						

5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; – During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; – Leaking equipment must be repaired immediately or be removed from site to facilitate repair; – Workshop areas must be monitored for oil and fuel spills; – Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; – The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; – Water drainage from the workshop must be contained and managed in accordance Section ***5.7: Storm and waste water management***.	**Contractor & cEO**	**Vehicle & Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Updated Maintenance Schedule** **Visual inspection of storage areas, signage, spill kits, etc. (photographic records)** **Disposal records** **Proof of training**

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Concrete mixing must be carried out on an impermeable surface; – Batching plants areas must be fitted with a containment facility for the collection of cement laden water. – Dirty water from the batching plant must be contained to prevent soil and groundwater contamination – Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; – A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; – Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; – Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; – Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to ***Section 5.20: Dust emissions***) – Any excess sand, stone and cement must be removed or	**Contractor & cEO**	**Method statement for managing batching plants** **Inspection of batching areas and cement storage areas** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Approved method statement** **Visual inspections (photographic records)** **Proof of training**

reused from site on completion of construction period and disposed at a registered disposal facility; – Temporary fencing must be erected around batching plants in accordance with Section ***5.5: Fencing and gate installation***.						

5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;	**Contractor & cEO**	**Dust monitoring** **Dust suppression schedule** **Signage displaying speed limits** **Training**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Updated dust suppression schedule** **Dust monitoring results** **Related entries into Public Complaints Register** **Visual inspections (photographic records)**

– Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; – Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; – Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; – Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; – For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.						**Proof of training**

5.21 Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Any blasting activity must be conducted by a suitably licensed blasting contractor; and – Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.	**Contractor & cEO**	**Compliance with blasting-related legislation and standards** **Method statement**	**Prior to blasting up to safe completion of blasting**	**dEO & ECO**	**Monthly**	**Approved method statement** **Proof of notification of**

		for blasting **Notifications** **Training**				**landowners** **Related entries into Public Complaints Register** **Visual inspections (photographic records)** **Proof of training**

5.22 Noise

Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only;	**Contractor & cEO**	**Code of Conduct** **Noise monitoring**	**Construction phase**	**dEO & ECO**	**Monthly**	**Noise monitoring results**

– All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; – Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; – Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.		**Signage** **Training**				**Related entries into Public Complaints Register** **Visible signage** **Proof of training**

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Designate smoking areas where the fire hazard could be regarded as insignificant; – Firefighting equipment must be available on all vehicles	**Contractor & cEO**	**Notification of FPA** **Emergency contact list**	**Pre-construction & construction phases**	**dEO & ECO**	**Monthly**	**Proof of notification of FPA**

located on site; – The local Fire Protection Agency (FPA) must be informed of construction activities; – Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; – Two way swop of contact details between ECO and FPA.		**Training**				**Emergency contact list displayed** **Related entries into Public Complaints Register** **Proof of training**

5.24 Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; – All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular	**Contractor & cEO**	**Inspection of stockpile areas** **Training**	**Construction phase**	**dEO & ECO**	**Monthly**	**Updated inspection register** **Visual inspections (photographic records)**

weeding and control methods; – Topsoil stockpiles must not exceed 2 m in height; – During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); – Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.						**Proof of training**

5.25 Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; – Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; – Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; – These areas can be stabilised using design structures or	**Contractor & cEO**	**Method statements for:** • **Managing topsoil** • **Managing spoil material** • **Rehabilitation**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statements** **Visual inspections (photographic records)**

vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; – Rehabilitation of the disturbed areas must be managed in accordance with ***Section 5.35: Landscaping and rehabilitation***; – All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and – Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.						

5.26 Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All excess spoil generated during foundation excavation	**Contractor &**	**Method statements for:**	**Construction phase**	**dEO & ECO**	**Monthly (during**	**Approved method**

must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; – Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; – Management of equipment for excavation purposes must be undertaken in accordance with ***Section 5.18: Workshop, equipment maintenance and storage***; and – Hazardous substances spills from equipment must be managed in accordance with ***Section 5.17: Hazardous substances***.	**cEO**	• **Managing spoil material** • **Managing hazardous substances** • **Rehabilitation**			**relevant construction activities)**	**statements** **Visual inspections (photographic records)**

5.27 Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Batching of cement to be undertaken in accordance with **Section *5.19: Batching plants***; and – Residual solid waste must be disposed of in accordance with **Section *5.8: Solid waste and hazardous management***.	**Contractor & cEO**	**Method statements for:** • **Managing batching plants** • **Managing**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statements** **Disposal records**

		hazardous waste				**Visual inspections (photographic records)**

5.28 Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Management of dust must be conducted in accordance with Section ***5. 20: Dust emissions***; – Management of equipment used for installation must be conducted in accordance with Section ***5.18: Workshop, equipment maintenance and storage***; – Management hazardous substances and any associated spills must be conducted in accordance with Section ***5.17: Hazardous substances***; and – Residual solid waste must be recycled or disposed of in accordance with ***Section 5.8: Solid waste and hazardous management***.	**Contractor & cEO**	**Method statements for:** • **Managing hazardous substances** • **Managing hazardous waste** **Dust monitoring** **Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statements** **Dust monitoring results** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

5.29 Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts – Emergency repairs due to breakages of equipment must be managed in accordance with ***Section 5. 18: Workshop, equipment maintenance and storage*** and ***Section 5.16: Emergency procedures***.	**Contractor & cEO**	**Emergency Response Action Plan** **Emergency contact list** **Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved Emergency Response Action Plan on record** **Emergency contact list displayed** **Visual inspections (photographic records)** **Proof of training**

5.30 Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with **Section 6.8: *Solid waste and hazardous Management***; – Management of equipment used for installation shall be conducted in accordance with **Section *5.18: Workshop, equipment maintenance and storage***; – Management hazardous substances and any associated spills shall be conducted in accordance with ***Section 5.17: Hazardous substances***.	**Contractor & cEO**	**Method statements for:** • **Managing hazardous substances** • **Managing hazardous waste** **Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statements** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

5.31 Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Residual solid waste must be recycled or disposed of in accordance with ***Section 5.8: Solid waste and hazardous management***.	**Contractor & cEO**	**Method statement for managing hazardous waste** **Equipment maintenance programme** **Training**	**Construction phase**	**dEO & ECO**	**Monthly (during relevant construction activities)**	**Approved method statements** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

5.32 Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Develop and implement communication strategies to facilitate public participation; – Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; – Sustain continuous communication and liaison with neighboring owners and residents – Create work and training opportunities for local stakeholders; and – Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.	**Contractor & cEO**	**Grievance Redress Mechanism (GRM)** **Share contact details of ECO with stakeholders**	**Pre-construction, construction and operational phases**	**dEO & ECO**	**Monthly**	**Documented GRM** **Proof of communication** **Related entries into Public Complaints Register**

5.33 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in ***sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage***; – Hazardous storage areas must be well ventilated; – Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; – Emergency and contact details displayed must be displayed; – Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; – Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; – Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; – Structures vulnerable to high winds must be secured; – Wind and dust mitigation must be implemented;	**Contractor & cEO**	**Method statement for temporary closure of site** **Training**	**Construction phase**	**dEO & ECO**	**Before and during site closure**	**Approved method statement** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

– Cement and materials stores must have been secured; – Toilets must have been emptied and secured; – Refuse bins must have been emptied and secured; – Drip trays must have been emptied and secured.						

5.34 Dismantling of old equipment

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; – Oil containing equipment must be stored to prevent leaking or be stored on drip trays; – All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; – Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; – The Contractor must also be equipped to contain and clean up any pollution causing spills; and	**Contractor & cEO**	**Method statement for dismantling, storage and disposal of old equipment** **Training**	**Construction phase**	**dEO & ECO**	**Before and during dismantling, storage and disposal of old equipment**	**Approved method statement** **Disposal records** **Visual inspections (photographic records)** **Proof of training**

– Disposal of unusable material must be at a licensed waste disposal site.						

5.35 Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; – All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 – All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; – Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; – Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; – Rehabilitation of access roads outside of farmland; – Indigenous species must be used for with species and/grasses to where it compliments or approximates the	**DPM, DSS, Contractor & cEO**	**Rehabilitation Method Statement** **Pre-construction survey – established baseline** **Signage** **Training**	**Throughout the duration of the construction period, as relevant to the concurrent or progressive reinstatement and rehabilitation of affected areas. Up to end of defects liability period. Rehabilitation will also extent into the operational phase.**	**dEO & ECO**	**Monthly**	**Approved method statement** **Pre-construction survey report** **Visible signage** **Related entries into Public Complaints Register** **Visual inspections (photographic records)**

original condition; – Stockpiled topsoil must be used for rehabilitation (refer to ***Section 5.24: Stockpiling and stockpiled areas***); – Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; – Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; – Subsoil must be ripped before topsoil is placed; – The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; – Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; – Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; – Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. – Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area						**Proof of training**

6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Name of applicant: LTM Green Energies (Pty) Ltd

Tel No: 021 0013758

Fax No:

Postal Address: PO Box 363 Newlands Cape Town

Physical Address: Suite 212 2nd Floor Kildare House The Oval 1 Oakdale Road Newlands Cape Town

7.1.2 Details and expertise of the EAP:

Name of EAP: Donavan Henning from Nemai Green

Tel No: 011 781 1730

Fax No: 011 781 1731

E-mail address: donavanh@nemai.co.za

Expertise of the EAP (Curriculum Vitae included): *Refer to Appendix 2*

7.1.3 Project name: **Proposed Grootvlei 600MW Solar Plant, Battery Energy Storage Systems & Grid Connection Project north west of Ventersdorp, JB Marks Local Municipality, North West Province.**

7.1.4 Description of the project:

Electricity generation sources need to be diversified to ensure security of supply and reduction in the carbon footprint created by the current heavy reliance of South Africa (SA) on coal to produce electricity. LTM Green Energies (Pty) Ltd (the "Applicant") has proposed the development of Grootvlei 600MW Solar Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project north west of Ventersdorp within the JB Marks Local Municipality in the North West Province (the "Project"). The electricity generated by the Project will be transmitted through Option 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In-Loop Out (LILO) of the Pluto – Watershed 275kV power line **and** Option 2 that comprises of 2.8km 132 kV line from the

new facility 33kV substation facility 33kV substation to the Makokskraal Substation. Ssee **Figure 1** below).

The technical details of the proposed project are captured in **Table 2** below.

The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows and/or other renewable energy markets within SA.

Table 2: *Technical details of the proposed PV Plant*

No.	Component	Description / Dimensions
1.	Height of PV panels	± 2.5m
2.	Area of PV Array	± 490 ha
3.	Number of inverters required	Approximately 240x 2.5MW inverters
4.	Area occupied by inverter / transformer stations / substations	• Area occupied by inverter stations =0.35ha • Area occupied by Operation and Maintenance infrastructure = ± 0.1 ha • Area occupied by facility (step-up/Collector) substation = 0.2 ha Area occupied by the onsite substations = 0.1 ha
5.	Capacity of on-site substation	Up to a maximum of 600 MW, 6.6kV/275kV
6.	Area occupied by buildings and BESS	• Area occupied by Operation & Maintenance infrastructure =± 0.1 ha Area occupied by BESS = 0.35 ha
7.	Area occupied by both permanent and construction laydown areas	• Construction areas = 0.25 ha • Operation & Maintenance infrastructure = ± 0.1 ha Total combined = ± 0.35 ha
8.	Area occupied by buildings	1.5 ha
9.	Length of internal roads	± 15km
10.	Width of internal roads	• Internal roads will have a 5m road width. Access road will have a 14m reserve and road width of 8m.
11.	Proximity to grid connection	Grid Connection: Route 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In-Loop Out (LILO) of the Pluto – Watershed 275kV power line; and Route 2 that comprises of 2.8km 132 kV line from the new facility 33kV substation facility 33kV substation to the Makokskraal Substation.
12.	Height of fencing	Up to 3m
13.	Type of fencing	Type will vary around the site, welded mesh, palisade and electric fencing

7.1.5 Project location:

The locality map is provided below.

Figure 1: ***Locality map of overall Project Area***

The coordinates of the substation are tabulated below.

Table 3: *Coordinates for the Proposed Substation*

Description	Coordinates
• 26° 7'26.94"S 26°32'36.31"E; • 26° 7'17.88"S 26°32'44.52"E; • 26° 7'25.77"S 26°32'52.81"E; and • 26° 7'33.74"S 26°32'44.33"E.	

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.

A summary of the proposed development site's environmental sensitivities is tabulated below, based on the national web based environmental screening tool. It is noted that these sensitivities are regarded as indicative, as the site's sensitivity was confirmed through the specialist studies undertaken as part of the EIA. Sensitivity maps for the substation follow.

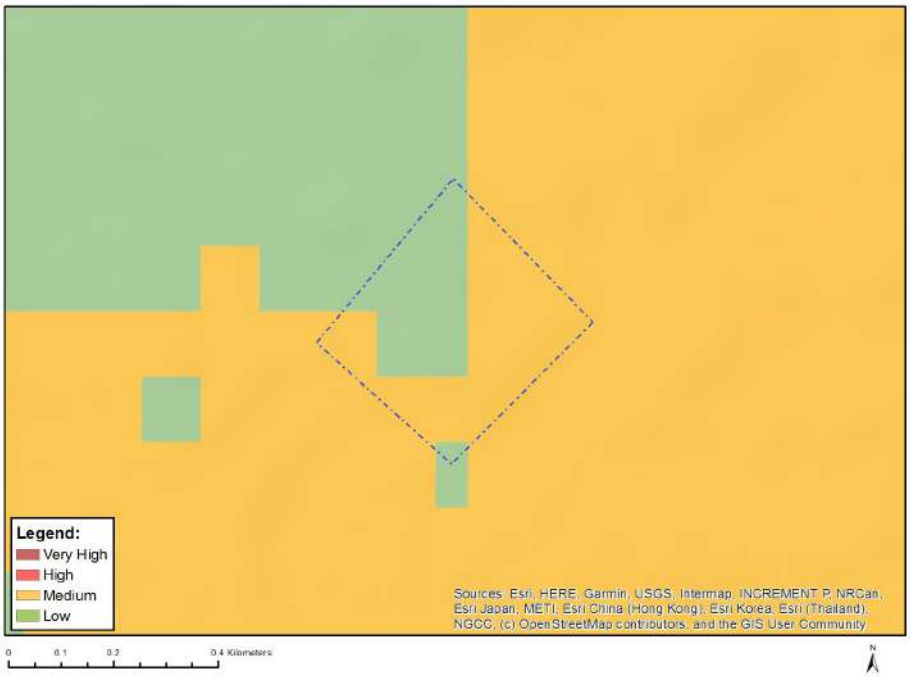
7.2.2.1 Substation

Table 4: *Screened Environmental Sensitivity (Substation)*

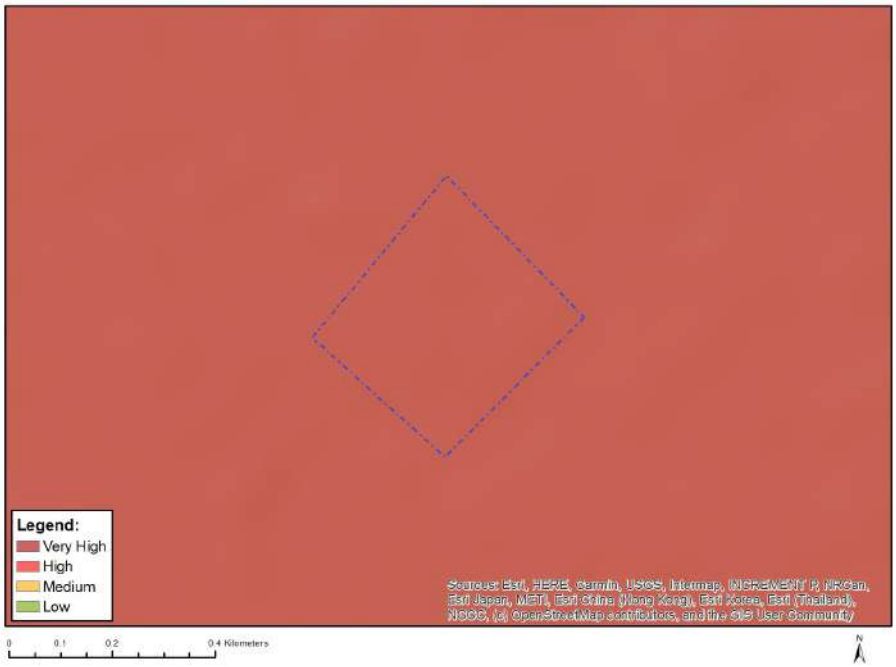
Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme				X

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

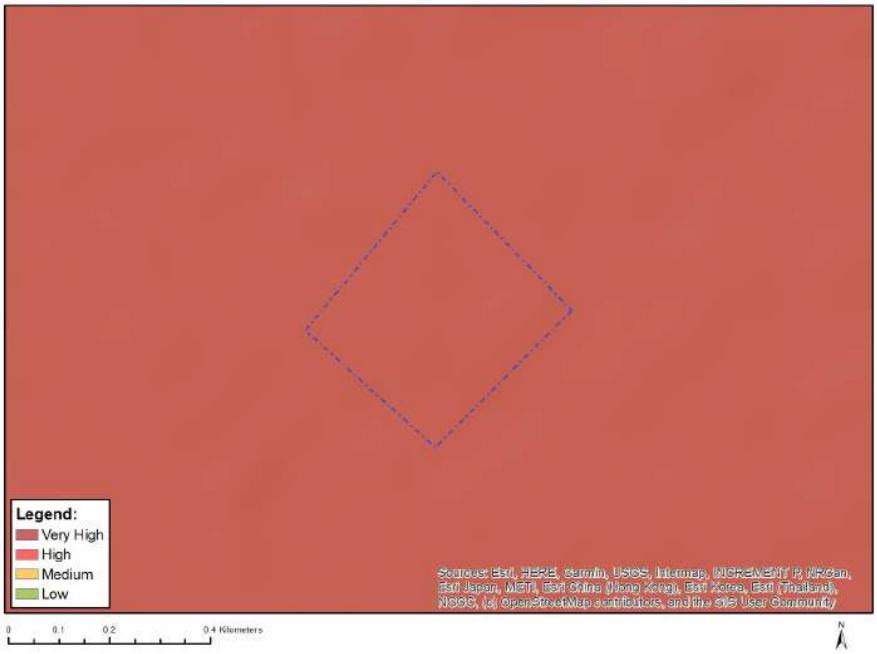


MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

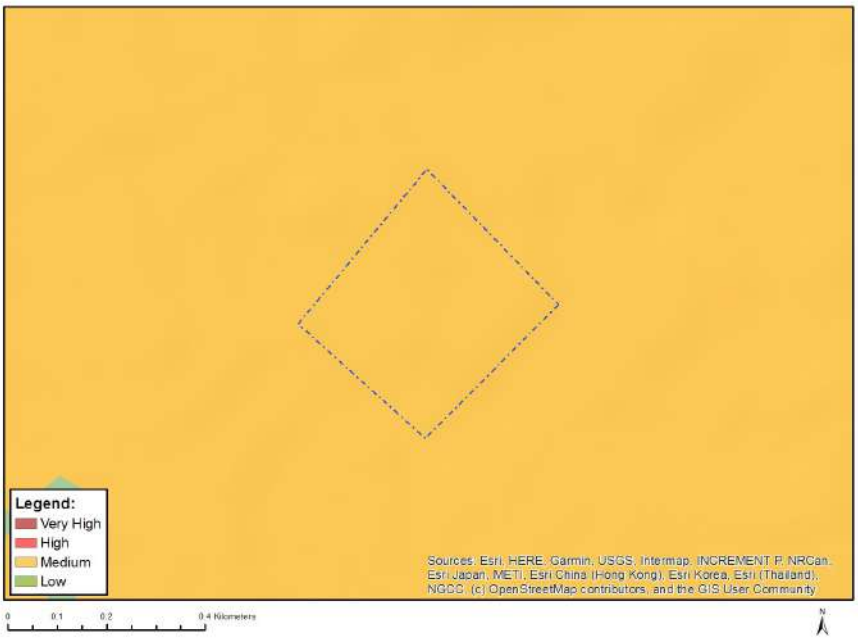
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

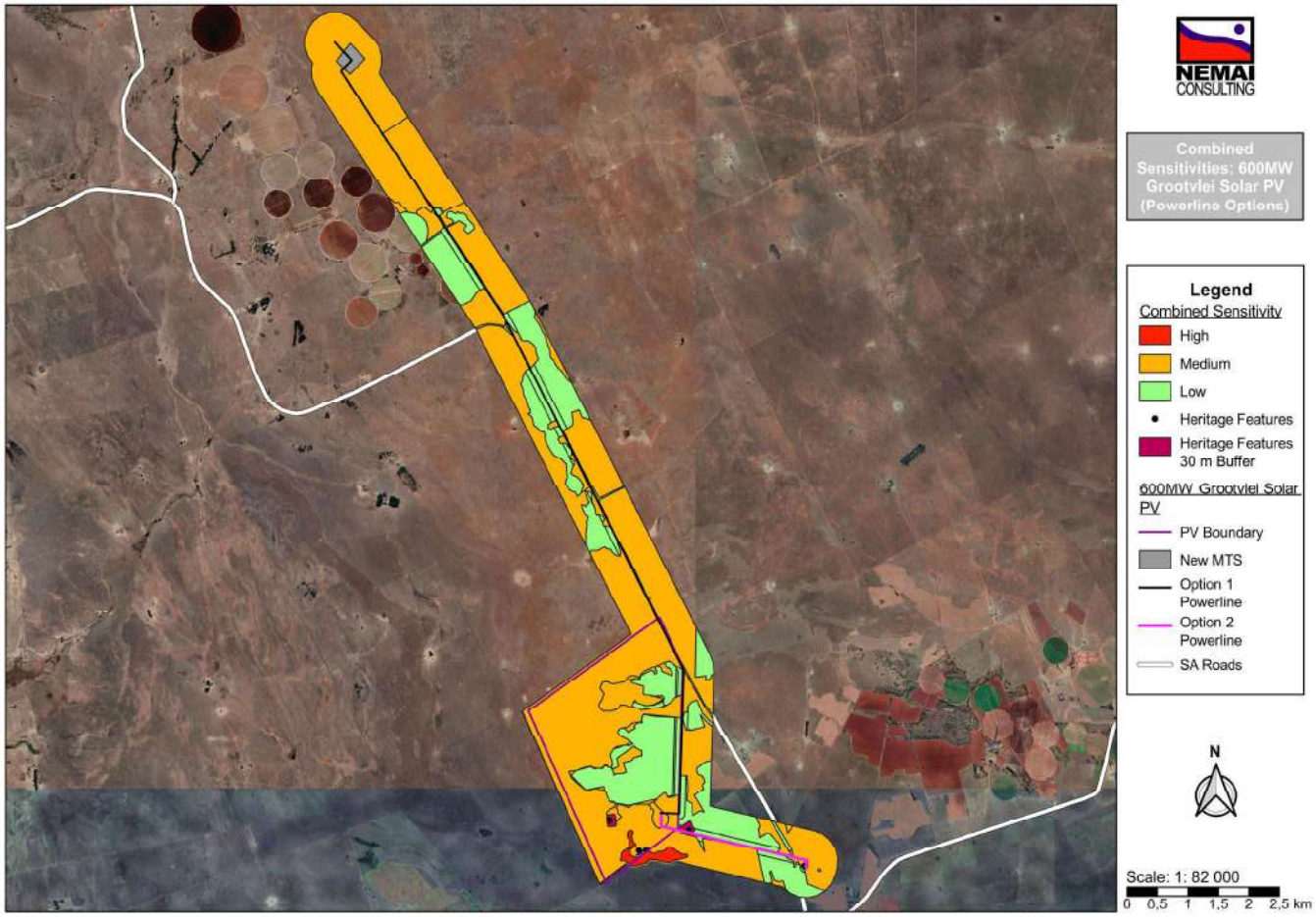
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY


NEMAI CONSULTING
Combined Sensitivities: 600MW Grootvlei Solar PV (Powerline Options)
Legend
Combined Sensitivity
High
Medium
Low
Heritage Features
Heritage Features 30 m Buffer
600MW Grootvlei Solar PV
PV Boundary
New MTS
Option 1 Powerline
Option 2 Powerline
SA Roads
N
Scale: 1: 82 000
0 0,5 1 1,5 2 2,5 km

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

---------- ----------

Signature Proponent/applicant/ holder of EA Date:

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr f or the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

Note that sensitive features are addressed in the EMPr for the overall Solar PV Plant.

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

Method Statements to be prepared by the Contractor

APPENDIX 2: CV of EAP

Curriculum Vitae

Queries: Donavan Henning
☎ +27 11 781 1730
+27 82 891 0604
🖷 +27 11 781 1731
✉ donavanh@nemai.co.za

1 Personal Particulars

Date of Birth:	1976-12-06
Name of Staff:	Donavan Henning
Years of Experience:	20
Nationality:	RSA

2 Position in the firm and within the organization of this assignment

Registered Environmental Assessment Practitioner.

3 Education

Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained
RAU (1995 – 1997)	B.Sc. Zoology and Biochemistry
RAU (1998)	B. Sc. Hons. Zoology
RAU (1999 – 2000)	M. Sc. Freshwater Ecology

4 Membership of professional bodies

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1217).
- South African Council for Natural Scientific Professions (SACNASP) (400108/17).

5 Relevant Experience - Energy

1.	**Project Name:**	**KIVU56**
	Client:	Symbion Power Lake Kivu LTD
	Location of Project:	Rubavu District, Western Province, Rwanda
	Duration (Start & Completion Dates):	Feb 2020 – Nov 2020
	Brief Description of work:	
	The KIVU56 project is located on the eastern shores of Lake Kivu, Rwanda. Methane gas is extracted from the waters of Lake Kivu and used to run engines that generate electricity. The electricity is passed onto the Rwandan national grid and used throughout the country. Nemai Consulting was appointed to ensure that the project conforms to the International Finance Corporation's 2012 Performance Standards on Environmental and Social Sustainability.	

2.	**Project Name:**	**Matjhabeng Solar PV Project**
	Client:	SunElex Energy (Pty) Ltd
	Location of Project:	Odendaalsrus, Free State Province, RSA
	Duration (Start & Completion Dates):	Jul – Nov 2018
	Brief Description of work:	
	SunElex Energy (Pty) Ltd has proposed the development of the Matjhabeng 400 MW Solar Photovoltaic Plant with 80 MW (320 MWh) Battery Energy Storage System, which is located north and south of the town of Odendaalsrus in the Free State Province. The proposed Solar Photovoltaic Plant will be developed to serve the Matjhabeng Local Municipality's energy requirements and will generate power for delivery to the local/national grid. The electricity generated by the Solar Photovoltaic Plant will be injected into the existing Eskom 132kV distribution system.	

3.	**Project Name:**	**75MW Beaufort West Photovoltaic Project**
	Client:	Beaufort West Photovoltaic (Pty) Ltd
	Location of Project:	Beaufort West, Western Cape, RSA
	Duration (Start & Completion Dates):	Nov 2020 – Jul 2021
	Brief Description of work:	

	Beaufort West Photovoltaic (Pty) Ltd has proposed the development of the Beaufort West Photovoltaic (PV) Project in the Western Cape, with a total generation capacity of not exceeding 75MW renewable solar energy. The associated infrastructure includes access roads, overhead power lines, substation and control building(s). The electricity generated by the PV Park will be transferred to the national Eskom grid. The Project will connect to existing Droërivier Substation beside the N12 through a ±14.9km single circuit twin conductor 132 kV line.

4.	**Project Name:**	**uMkhomazi Water Project Phase 1**
	Client:	Department of Water and Sanitation
	Location of Project:	Bulwer, KwaZulu-Natal Province, RSA
	Duration (Start & Completion Dates):	Aug 2013 - Present
	Brief Description of work:	
	EIA as part of Feasibility Study for the uMkhomazi Water Project Phase 1. Project components include large storage dam, tunnel, balancing dam, raw water pipeline and **hydropower facilities** (Baynesfield HPP - 3 MW power potential; Smithfield Dam HPP- 2.6 MW power potential).	

5.	**Project Name:**	**Hydropower Plant within Hydraulic Network at Zoekfontein Site**
	Client:	Rand Water
	Location of Project:	Zoekfontein, Gauteng Province, RSA
	Duration (Start & Completion Dates):	Feb 2012 – April 2014
	Brief Description of work:	
	Environmental Impact Assessment for the construction of an 8 MW hydropower station alongside the Zoekfontein Control Works downstream of the Vaal Dam.	

6.	**Project Name:**	**Impompomo Hydropower Plant**
	Client:	Blue World Power & Energy
	Location of Project:	Mpumalanga, RSA
	Duration (Start & Completion Dates):	2018
	Brief Description of work:	
	Environmental Screening for a hydropower plant on the Mpompomo Falls in Mpumalanga. The scope of works include the Impompomo powerhouse (hydropower plant), powerlines from Impompomo hydropower plant to Barberton, penstock from Mpompomo Top Weir and Mpompomo Top Weir.	

7.	**Project Name:**	**Neptune-Poseidon Transmission Line**
	Client:	Eskom
	Location of Project:	Eastern Cape, RSA
	Duration (Start & Completion Dates):	2009 - 2011
	Brief Description of work:	
	EIA and public participation for a 200 km transmission line, with alternatives, with 3000 affected parties and landowners.	

8.	**Project Name:**	**Anderson Dinaledi Transmission Line**
	Client:	Eskom
	Location of Project:	North-West, RSA
	Duration (Start & Completion Dates):	2011 - 2013
	Brief Description of work:	
	EIA and public participation for an 80 km transmission line, with alternatives, through a the Magaliesburg Nature Conservation Area.	

9.	**Project Name:**	**Makalu B (Igesi) Substation and Associated Transmission Loop-In Lines**
	Client:	Eskom
	Location of Project:	Free State, RSA
	Duration (Start & Completion Dates):	2016 - 2018
	Brief Description of work:	
	EIA and public participation for a new substation and 2 x 275 kV line loop-ins from the Lethabo – Makalu Lines.	

APPENDIX G3: Solar PV Project EMPr

PROPOSED GROOTVLEI 600MW SOLAR PLANT, BATTERY ENERGY STORAGE SYSTEMS & GRID CONNECTION PROJECT NORTH WEST OF VENTERSDORP, JB MARKS LOCAL MUNICIPALITY, NORTH WEST PROVINCE

ENVIRONMENTAL MANAGEMENT PROGRAMME – SOLAR PHOTOVOLTAIC PLANT

DFFE REFERENCE NO.: 14/12/16/3/3/2/2386

DRAFT

OCTOBER 2023

APPLICANT: LTM GREEN ENERGIES (PTY) LTD

NEMAI GREEN
Environmental Solutions for a Sustainable Future

P.O. Box 1673	147 Bram Fischer Drive	Tel: (011) 781 1730
SUNNINGHILL	Ferndale	Fax: (011) 781 1731
2157	2194	Email: info@nemai.co.za

Title and Approval Page

Project Name:	Proposed Grootvlei 600MW Solar Plant, Battery Energy Storage Systems & Grid Connection Project north west of Ventersdorp, JB Marks Local Municipality, North West Province
Report Title:	Environmental Management Programme - Solar Photovoltaic Plant
Authority Reference:	14/12/16/3/3/2/2386
Report Status:	Draft

Applicant:	LTM Green Energies (Pty) Ltd

Prepared By:	Nemai Green			
NEMAI GREEN Environmental Solutions for a Sustainable Future	☎	+27 11 781 1730		147 Bram Fischer Drive, FERNDALE, 2194
	🖷	+27 11 781 1731		
	✉	donavanh@nemai.co.za		PO Box 1673, SUNNINGHILL, 2157
		www.nemai.co.za		
Report Reference:	10760-20231005 EMPr PV Site			R-PRO-REP|20170216

	Name	Date
Authors:	D. Henning U. Naicker N. Brink	October 2022
Reviewed By:	N. Naidoo	October 2023

Amendments Page

Date:	Nature of Amendment	Amendment Number
October 2023	Draft for Review by Authorities and the Public	0

Table of Contents

LIST OF TABLES

LIST OF FIGURES

DEFINITION OF KEY TERMS

Auditing	*A systematic and objective assessment of an organisation's activities and services conducted and documented on a periodic basis.*
Construction Area	*Immediate site influenced by specific construction activities, as approved by the Engineer.*
Construction Domain	*Entire footprint required for the construction of the overall project components.*
Environment	*The surroundings in which humans exist and which comprise:* • *The land, water and atmosphere of the earth.* • *Micro-organisms, plant and animal life.* • *Any part or combination of a) and b) and the interrelationships among and between them.* • *The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that can influence human health and well-being.*
Environmental Aspect	*Those components of the company's activities, products and services that are likely to interact with the environment.*
Environmental Feature	*Elements and attributes of the biophysical, economic and social environment.*
Environmental Impact	*The change to the environment resulting from an environmental aspect, whether desirable or undesirable. An impact may be the direct or indirect consequence of an activity.*
Environmental Management Programme (EMPr)	*A detailed plan of action prepared to ensure that recommendations for enhancing positive impacts and/or limiting or preventing negative environmental impacts are implemented during the life-cycle of a project.*
Environmental Objective	*Overall environmental goal pertaining to the management of environmental features.*
Environmental Target	*Performance requirement that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.*
Monitoring	*A systematic and objective observation of an organisation's activities and services conducted and reported on regularly.*
Project Area	*The greater area within which the project is executed. Extends beyond the construction domain.*
Sensitive environmental features	*Environmental features protected by legislation (e.g., heritage resources), or identified during the EIA process as sensitive through specialists' findings and input received from Interested and Affected Parties.*
Watercourse	*A geomorphological feature characterized by the presence of a streamflow channel, a floodplain and a transitional upland fringe seasonally or permanently conveying surface water. According to the National Water Act (Act 36 of 1998), a watercourse constitutes a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which, or from which, water flows, and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.*

1 PURPOSE OF THIS DOCUMENT

Nemai Green was appointed by LTM Green Energies (Pty) Ltd (the "Applicant") to conduct the Environmental Impact Assessment (EIA) for the **development of Grootvlei 600MW Solar Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project north west of Ventersdorp within the JB Marks Local Municipality in the North West Province (the "Project").**

The EIA is being undertaken according to the process prescribed in the EIA Regulations of 2014, published under Government Notice (GN) No. 982 in Gazette No. 38282 of 4 December 2014 and amended by GN 326 of 7 April 2017 published in Gazette No. 40772 (the "EIA Regulations"). The EIA Regulations were promulgated in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA). This document serves as the **Environmental Management Programme (EMPr)** for the proposed Project' Solar PV Plant. This EMPr provides performance criteria required to address potential environmental impacts during the pre-construction, construction and operational phases of the proposed Project' Solar PV Plant. This report must be read in conjunction with the EIA Report.

The content of an EMPr must either contain the information set out in Appendix 4 of the EIA Regulations or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a Government Notice. Once the Minister has identified, through a Government Notice, that a generic EMPr is relevant to an application for Environmental Authorisation, that generic EMPr must be applied by all parties involved in the environmental assessment process, including, but not limited to, the Applicant and the Competent Authority.

In accordance with the above, the following EMPr's were developed for the Project:

- **Normal EMPr for the Solar PV Plant** (topic if this document);
- Generic EMPr for the development and expansion for overhead electricity transmission and distribution infrastructure (appended to the EIA Report); and
- Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity (appended to the EIA Report).

The scope of the EMPr is as follows:

- Establish management objectives during the pre-construction, construction and operational phases in order to enhance benefits and manage (i.e., prevent, reduce, rehabilitate and/or compensate) adverse environmental impacts;
- Provide targets for management objectives, in terms of desired performance;
- Describe actions required to achieve management objectives;
- Outline institutional structures and roles required to implement the EMPr; and
- Provide the legislative framework.

2 DOCUMENT ROADMAP

As a minimum, the EMPr aims to satisfy the requirements stipulated in Appendix 4 of the EIA Regulations. **Table 1** below presents the document's composition in terms of the aforementioned regulatory requirements.

Table 1: Document Roadmap

Chapter	Title	Correlation with Appendix 4 of G.N. No. R982	
1	**Purpose of this Document**	N/A	
2	**Document Roadmap**	N/A	
3	**Project Overview**	N/A	
4	**Environmental Assessment Practitioner**	1(a)	Details of – (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including curriculum vitae.
5	**Legislation and Guidelines Considered**	N/A	
6	**Roles & Responsibilities**	1(i)	An indication of the persons who will be responsible for the implementation of the impact management actions.
7	**Monitoring**	1(g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).
		1(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).
		1(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).
		1(l)	A programme for reporting on compliance, taking into account the requirements as prescribed by the Regulations.
8	**Environmental Training & Awareness Creation**	1(m)	An environmental awareness plan describing the manner in which - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.
9	**EMPr Review**	N/A	
10	**Environmental Activities, Aspects and Impacts**	1(b)	A detailed description of the aspects of the activity that are covered by the final environmental management plan.
11	**Sensitive Environmental Features**	1(c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the

Chapter	Title	Correlation with Appendix 4 of G.N. No. R982	
			preferred site, indicating any areas that should be avoided, including buffers.
12	**Impact Management**	1(d)	A description of impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including – (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities.
		1(f)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to - (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.
		1(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented.
		1(l)	A programme for reporting on compliance, taking into account the requirements as prescribed by the Regulations.
N/A		1(n)	Any specific information that may be required by the competent authority
N/A		2	Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.

3 PROJECT OVERVIEW

3.1 Project Motivation

The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows and/or other renewable energy markets within SA.

3.2 Project Description

The Applicant has proposed the development of Grootvlei 600MW Solar Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project north west of Ventersdorp within the JB Marks Local Municipality in the North West Province (see **Figure 1** below). The electricity generated by the Project will be transmitted through Option 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In Loop Out (LILO) of the Pluto – Watershed 275kV power line and Option 2 that comprises of 2.8km 132 kV line from the new facility 33kV substation facility 33kV substation to the Makokskraal Substation.

The technical details of the proposed Solar PV Plant are captured in **Table 2** below.

Table 2: Technical details of the proposed PV Plant

No.	Component	Description / Dimensions
1.	Height of PV panels	± 2.5m
2.	Area of PV Array	± 490 ha
3.	Number of inverters required	Approximately 240x 2.5MW inverters
4.	Area occupied by inverter / transformer stations / substations	• Area occupied by inverter stations =0.35ha • Area occupied by Operation and Maintenance infrastructure = ± 0.1 ha • Area occupied by facility (step-up/Collector) substation = 0.2 ha Area occupied by the onsite substations = 0.1 ha
5.	Capacity of on-site substation	Up to a maximum of 600 MW, 6.6kV/275kV
6.	Area occupied by buildings and BESS	• Area occupied by Operation & Maintenance infrastructure =± 0.1 ha Area occupied by BESS = 0.35 ha
7.	Area occupied by both permanent and construction laydown areas	• Construction areas = 0.25 ha • Operation & Maintenance infrastructure = ± 0.1 ha Total combined = ± 0.35 ha
8.	Area occupied by buildings	1.5 ha
9.	Length of internal roads	± 15km
10.	Width of internal roads	• Internal roads will have a 5m road width. Access road will have a 14m reserve and road width of 8m.
11.	Proximity to grid connection	Grid Connection: Route 1 which consists of 2 x 132kV powerlines, approximately 14km kilometres (km) in length, from the new facility 33kV substation to new 400/132kV Main Transmission Substation (MTS) to Loop In-Loop Out (LILO) of the Pluto – Watershed 275kV power line; and Route 2 that comprises of 2.8km 132 kV line from the new facility 33kV substation facility 33kV substation to the Makokskraal Substation.
12.	Height of fencing	Up to 3m
13.	Type of fencing	Type will vary around the site, welded mesh, palisade and electric fencing

The project-lifecycle as well as resources and services required for construction and operation are explained in the EIA Report.

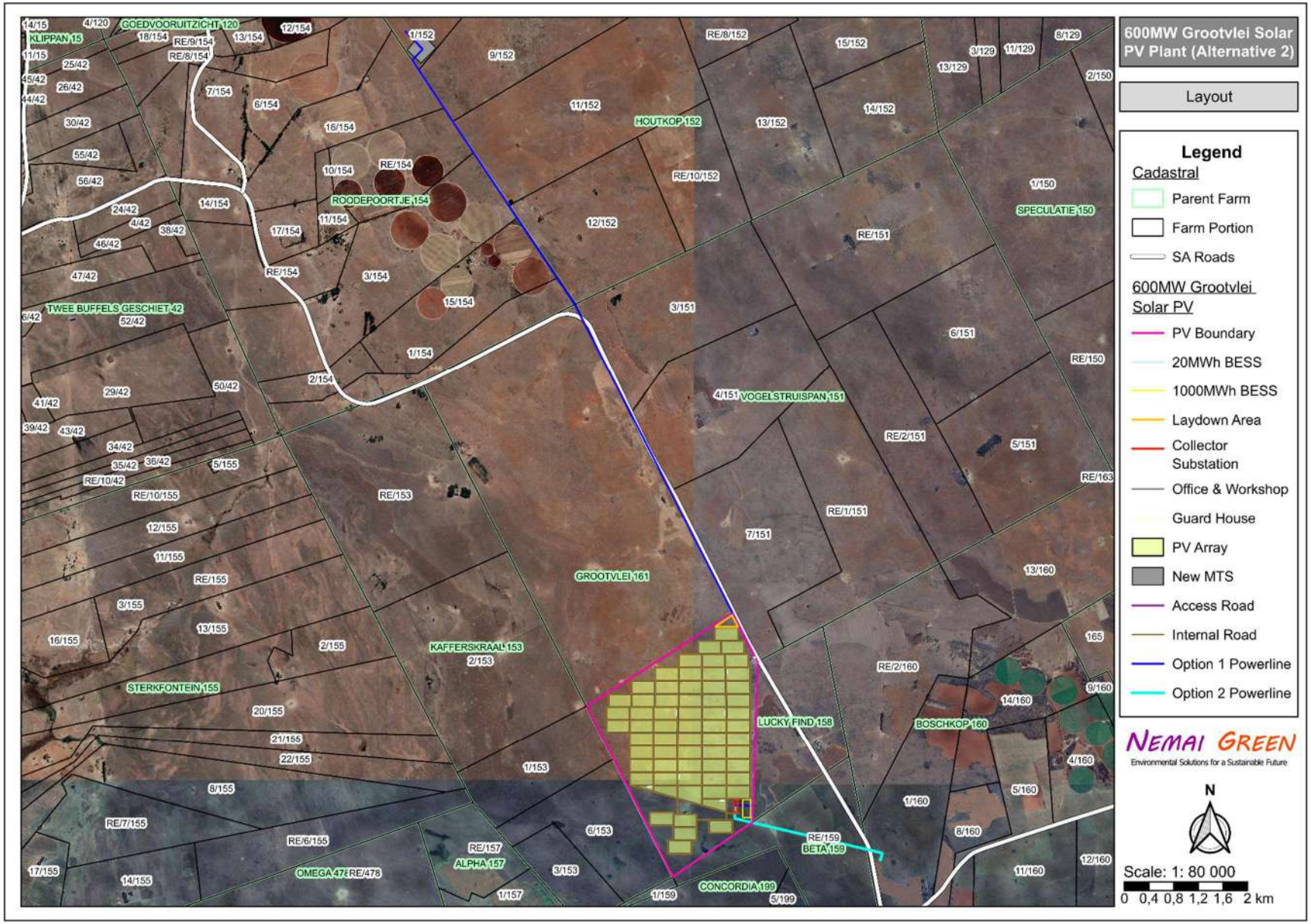


Figure 1: Locality map (preferred layout)

4 ENVIRONMENTAL ASSESSMENT PRACTITIONER

The details of the Environmental Assessment Practitioner (EAP) are as follows:

Name of EAP: Donavan Henning from Nemai Green
Professional registration: EAPASA Reg. no. 2020/1217
Tel No: 011 781 1730
Fax No: 011 781 1731
E-mail address: donavanh@nemai.co.za

The core members of Nemai Green that were involved with compiling the EMPr for the Project are captured in **Table 3** below, and their respective Curricula Vitae are contained in in the body of the EIA Report.

Table 3: EMPr Core Team Members

Name	Qualifications	Experience	Duties
Mrs D. Naidoo	BSc Eng (Chem)	25 years	• Project Manager - EIA Process
Mr D. Henning	MSc (River Ecology)	21 years	• Project Leader - EIA Process

5 LEGISLATION AND GUIDELINES CONSIDERED

5.1 Overview of Legislation

Activities during the pre-construction, construction and operational phases will be undertaken according to recognised best industry practices and will include measures prescribed within this EMPr. The EMPr shall form part of the contract documents and informs the Contractor about his duties in the fulfilment of the Project's objectives, with particular reference to the mitigation of environmental impacts that may potentially be caused by construction activities. The Contractor will note that obligations imposed by the EMPr are legally binding in terms of environmental legislation.

All Project activities must comply with all relevant South African legislation and regulations. All environmental statutory requirements should be included in the Contractors' conditions. Some of the pertinent environmental legislation that has bearing on the proposed development is captured in **Table 4** below.

Table 4: Environmental Legislative Framework

Legislation	Description and Relevance
Constitution of the Republic of South Africa (No. 108 of 1996)	▪ Chapter 2 – Bill of Rights. ▪ Section 24 – Environmental Rights.
National Environmental Management Act (Act No. 107 of 1998)	▪ Key sections (amongst others): o Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment). o Section 28 – Duty of care and remediation of environmental damage. ▪ Environmental management principles. ▪ Authorisation type – Environmental Authorisation. ▪ Authorities – DFFE (national) (competent authority for this application) and the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) (provincial).
GN No. R 982 of 4 December 2014 (as amended)	▪ Purpose - regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to EIA, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.
GN No. R. 983 of 4 December 2014 (as amended) (Listing Notice 1)	▪ Purpose - identify activities that would require environmental authorisations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA. ▪ The investigation, assessment and communication of potential impact of activities must follow a Basic Assessment process, as prescribed in regulations 19 and 20 of GN No. R 982 of 4 December 2014 (as amended). However, according to Regulation 15(3) of GN No. R 982 (as amended), S&EIR must be applied to an application if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities. ▪ Activities under Listing Notice 1 that are relevant to this project are listed in the EIA Report.
GN No. R. 984 of 4 December 2014 (as amended) (Listing Notice 2)	▪ Purpose - identify activities that would require environmental authorisations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA. ▪ The investigation, assessment and communication of potential impact of activities must follow a Scoping and EIA process, as prescribed in regulations 21 - 24 of GN No. R 982 of 4 December 2014 (as amended). ▪ Activities under Listing Notice 2 that are relevant to this project are listed in the EIA Report.
GN No. R. 985 of 4 December 2014 (as amended) (Listing Notice 3)	▪ Purpose - list activities and identify competent authorities under sections 24(2), 24(5) and 24D of NEMA, where environmental authorisation is required prior to commencement of that activity in specific identified geographical areas only. ▪ The investigation, assessment and communication of potential impact of activities must follow a Basic Assessment process, as prescribed in regulations 19 and 20 of GN No. R 982 of 4 December 2014 (as amended). However, according to Regulation 15(3) of GN No. R 982 (as amended), S&EIR must be applied to an application if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities. ▪ Activities under Listing Notice 3 that are relevant to this project are listed in the EIA Report.
National Water Act (NWA) (Act No. 36 of 1998)	▪ Sustainable and equitable management of water resources. ▪ Key sections (amongst others): o Chapter 3 – Protection of water resources. o Section 19 – Prevention and remedying effects of pollution.

Legislation	Description and Relevance
	○ Section 20 – Control of emergency incidents. ○ Chapter 4 – Water use. ▪ Authority – Department of Water and Sanitation (DWS).
National Environmental Management Air Quality Act (Act No. 39 of 2004)	▪ Air quality management. ▪ Key sections (amongst others): ○ Section 32 – Dust control. ○ Section 34 – Noise control. ▪ Authorisation type – Atmospheric Emission License (*not required for the Project*). ▪ Authority – DFFE (national), (DEDECT) (provincial) and municipality.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	▪ Management and conservation of the country's biodiversity. ▪ Protection of species and ecosystems. ▪ Authorisation type – Permit (*relevance to the Project to be confirmed*). ▪ Authority – DFFE (national) and DEDECT (provincial).
National Environmental Management: Waste Act (Act No. 59 of 2008)	▪ Management of waste. ▪ Key sections (amongst others): ○ Section 16 – General duty in respect of waste management. ○ Chapter 5 – licensing of waste management activities listed in GN No. R. 921 of 29 November 2013 (as amended). ▪ Authorisation type – Waste Management Licence (*not required for the Project*). ▪ Authority – DFFE (national) and (DEDECT) (provincial).
National Environmental Management: Protected Areas Act (NEM:PAA) (Act No. 57 of 2003)	▪ Protection and conservation of ecologically viable areas representative of South Africa's biological diversity and natural landscapes. ▪ No protected areas are directly affected by the Project
National Forests Act (NFA) (No. 84 of 1998)	▪ Supports sustainable forest management and the restructuring of the forestry sector, as well as protection of indigenous trees in general. ▪ Section 15 – Authorisation required for impacts to protected trees. ▪ Authorisation type – Permit (*relevance to the Project to be confirmed*). ▪ Authority – Department of Agriculture, Forestry and Fisheries (DAFF).
Minerals and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002)	▪ Equitable access to and sustainable development of the nation's mineral and petroleum resources and to provide for matters related thereto. ▪ Key sections (amongst others): ○ Section 22 – Application for mining right. ○ Section 27 – Application for, issuing and duration of mining permit. ○ Section 53 – Use of land surface rights contrary to objects of Act. ▪ Authorisation type – Mining Permit / Mining Right. *Note that this is not required for the Project.* ▪ Authority – Department of Mineral Resources and Energy (DMRE).
Occupational Health & Safety Act (Act No. 85 of 1993)	▪ Provisions for Occupational Health & Safety. ▪ Authority – Department of Employment and Labour (DEL). ▪ Relevant regulations, such as Electrical Installation Regulations, Construction Regulations, etc.
Hazardous Substance Act (No 15 of 1973) and Regulations	▪ Provides for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products ▪ Provides for the division of such substances or products into groups in relation to the degree of danger. ▪ Provides for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.

Legislation	Description and Relevance
National Heritage Resources Act (NHRA) (Act No. 25 of 1999)	▪ Key sections: o Section 34 – protection of structure older than 60 years. o Section 35 – protection of heritage resources. o Section 36 – protection of graves and burial grounds. o Section 38 – Heritage Impact Assessment for linear development exceeding 300m in length; development exceeding 5 000m^2 in extent, etc. ▪ Authorisation type – Permit (*relevance to the Project to be confirmed*). ▪ Authority – South African Heritage Resources Agency (SAHRA) and Free State Heritage Resources Authority (FSHRA).
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	▪ Control measures for erosion. ▪ Control measures for alien and invasive plant species. ▪ Authority – Free State Department of Agriculture and Rural Development (DARD).

Refer to **Section 5** of the EIA Report for an overview of the relationship between the proposed Project and certain key pieces of environmental legislation.

5.2 Method Statements

The Contractor shall provide detailed method statements on how the performance criteria in the EMPr will be met. These method statements are to be reviewed and approved by the Engineer to ensure that they are adequate.

The method statements must be project-specific and should explain in detail the following:

1. The manner in which the work is to be undertaken;
2. The estimated schedule for the works (timing);
3. The area where the works will be executed (location);
4. The materials and plant / equipment needed for the works;
5. The necessary mitigation measures that need to be implemented to adequately safeguard the environment, construction workers and the public (where applicable);
6. Training of employees;
7. Roles and responsibilities; and
8. Monitoring and reporting requirements.

The list of method statements required to assist in the implementation of this EMPr includes (where applicable):

- ❑ Method Statement for site clearing;
- ❑ Method Statement for establishing the construction camp;
- ❑ Method Statement with regard to waste and wastewater management;
- ❑ Method Statement to show procedures for dealing with possible emergencies that can occur, such as fire and accidental leaks and spillage of carbon fuels and oils;
- ❑ Method Statement for dust control;

- Method Statement for the storage and handling of hazardous substances;
- Method Statement for management of concrete and batching plants;
- Method Statement for managing spoil material;
- Method Statement for controlling alien invasive species and noxious weeds;
- Method Statement for the decommissioning of the construction works area;
- Method Statement for rehabilitation of construction footprint;
- Method Statement for the management of stormwater and erosion; and
- Method statement for managing traffic safety.

Note that the method statements are contractual requirements between the proponent and the Contractor and therefore not subject to approval by DFFE.

6 ROLES & RESPONSIBILITIES

As mentioned, generic EMPr's were compiled for the substation and overhead electricity transmission and distribution infrastructure, in accordance with GN No. 435 of 22 March 2019. For the sake of consistency, and to facilitate the implementation of multiple EMPr's, the roles and responsibilities contained in the generic EMPr's were adopted for the PV Plant's EMPr. These roles and responsibilities and captured in **Table 5** below.

It is noted that if no specific person, for example, an Environmental Control Officer (ECO) is appointed, the holder of the Environmental Authorisation (EA) remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 5: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person	Role and Responsibilities
Developer's Project Manager (DPM)	Role The DPM is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an Environmental Control Officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the Environmental Authorisation (EA). The DPM is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent. Responsibilities - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	Role The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day-to-day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr. Responsibilities - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	Role The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non- compliance with the Performance Specifications as set out in the EA and EMPr.

Responsible Person	Role and Responsibilities
	The ECO provides feedback to the DSS and DPM, who in turn reports back to the Contractor and potential and Registered Interested and Affected Parties (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the DPM, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e., those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant Competent Authority (CA) as and when required. <u>Responsibilities</u> The responsibilities of the ECO will include the following: - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; and - Communication of all modifications to the EMPr to the relevant stakeholders.

Responsible Person	Role and Responsibilities
developer Environmental Officer (dEO)	Role The dEOs will report to the DPM and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities. Responsibilities - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s); - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; and - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor.
Contractor	Role The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities. Responsibilities - Project delivery and quality control for the development services as per appointment; - Employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - Ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is Properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - Attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones;

Responsible Person	Role and Responsibilities
	- Ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	Role Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the ECO and the public. As a minimum the cEO shall meet the following criteria: Responsibilities - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

7 MONITORING

Monitoring is required to ensure that the receiving environment is suitably safeguarded against the identified potential impacts, and to ensure that the environmental management requirements are adequately implemented and adhered to during the execution of the Project.

7.1 Baseline Monitoring

7.1.1 General

Baseline monitoring aims to determine the pre-construction state of the receiving environment and serves as a reference to measure the residual impacts of the Project by evaluating the deviation from the baseline conditions and the associated significance of the adverse effects.

7.1.2 Preconstruction (walk-down) Survey

A pre-construction survey needs to be conducted for all areas that are to be affected by construction activities. The survey needs to include the following:

- Site investigations by appropriate members of the project team and specialists (as relevant);
- Generate records from survey which include site details, photographs, explanatory notes, etc. (as required);
- Record the condition of existing structures and infrastructure on the site; and
- Identify site-specific mitigation measures.

The records from the pre-construction survey must be used to establish and inform the reinstatement and rehabilitation requirements for the affected areas.

7.1.3 Environmental Parameters

The environmental parameters to be included in the baseline monitoring are shown in **Table 6** below.

Table 6: Baseline Monitoring

Environmental Parameter	Monitoring Locations	Requirements
Air Quality	Dust fallout units to be located taking into consideration significant sources of air pollution, sensitive receptors, and dominant wind direction.	Dust fallout – comply with ASTM D1739; SANS 1929, SANS 69.
Noise	Noise monitoring sampling sites to be located taking into consideration significant sources of noise, sensitive receptors and dominant wind direction. Sites to coincide with dust fallout sites (where relevant).	Comply with SANS 10103:2008.

7.2 Environmental Monitoring

Environmental monitoring entails checking, at pre-determined frequencies, whether thresholds and baseline values for certain environmental parameters are being exceeded. The parameters and sampling localities used during the baseline monitoring will form the basis of the environmental monitoring programme.

The environmental parameters to be included as part of the environmental monitoring programme, which is to be undertaken by the Contractor during the construction phase, are listed in **Table 6** above.

The following requirements need to be incorporated into the programme:

- Monitoring during normal operations, abnormal situations and emergency situations;
- Measuring equipment must be accurately calibrated;
- Adequate quality control of the sampling must be ensured;
- Certified methods of testing must be employed;
- Where legal specifications exist for testing and sampling methods, these must be considered; and
- Establish a process for identifying and implementing corrective measures.

7.3 Compliance Monitoring and Auditing

Compliance monitoring will commence in the pre-construction phase, where those conditions in the EA that need to be adhered to prior to Project implementation will need to be checked and recorded, as well as to check compliance with the provisions in the EMPr. Compliance monitoring will be completed at the end of the defects liability period to check the performance of rehabilitation measures and whether the related objectives have been met.

It is recommended that the ECO undertake monthly monitoring and bi-annual full compliance auditing, including an audit at the end of construction and one at the end of the defects notification period.

Auditing of compliance with the EA and EMPr must be conducted in accordance with Regulation 34 of the EIA Regulations in terms of the following:

1. The holder of the EA must, for the period during which the EA and EMPr remain valid -
   a. Ensure that the compliance with the conditions of the EA and EMPr is audited; and
   b. Submit an environmental audit report to DFFE.
2. The environmental audit report must -
   a. Be prepared by an independent person with the relevant environmental auditing expertise;
   b. Provide verifiable findings, in a structured and systematic manner, on -

   i. The level of performance against and compliance of an organization or project with the provisions of the requisite EA and EMPr; and
   ii. The ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity;
c. Contain the information set out in Appendix 7 of the EIA Regulations; and
d. Be conducted and submitted to DFFE at intervals as indicated in the EA.

3. The environmental audit report must determine-
   a. The ability of the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
   b. The level of compliance with the provisions of the EA and EMPr.

A document handling system must be established to ensure accurate updating of EMPr documents, and availability of all documents required for the effective functioning of the EMPr.

Supplementary EMPr documentation could include:

- Method Statements;
- Site instructions;
- Emergency preparedness and response procedures;
- Record of environmental incidents;
- Non-conformance register;
- Training records;
- Site inspection reports;
- Monitoring reports;
- Auditing reports;
- Public complaints register; and
- Grievance Mechanism/Process for public and contractor/employees.

8 ENVIRONMENTAL TRAINING & AWARENESS CREATION

Training aims to create an understanding of environmental management obligations and prescriptive measures governing the execution of the project. It is generally geared towards project team members that require a higher-level of appreciation of the environmental management context and implementation framework for the project.

Awareness creation strives to foster a general attentiveness amongst the construction workforce to sensitive environmental features and an understanding of implementing environmental best practices.

The various means of creating environmental awareness during the pre-construction and construction phases of the Project may include:

- Induction course for all workers before commencing work on site;
- Refresher courses (as and when required);
- Daily toolbox talks, focusing on particular environmental issues (task- and area specific);
- Courses must be provided by suitably qualified persons and in a language and medium understood by the workers;
- Erect signage and barricading (where necessary) at appropriate points in the construction domain, highlighting sensitive environmental features (e.g. grave sites, protected trees); and
- Place posters containing environmental information at areas frequented by the construction workers (e.g. eating facilities).

Training and awareness creation will be tailored to the audience, based on their designated roles and responsibilities. Records will be kept of the type of training and awareness creation provided, as well as containing the details of the attendees.

The Contractor must compile a project-specific Environmental Training and Awareness Programme, taking into consideration the abovementioned factors, to be approved by the DPM/ECO.

9 EMPr Review

Due to its dynamic nature, this EMPr will be reviewed and revised when necessary to ensure continued environmental improvement.

Following detailed design and planning, the EMPr may need to be revised to render the management actions more explicit and accurate to the final project specifications. Changes to the EMPr shall also be required where the existing system:

- Does not make adequate provision for protecting the environment against the pre-construction, construction and/or operational activities;
- Needs to be modified to meet conditions of statutory approval;
- It is not achieving acceptable environmental performance;
- Requires changes due to the outcome of a monitoring or auditing event or management review;
- Provides redundant, impracticable or ineffective management measures; and
- Based on provisions in Regulation 34 of the EIA Regulations.

The amendment of the EMPr will be undertaken in terms of Regulation 34 – 37 of the EIA Regulations, as applicable.

10 ENVIRONMENTAL ACTIVITIES, ASPECTS AND IMPACTS

10.1 Environmental Activities

10.1.1 Pre-construction Phase

Some of the main Project activities, as well as high-level environmental activities, to be undertaken in the pre-construction phase are listed in **Table 7** below.

Table 7: Simplified List of Activities associated with Pre-Construction Phase

Project Phase: Pre-construction
Project Activities
▪ Negotiations and agreements with the affected landowner, stakeholders and authorities
▪ Lease Agreement
▪ Registration of power line servitude
▪ Detailed engineering design
▪ Detailed geotechnical investigations, including geophysical investigations
▪ Survey and mark development
▪ Procurement process for Contractor
▪ Review Contractor's method statements (as relevant)
▪ Establish new access roads and undertake selective improvements to existing access roads to facilitate the delivery of construction plant and materials
▪ Arrangements for accommodation of construction workers (off site)
▪ The building of a site office and ablution facilities
▪ Confirmation of the location and condition of all structures and infrastructure on the PV Site
▪ Determining and documenting the conditions of the roads to be used during construction
▪ Fencing off PV Site
High Level Environmental Activities
▪ Diligent compliance monitoring of the EMPr, EA and other relevant environmental legislation
▪ Pre-construction environmental survey
▪ Develop Environmental Monitoring Programme (air quality, water quality, noise, traffic, social)
▪ Barricading of sensitive environmental features (e.g., wetland buffer)
▪ Obtain permits for impacts to Species of Conservation Concern (SCC), if avoidance is not possible (if required)
▪ Obtain permits if heritage resources are to be impacted on and for the relocation of graves (if required)
▪ On-going consultation with I&APs
▪ Other activities as per conditions of EA and EMPr

10.1.2 Construction Phase

Some of the main Project activities, as well as high-level environmental activities, to be undertaken in the construction phase are listed in **Table 8** below.

Table 8: Simplified List of Activities associated with Construction Phase

Project Phase: Construction
Project Activities
▪ Site establishment
▪ Relocation of existing structures and infrastructure
▪ Prepare access roads
▪ Establish construction laydown area
▪ Bulk fuel storage
▪ Delivery of construction material
▪ Transportation of equipment, materials and personnel
▪ Storage and handling of material
▪ Construction employment
▪ Site clearing (as necessary)
▪ Excavation
▪ Concrete Works
▪ Mechanical and Electrical Works
▪ Electrical supply
▪ Material delivery and offloading
▪ Construction of PV Plant infrastructure
▪ Stockpiling
▪ Stringing of transmission lines
▪ Waste and wastewater management
High Level Environmental Activities
▪ Diligent compliance monitoring of the EMPr, EA and other relevant environmental legislation
▪ Implement Environmental Monitoring Programme (air quality, water quality, noise, traffic, social)
▪ Reinstatement and rehabilitation of construction domain (as necessary)
▪ On-going consultation with I&APs
▪ Other activities as per conditions of EA and EMPr

10.1.3 Operation Phase

Some of the main Project activities, as well as high-level environmental activities, to be undertaken in the operational phase are listed in **Table 9** below.

Table 9: Simplified List of Activities associated with Operation Phase

Project Phase: Operation
Project Activities
▪ Testing and commissioning the facility's components
▪ Cleaning of PV modules
▪ Servitude access arrangements and requirements
▪ Routine maintenance inspections of power lines and servitudes
▪ Controlling vegetation
▪ Managing stormwater and waste
▪ Conducting preventative and corrective maintenance

Project Phase: Operation
▪ On-going consultation with directly affected parties
▪ Monitoring of the facility's performance
High Level Environmental Activities
▪ On-going consultation with I&APs
▪ Other activities as per conditions of EA and EMPr for Operational Phase

10.2 Environmental Aspects

Environmental aspects are regarded as those components of an organisation's activities, products and services that are likely to interact with the environment and cause an impact.

The environmental aspects that have been identified for the proposed Project, which are linked to the project activities, are provided in **Table 10** below. Note that only high level aspects are provided.

Table 10: Environmental Aspects associated with Project Life-Cycle

Project Phase: Pre-construction
▪ Inadequate consultation with landowner and other relevant stakeholders
▪ Inadequate rehabilitation of current eroded areas
▪ Inadequate environmental and compliance monitoring
▪ Poor construction site planning and layout
▪ Site-specific environmental issues not fully understood
▪ Land occupancy by temporary buildings, provisional on-site facilities and storage areas
▪ Inaccurate pre-construction environmental survey
▪ Absence of relevant permits (e.g. for protected trees, heritage resources)
▪ Lack of barricading of sensitive environmental features (e.g., wetland buffer)
▪ Poor waste management
▪ Absence of ablution facilities
Project Phase: Construction
▪ Inadequate consultation with landowner
▪ Inadequate environmental and compliance monitoring
▪ Lack of environmental awareness creation
▪ Indiscriminate site clearing
▪ Poor site establishment
▪ Poor management of access and use of access roads
▪ Disruptions to traffic
▪ Poor transportation practices
▪ Poor fencing arrangements
▪ Erosion
▪ Disruptions to existing services
▪ Disturbance of topsoil
▪ Poor management of excavations

Project Phase: Construction
▪ Inadequate storage and handling of material
▪ Inadequate storage and handling of hazardous material
▪ Poor maintenance of equipment and plant
▪ Poor management of labour force
▪ Pollution from ablution facilities
▪ Inadequate management of construction camp
▪ Poor waste management practices – hazardous and general solid, liquid
▪ Wastage of water
▪ Poor management of pollution generation potential
▪ Damage to significant flora (if encountered)
▪ Damage to significant fauna (if encountered)
▪ Impact to resource quality of wetland in central part of PV site
▪ Inadequate stormwater management
▪ Disruptions to agricultural activities at UFS Paradys Experimental Farm
▪ Damage to cultural heritage and palaeontological features (if encountered)
▪ Poor reinstatement and rehabilitation
Project Phase: Operation
▪ Inadequate environmental and compliance monitoring
▪ Inadequate management of access, routine maintenance and maintenance works
▪ Inadequate management of vegetation
▪ Inadequate stormwater management
▪ Pollution caused by cleaning of panels
▪ Impacts caused by fire, explosion or leaks associated with BESS
▪ Pollution caused by dangerous good (e.g. transformer oils) associated with substation
▪ Inadequate management of light pollution
▪ Failure to comply with health, safety and environmental specifications

10.3 Potentially Significant Environmental Impacts

Environmental impacts are the change to the environment resulting from an environmental aspect, whether desirable or undesirable.

Refer to **Table 11** below for the potentially significant impacts associated with the Project's activities and environmental aspects for the construction and operational phases.

Table 11: Potentially significant environmental impacts - Construction and Operational Phases

Environmental Theme/Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts
Land Use	▪ Sterilisation of land for other land use types. ▪ Setbacks / conditions associated with surrounding land and infrastructure.	▪ Sterilisation of land for other land use types up to the decommissioning of the Project. ▪ Servitude restrictions.

Environmental Theme/Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts
Geology	▪ Suitability of geological conditions to support the Solar PV Plant.	▪ Suitability of geological conditions to support the Solar PV Plant.
Geohydrology	▪ Groundwater pollution due to spillages and poor construction practices. ▪ Utilisation of boreholes, if required.	▪ Groundwater pollution due to poor operation and maintenance practices. ▪ Utilisation of boreholes, if required.
Topography	▪ Visual impacts. ▪ Erosion of areas cleared for construction purposes. ▪ Crossing topographic features (watercourses).	▪ Crossing topographic features (watercourses). ▪ Visual impact caused by proposed Project infrastructure and landscape transformation. ▪ Glint and glare from solar panels.
Soil	▪ Soil erosion due to clearance and inadequate stormwater management. ▪ Soil compaction. ▪ Soil contamination due to spillages and poor construction practices. ▪ Loss of topsoil.	▪ Soil erosion due to inadequate stormwater management. ▪ Soil contamination due to poor operation and maintenance practices.
Surface Water	▪ Alteration of drainage over the PV Site. ▪ Surface water pollution due to spillages and poor construction practices. ▪ Encroachment of construction activities into watercourses and their buffer zones. ▪ Impacts where access roads and ancillary infrastructure cross / are in close proximity to watercourses (e.g., sedimentation, loss of vegetation, destabilisation of watercourse structure).	▪ Sedimentation through silt-laden runoff, caused by inadequate stormwater management. ▪ Damage to the PV facility and towers of the power line from major flood events. ▪ Water resources could be contaminated through inadequate storage and handling of hazardous materials, leaks from the BESS and poor management of waste and wastewater. ▪ Water use requirements of the Project need to be satisfied.
Flora & Fauna	▪ Habitat loss / fragmentation. ▪ Potential loss, disturbance or displacement of protected fauna and flora species. ▪ Human - animal conflicts. ▪ Noise and vibration impacts to fauna. ▪ Nights lights may affect nocturnal faunal species. ▪ Illegal harvesting and poaching of faunal and floral species by construction workers. ▪ Pollution of the biophysical environment from poor construction practices. ▪ Proliferation of invasive alien species in disturbed areas.	▪ Habitat fragmentation (e.g., barriers to animal movement). ▪ Reflection of sunlight from the solar panels could adversely affect birds, including those species that use the wetlands on the site and surrounding areas ▪ Risk to birds from collision with infrastructure and from electrocution. ▪ Electrical faulting from birds. ▪ Chemical pollution associated with cleaning the PV panels. ▪ Proliferation of invasive alien species in disturbed areas.
Socio-economic Environment	▪ Influx of people seeking employment and associated impacts (e.g., foreign workforce, cultural conflicts, squatting, demographic changes). ▪ Safety and security. ▪ Use of local road network. ▪ Nuisance from dust and noise. ▪ Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact). ▪ Transfer of skills (positive impact).	▪ Direct and indirect economic opportunities as a result of the Project.
Air Quality	▪ Dust from the use of dirt roads by construction vehicles. ▪ Dust from bare areas that have been cleared for construction purposes. ▪ Emissions from construction equipment and machinery. ▪ Exhaust emissions from construction vehicles.	▪ The efficiency of the solar plant could be reduced if the modules are soiled (covered) by particulates/dust. ▪ Impacts to air quality caused by the operation and maintenance of the facility include dust from the use of dirt roads and exhaust emissions from vehicles.

Environmental Theme/Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts
Noise	▪ Localised increases in noise may be caused by construction activities.	N/A
Agriculture	▪ Loss of fertile soil through land clearance. ▪ Soil erosion. ▪ Loss of topsoil. ▪ Risk of harm to livestock from construction activities.	▪ Loss of possible future agricultural land use due to direct occupation by the development footprint. ▪ Soil erosion due to inadequate stormwater management.
Historical and Cultural Features	▪ Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance. ▪ Possible direct impacts on cultural and historical resources (e.g. grave sites, iron age sites)	▪ Possible impacts to the cultural landscape as a result of the introduction of incompatible structures and infrastructure to the rural landscape.
Existing Structures & Infrastructure	▪ Setbacks/conditions associated with surrounding land and infrastructure. ▪ Crossing of existing infrastructure by power line.	▪ Setbacks/conditions associated with surrounding land and infrastructure. ▪ Disturbances to infrastructure traversed by power line during maintenance activities.
Transportation	▪ Increase in traffic on the local road network. ▪ Transportation of materials and construction personnel to site. ▪ Impacts to road conditions. ▪ Speeding and reckless driving by construction personnel. ▪ Construction vehicles accessing and leaving the sites via provincial roads. ▪ Use of oversized vehicles/abnormal loads, as required. ▪ Risks to other road users.	▪ Transportation of maintenance materials, as well as operational and maintenance personnel, to site. ▪ Sun glare off PV panels.
Aesthetics	▪ Landscape transformation. ▪ Visual impacts associated with construction activities.	▪ Landscape transformation. ▪ Inadequate reinstatement and rehabilitation of construction footprint. ▪ Light pollution. ▪ Glint and glare from PV facility. ▪ High visibility of power lines to visual receptors.
Health	▪ Hazards related to construction work. ▪ Increased levels of dust and particulate matter. ▪ Increased levels of noise. ▪ Water (surface and ground) contamination. ▪ Poor water and sanitation. ▪ Communicable diseases. ▪ Psychosocial disorder (e.g. social disruptions). ▪ Safety and security. ▪ Lack of suitable health services.	▪ Hazards related to operation and maintenance work. ▪ Fire and explosion risks during BESS operation.

11 SENSITIVE ENVIRONMENTAL FEATURES

The following sensitive and significant environmental features that are associated with the Project's receiving environment (related to the preferred layout) are highlighted, for which mitigation measures are included in the EIA Report and EMPr:

- One wetland HGM unit was identified namely a large depression wetland;
- In terms of the North West Biodiversity Sector Plan the PV site and Powerline option 1 overlap with a CBA2, ESA1 and ESA2. Powerline option 2 overlap with ESA1;
- Ten (10) avifaunal risk species (species at risk for collisions, electrocutions or sensitive to habitat loss) were recorded during the field investigation;
- Powerline option 1 traverse cultivated land and land under irrigation which are sensitive agricultural features;
- From a cultural heritage perspective, historical structures and iron age sites were identified in the study area; and
- Outcrops of weathered stromatolites were identified.

The combined sensitivity map overlaid with the Project's preferred layout is provided in **Figure 2** and **Figure 3** below. Key environmental features that contributed toward the sensitive areas shown in the map included wetlands, their associated buffer zones and cultural/historical resources, as determined by the relevant specialist studies.

The sensitivity maps shown in **Figure 2** and **Figure 3** below and the associated spatial data **must** be made available to the implementation team (including the DPM, ECO and Contractor) to allow for further consideration and adequate interpretation at an appropriate scale.

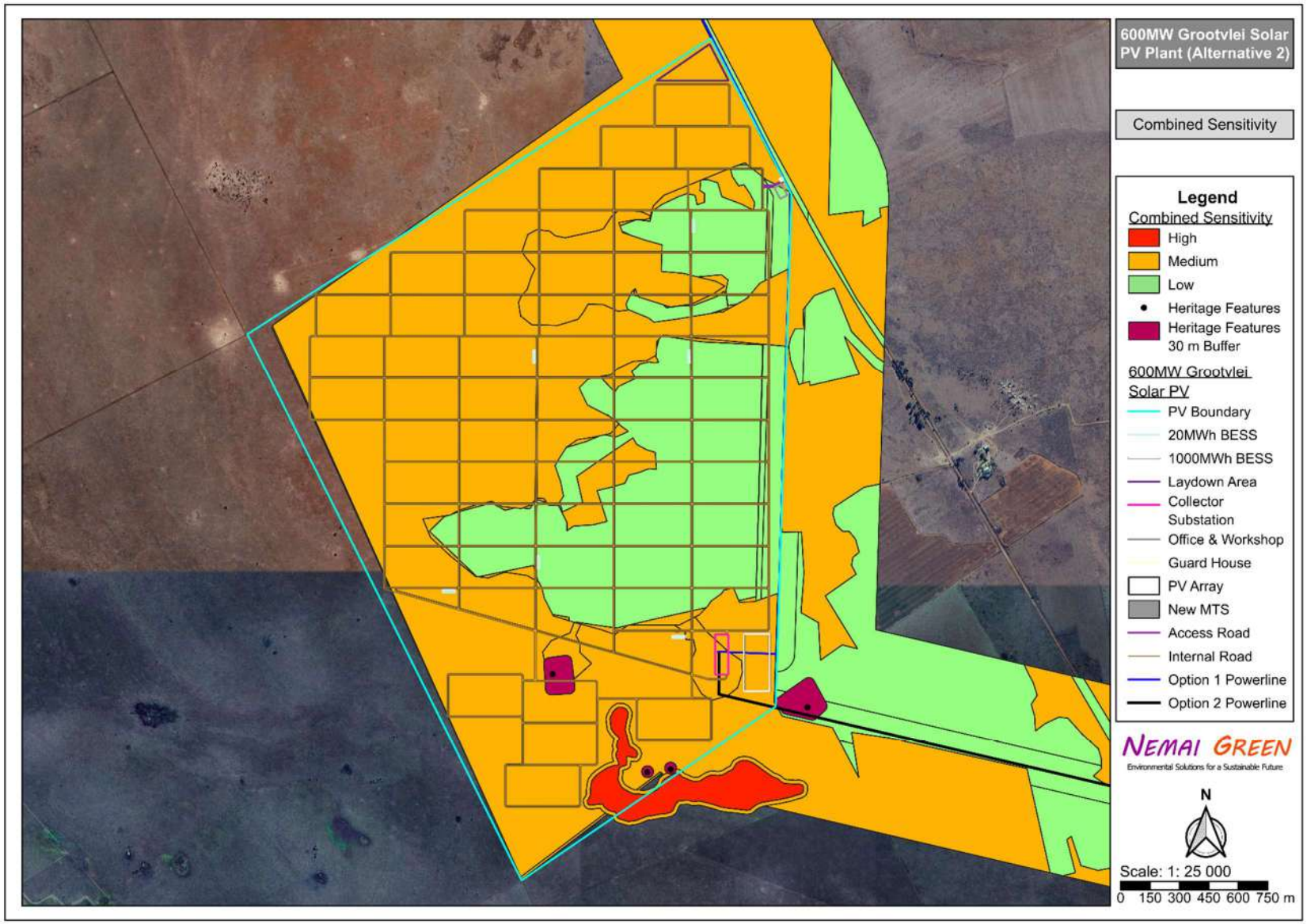


Figure 2: Combined sensitivity map (preferred layout)

Figure 3: Combined sensitivity map (including powerline options)

12 IMPACT MANAGEMENT

12.1 Introduction

The framework for the subsequent management measures consists of the following:

- **Management objectives** – i.e. desired outcome of management measures for mitigating negative impacts and enhancing the positive impacts related to project activities and aspects (i.e. risk sources);
- **Targets** – i.e. level of performance to accomplish management objectives;
- **Management actions** – i.e. practical actions aimed at achieving management objectives and targets;
- **Responsibilities**; and
- **Monitoring requirements**.

12.2 Pre-Construction and Construction Phases

12.2.1 Specialist Environmental Investigations

Management Objective:

Identify and manage impacts to sensitive and protected environmental features.

Target:

- All sensitive and protected environmental features to be identified in the construction domain.
- All relevant approvals to be obtained prior to relocation of red data, protected and endangered flora and fauna species, medicinal plants, heritage resources and graves (where avoidance is not possible).

Management Actions:

- As far as possible, avoid disturbance to fauna and flora SCC.
- Permits from DFFE and DEDECT, as relevant, are required before construction commences in order to cut, disturb, destroy or remove protected trees and plants.
- A pre-construction survey must be undertaken by a suitably qualified Ecologist to identify fauna and flora SCC.
- Where avoidance of fauna and flora SCC is not possible, the suitably qualified Ecologist must oversee the rescue and relocation of these species.
- For the relocation of flora SCC, the following factors need to be considered amongst others) as part of this process:
  - Detailed plan of action (including timeframes, methodology and costs);

- Site investigations;
- Consultation with authorities and stakeholders;
- Marking of species to be relocated;
- Applying for permits;
- Identification of suitable areas for relocation;
- Aftercare; and
- Monitoring (including targets and indicators to measure success).

- In order to protect fauna SCC on or around the site, prior to construction, these species must be removed and relocated to natural areas in the vicinity.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
DPM	Appoint Specialists.	Pre-construction phase (prior to site clearing).
Specialists	• Execute relevant management actions. • Compile reports capturing findings of pre-construction surveys.	
Contractor & cEO	• Barricading of sensitive features and displaying of signage (no-go areas). • Relocation of SCC, under Specialist supervision.	

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• All necessary environmental consents to be in place with due consideration to the Project programme. • Pre-construction survey report. • Inspection of barricading (photographic records). • Visible signage (photographic records).

12.2.2 Administrative Requirements

Management Objective:

Ensure that all administrative measures and arrangements associated with the compliance with the EA and EMPr are in place.

Target:

- Administrative measures and arrangements are confirmed, checked and maintained.
- Document control procedure is in place.

Management Actions:

- Adequate financial provision is made for the implementation of the conditions of the EA and the mitigation measures contained in the EMPr. Differentiate between those requirements that relate to the Applicant, Contractor, environmental team and other responsible parties.

- Document control procedure shall be provided and adhered to.
- Filing system shall be provided and maintained.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
DPM	Administrative provisions for compliance.	Pre-construction & construction phases.
Contractor & cEO		

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Document control procedure. • Filing systems. • Financial provisions (e.g. bill of quantities, budgets, etc.).

12.2.3 Construction Site Planning and Layout

Management Objective:

Proper planning and layout of the construction domain to ensure protection of sensitive environmental features. Refer to sensitive features highlighted in **Section 11**, findings from pre-construction survey, further environmental studies, etc.

Target:

- No negative impacts to sensitive environmental features as a result of poor construction site planning and layout.
- The entire construction domain shall be included in the pre-construction survey.

Management Actions:

- See requirements in EMPr for *Specialist Environmental Investigations*.
- Conduct a pre-construction survey of the area to be affected by construction activities. This shall include site investigations with photographic records.
- Undertake a walkdown survey of the power line route to confirm the most suitable locations of the towers. An Aquatic Ecologist and Avifaunal Specialist are to be involved in the walkdown survey.
- It is recommended that a thorough walkdown of the PV areas is conducted immediately prior to the onset of the initial clearing and earthmoving activities for construction.
- If nests of are found during the walkdown the avifaunal specialist is to advise on the way forward which may involve, inter alia, delaying clearing activities in a particular portion of the project area to allow successful fledging.

- The Contractor shall produce a site plan for the approval of the DPM prior to the establishment of the site, which aims to identify construction activities, facilities and structures in relation to sensitive environmental features. This plan will serve as a spatial tool that facilitates the execution of the construction phase with due consideration of sensitive environmental features. The plan shall show the following (as relevant):
  - Buildings and structures;
  - Contractors' camp and lay down areas;
  - Site offices;
  - Site laboratories;
  - Crusher plants;
  - Access routes;
  - Gates and fences;
  - Essential services (permanent and temporary water, electricity and sewage);
  - Solid waste storage and disposal sites;
  - Site toilets and ablutions;
  - Hazardous waste storage and disposal sites;
  - Firebreaks;
  - Excavations and trenches;
  - Cut and fill areas;
  - Topsoil stockpiles;
  - Spoil areas;
  - Construction material stores;
  - Vehicle and equipment stores;
  - Workshops;
  - Wash bays;
  - Fuel stores;
  - Hazardous substance stores;
  - Sensitive environmental features; and
  - Any other activities, facilities and structures deemed relevant.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Establishment Method Statement. • Site Plan.	Pre-construction phase.
Specialists	Locations of towers.	

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement.

		• Evidence of site establishment in accordance with method statement (photographic records). • Pre-construction survey report. • Approved site plan.

12.2.4 Environmental Awareness Creation

Management Objective:

Ensure that the Contractor, construction workers and site personnel are aware of the relevant provisions of the EA and EMPr.

Target:

- All construction workers and employees are to have completed appropriate environmental training before being allowed on the construction site.
- A record of environmental training undertaken shall be kept on site.

Management Actions:

- Environmental Training and Awareness Programme shall be developed, which is to be approved by the DPM/ECO.
- The Contractor shall arrange that all of his employees and those of his sub-contractors go through the project specific environmental awareness training courses before the commencement of construction and as and when new staff or sub-contractors are brought on site.
- Environmental awareness training should include discussions on all sensitive environmental receptors within the project area to inform contractors and site staff of the presence of sensitive habitat features such as ridges and wetlands.
- The environmental training is compulsory for all employees and structured in accordance with their relevant rank, level and responsibility, as they apply to the works and site.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Environmental Training and Awareness Programme. • Induction course. • Refresher courses. • Daily toolbox talks. • Courses to be provided by suitably qualified persons and in a language and medium understood by the workers. • Erect signage and place posters.	Pre-construction & construction phases.

Monitoring:

Responsible	Frequency	Evidence of compliance

person		
dEO & ECO	Monthly	• Records of training and awareness creation (e.g. training material, training programme, completed attendance registers, etc.).

12.2.5 On-going Consultation with Community and Affected Parties

Management Objective:

- Establish and maintain a record of all complaints and claims against the Project and ensure that these are timeously and effectively verified and responded to.
- Adhere to agreements made with stakeholders (including affected and adjoining landowners) regarding communication, as relevant.

Target:

- All complaints and claims shall be acknowledged within 5 working days and shall be responded to within 10 working days of receipt, unless additional information and / or clarification are required.
- No deviations from agreements made with individual landowners and community members.

Management Actions:

- Develop Grievance Redress Mechanism (GRM).
- Establish lines of communications with community members.
- Existing communication channels shall be duly respected and adhered to when engaging with communities.
- Establish processes and procedures to effectively verify and address complaints and claims received.
- Complaints or liaison with community members with regard to environmental aspects, shall be recorded, reported to the correct person and a record of the response shall be entered in the complaints register.
- Provide the relevant contact details to community members for queries / raising of issues or complaints.
- Provide all information, especially technical findings, in a language that is understandable to the general public.
- Promptly deal with any raised expectations amongst communities regarding perceived benefits associated with the project, through a process of communication and consultation.
- Where necessary always provide prompt and clear feedback to communities.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	Develop and implement GRM.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Documented and functional GRM. • Proof of communication. • Related entries into Public Complaints Register.

12.2.6 Management of Security

Management Objective:

The safety and security of the public is of paramount importance and shall not be compromised by the activities associated with the construction phase.

Target:

- No security related incidents associated with the labour force and construction activities.

Management Actions:

- Involve the local Community Policing Forum or other security associations (as relevant).
- Ensure suitable management of the labour force to prevent security-related issues or disturbance to community members. This is to be established in line with the IFC Performance requirements.
- A security policy shall be developed which amongst others requires that permission be obtained prior to entering any property and provisions controlling trespassing by contractor staff.
- Only security staff shall be allowed to reside at the construction camp.
- The camp site for the project and the longitudinal construction sub-site laid down areas should be fenced for the duration of construction.
- The Contractor shall establish crime awareness programmes at the site camp.
- See requirements in EMPr for *Management of Labour Force* and *Management of Health and Safety* and *Management of Access* and *Fencing Arrangements*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Security Policy. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Records of training and awareness creation.

		• Proof of communication. • Related entries into Public Complaints Register. • Visual inspections (photographic records) (e.g. fencing).

12.2.7 Site Clearing

Management Objective:

- Manage environmental impacts associated with site clearing.
- Ensure that only areas that are specifically required for the construction purposes are cleared.

Target:

No damage shall be caused to sensitive environmental features outside of the demarcated construction domain, including marked and barricaded wetlands, heritage resources, protected trees, structures and infrastructure (as relevant).

Management Actions:

- A Method Statement shall be developed, which will provide the details of how site clearing will be executed.
- Restrict site clearing activities to the construction domain.
- Maintain barricading around sensitive environmental features (including delineated wetland and associated buffer area on the PV site) until the cessation of construction works.
- Avoid any disturbance to demarcated sensitive environmental features.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Method Statement for site clearing. • Barricading and signage.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Related entries into Public Complaints Register. • Visual inspections (photographic records) of cleared areas, barricading and signage.

12.2.8 Site Establishment

Management Objective:

Minimise negative environmental impacts associated with site establishment.

Target:

- No deviations from agreements made with the landowner of the PV site.
- No damage to sensitive environmental features outside demarcated construction areas during site establishment.
- No access or encroachment into no-go areas.
- No justifiable complaints regarding general disturbance and nuisance caused by site establishment.

Management Actions:

- See requirements in EMPr for *Construction Site Planning and Layout* and *Management of Flora.*
- Locate construction camp in area where sensitive environmental features will not be impacted on.
- Positioning of the storage and lay-down areas shall aim to minimise visual impacts.
- Maintain barricading around sensitive environmental features until the cessation of construction works.
- Control the movement of all vehicles and plant (including suppliers), such that they remain on designated routes and comply with relevant agreements.
- Ensure noise levels of construction activities and equipment are within their lawfully acceptable limits as per SANS 10103.
- Minimise public disturbance from lighting of the construction camp and site. For example, proper design of the placing (zones), height, type, direction (inward rather than outward) and intensity of floodlights, without compromising safety.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Plan. • Barricading and signage.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Related entries into Public Complaints Register. • Visual inspections (photographic records).

12.2.9 Management of Existing Services and Infrastructure

Management Objective:

- Prevent impacts to existing services and infrastructure.
- Adhere to agreements made with owners/custodians of the services and infrastructure.

Target:

- No unwarranted complaints regarding adverse impacts to existing services and infrastructure.
- No adverse impacts to existing services and infrastructure.
- All relevant approvals shall be obtained prior to working within existing servitudes (including roads, railway line, power lines, telephone lines, etc.).

Management Actions:

- Identify and record all existing services.
- Conform to requirements of relevant service providers. Agreements to be in place prior to construction in affected areas.
- Ensure access to infrastructure is available to service providers at all times.
- Immediately notify service providers of disturbance to services. Rectify disturbance to services, in consultation with service providers. Maintain a record of all disturbances and remedial actions on site.
- Notify landowners of any disruptions to essential services.
- Adequate reinstatement and rehabilitation of affected environment.
- See requirements in EMPr for *Management of Waste*, and *Management of Access and Traffic*

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Plan. • Wayleaves. • Record of disturbances and remedial actions. • Method statement for rehabilitation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement.

		• Related entries into Public Complaints Register. • Visual inspections (photographic records).

12.2.10 Management of Access and Traffic

Management Objective:

- Ensure that all construction vehicles use only dedicated access routes to construction sites.
- Ensure proper access control.
- Prevent unlawful access to the construction domain.
- Ensure the safety of all road users by implementing proper signage and traffic control measures.

Target:

- No reports of construction vehicles using other unauthorised routes.
- No complaints regarding blocking of access to properties.
- No transporting of unsafe loads. Permits are to be obtained for abnormal loads.
- No speeding.
- No accidents.

Management Actions:

- Selective upgrade of the relevant access roads shall ensure that they are capable of accommodating the type of vehicles and/or mechanical plant using these roads.
- The preferred route should be surveyed to identify problem areas (e.g., intersections with limited turning radius and sections of the road with sharp horizontal curves or steep gradients, which may require modification). After the road modifications have been implemented, it is recommended to undertake a “dry-run” with the largest abnormal load vehicle, prior to the transportation of any components, to ensure that delivery will occur without disruptions. This process is to be undertaken by the haulage company transporting the components and the contractor, who will modify the road and intersections to accommodate abnormal vehicles. The “dry-run” should be undertaken within the same month that components are expected to arrive. The haulage company is to provide evidence that the route has been surveyed and deemed acceptable for the transportation of the abnormal load.
- Temporary access roads constructed shall be suitably rehabilitated.
- Ensure temporary accommodation of traffic where any public or private roads are to be affected by construction activities.
- Strict adherence to speed limits by construction vehicles on the public and private access roads. Appropriate speed limits shall be posted on all access roads according to the geometric design and limitations of heavy vehicles.
- The Contractor is to ensure that all drivers entering the site adhere to the traffic laws.
- Vehicular movements within the site boundary are the responsibility of the respective Contractor and the Contractor must ensure that all construction road traffic signs and road markings (where applicable) are in place. It should be noted that traffic violations on public roads is the

responsibility of Law Enforcement, and the public should report all transgressions to Law Enforcement and the Contractor.

- The payloads delivered by heavy vehicles shall be recorded and audited to prevent overloading of heavy vehicles.
- Abnormal load permits shall be acquired, as relevant.
- Traffic shall be accommodated according to the South-African Road Traffic Signs Manual standards where any construction affects an existing road.
- Time restrictions for delivery vehicles through built-up and socially sensitive areas.
- The delivery of components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.
- Staff and general trips should occur outside of peak traffic periods as far as possible.
- The use of mobile batch plants and quarries near the site would decrease the traffic impact on the surrounding road network, if available and feasible.
- Access roads shall be maintained in a suitable condition.
- Clearly mark pedestrian-safe access routes within the construction areas.
- Suitable erosion protective measures shall be implemented for access roads during the construction phase.
- Traffic safety measures (e.g. traffic warning signs, flagmen) shall be implemented where applicable.
- If required, low hanging overhead lines (lower than 5.1m) e.g., Eskom and Telkom lines, along the proposed routes will have to be moved (to be arranged by haulage company) to Page 33 accommodate the abnormal load vehicles. The Contractor and the Developer is to ensure that the haulage company is aware of this requirement.
- The haulage company is to provide evidence to the Contractor and the Developer that any affected overhead lines have been moved or raised.
- Clearly demarcate all construction access roads.
- Proper access control shall be maintained to prevent livestock from accessing construction domain.
- Dust suppression of gravel roads located within the site boundary, including the main access road to the site and the site access roads, during the construction phase, if required.
- A continuous condition survey of the local roads to be used during the construction phase must be made.
- Delivery routes shall be defined and adhered to during the construction phase.
- Maintenance of local roads shall take place during the construction phase, ensuring that the local roads used by the contractor are left in the same or better condition than they were prior to the start of construction.
- The Contractor needs to ensure that the gravel sections of the haulage routes (i.e., the site access road and the main access road to the site) remain in good condition and will need to be maintained during the additional loading of the construction phase and reinstated after construction is completed.
- Regular maintenance of gravel roads located within the site boundary, including the access roads to the site, by the Contractor during the construction phase.

- See requirements in EMPr for *Fencing Arrangements* and *Construction Site Planning and Layout.*

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Plan. • Condition survey of roads. • Traffic and access related signage. • Training and awareness creation. • Method statement for traffic safety.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.11 Fencing Arrangements

Management Objective:

- Protect and maintain existing fences.
- Fencing arrangements to adequately protect livestock and wild animals from construction activities.

Target:

- No deviations from agreements made regarding fencing.
- No direct harm to public / livestock / wild animals due to inadequate fencing arrangements.
- Disturbed or damaged fencing to be reinstated / replaced to meet pre-existing conditions.

Management Actions:

- Any damaged fencing shall be replaced to meet pre-existing conditions.
- All fences erected for construction purposes (e.g. fences around camp sites, fencing around trenches, etc.) shall be inspected on a daily basis to detect whether any damage has occurred. Damaged fences / barricading shall be repaired immediately.
- Erect fences according to appropriate specifications.
- Fence failures during the construction phase shall be fixed immediately.
- Ecologist to advise on fencing requirements for wetland area and associated buffers.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Plan. • Fence inspections. • Training and awareness creation.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Fencing register. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.12 Management of Labour Force

Management Objective:

- Ensure suitable management of the labour force to prevent security-related issues or disturbance to landowners and community members.
- Optimise the use of local labour.
- Provide a work environment that is conducive to effective labour relations.

Target:

- No complaints from landowners and community members regarding trespassing or misconduct by construction workers.
- All unskilled labour to be sourced from local area.

Management Actions:

- See requirements in EMPr for *Management of Security.*
- Develop a Code of Conduct in terms of behaviour of construction staff.
- Prohibit trespassing of construction workers on private property.
- Workers shall be provided with identity cards and must wear identifiable clothing.
- Creating nuisances and disturbances in or near communities shall be prohibited.
- Machine / vehicle operators shall receive clear instructions to remain within demarcated access routes and construction areas.
- Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly.
- Designated smoking areas shall be provided, with special bins for discarding of cigarette butts.
- Establish a ‘labour and employment desk’ in consultation with local authorities, which shall not to be situated at the site.
- Develop a grievance procedure, which also needs to address gender matters.

- Local SMMEs shall be given an opportunity to participate in the construction of the project through the supply of services, material or equipment.
- A procurement policy promoting the use of local business where possible shall be put in place and applied throughout the construction and operational phases of the project.
- The main contractor must employ non-core labour from the regional study area as far as possible during the construction phase.
- Prioritise and articulate gender inclusivity and equity in the project documents by including specific strategies and guidelines for implementation.
- Gender sensitive workplace practises should be planned for and adopted on site. Employment practises should be demonstrated free of coercion or harassment.
- Where possible use labour-intensive methods of construction.
- Implement applicable training of labour to benefit individuals beyond the completion of the project.
- Liaise with the South African Police Services (SAPS) and Community Policing Forums to ensure that the construction site is monitored.
- Prevent loitering within the vicinity of the construction camp as well as construction sites.
- Communicate the limitation of opportunities created by the project through the Ward Councillor.
- Draw up a recruitment policy in conjunction with the Ward Councillor of the area and ensure compliance with this policy.
- Include a section in the induction programme for incoming construction workers that cover local traditions and practices.
- Ensure the infrastructure and social facilities within the host communities will not be compromised with the arrival of additional people into the area.
- All employment of locally sourced labour shall be controlled on a contractual basis. If possible, and if the relevant Ward Councillor deems it necessary, the employment process must include the affected Ward Councillors and their ward committee.
- To limit the growth of informal settlements in the project area, labour should be sourced from existing labour sending areas, from people who resided in the area prior to appointment. This process should include the Ward Councillor to ensure that only local residents are employed, rather than labour migrants.
- No staff accommodation must be allowed on site (except for security personnel).
- Influx of workers could lead to increased diseases and HIV/AIDSs & STI as well as STD infections, therefore awareness programmes should be implemented through the local educational institutions and for the workers as well.
- Spaza shops may open next to the site as a consequence of construction. These must be controlled by the contractor to limit their footprint and to ensure that the Local Municipality – Informal Trading By-Laws, are complied with.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation

Contractor & cEO	• Code of Conduct. • GRM. • Security Policy. • Recruitment Policy. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Documented GRM. • Proof of communication. • Related entries into Public Complaints Register. • Proof of training.

12.2.13 Management of Construction Camps

Management Objective:

Minimise environmental impacts associated with construction camp and eating areas.

Target:

- No environmental contamination associated with construction camp and eating areas.
- Minimise visual impact associated with construction camp and eating areas.
- Prevent socio-economic impacts associated with the construction camp.

Management Actions:

- Erect suitable fencing around the construction camp.
- The construction camp shall not be situated nearer than 100m of any water body or within the 1:100 year flood line.
- Provide essential services (including showers, appropriate sanitation and drinking water facilities) at the construction camp. Maintain essential services in a functional state.
- Provide safe potable water for food preparation, drinking and bathing.
- Provide adequate parking for site staff and visitors.
- Open uncontrolled fires will be forbidden at the site camp. Rather, 'contained' cooking mechanisms shall be used (e.g. gas stoves or an enclosed braai facility).
- The cooking area shall be positioned such that no vegetation is in close proximity thereto, including overhanging trees. An area around the cooking area shall be cleared such that any escaping embers will not start an uncontrolled fire.
- Eating areas shall be designated and demarcated.
- The feeding, or leaving of food for animals, is strictly prohibited.
- Allow areas for social interaction.
- Sufficient vermin / weatherproof bins shall be used for all waste material.
- Dish washing facilities shall be provided.
- Ensure that wastewater is appropriately disposed of.

- Locate all storage areas and material laydown sites within predetermined zones, as per the approved site plan.
- Keep the camp and all its storage and laydown areas secure and neat at all times.
- Employ appropriate access control measures.
- Suitable security shall be provided at the construction camp at all times.
- Manage storm water from construction camp to avoid environmental contamination and erosion.
- Failure to comply with the general code of conduct, or the rules and procedures implemented at the construction camp will result in disciplinary actions.
- Prohibit the felling of trees for firewood.
- Provide medical and first aid facilities at the camp area.
- Prepare de-establishment plan for construction camp for approval by the DPM.
- Provide firefighting equipment at the camp area.
- See requirements in EMPr for *Management of Waste, Management of Water, Management of Labour Force, Management of Ablution Facilities, Management of Storage and Handling of Non-Hazardous Material, Management of Workshop and Equipment, Management of Flora, and Management of Fauna etc.*

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site Plan. • Fence inspections. • Training and awareness creation. • De-establishment plan for construction camp.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Fencing register. • Waste disposal records. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.14 Management of Ablution Facilities

Management Objective:

Minimise environmental impacts associated with ablution facilities.

Target:

- No environmental contamination associated with ablution facilities.
- Minimise visual impact associated with ablution facilities.

Management Actions:

- Provide sufficient ablution facilities (e.g. mobile / portable / VIP toilets) at the construction camp and within the construction domain, which shall conform to all relevant health and safety standards and codes.
- No pit latrines, french drain systems or soak away systems shall be allowed. Install and maintain conservancy tanks for any site offices, which must comply with any relevant local by-laws and must be serviced by a suitable contractor, as appropriate. The location of conservancy tanks shall be approved by the DPM.
- Toilets shall not be situated within 50m of any water body.
- A sufficient number of toilets shall be provided to accommodate the number of personnel working in any given area. Toilets may not be further than 100m from any working area.
- Toilet facilities supplied by the Contractor for the workers shall occur at a maximum ratio of 1 toilet per 15 workers.
- There must be separate toilets for men and women.
- All temporary / portable / mobile toilets shall be secured to the ground to prevent them from toppling over due to wind or any other cause.
- Ensure the proper utilisation, maintenance and management of toilet, wash and waste facilities.
- The entrances to the toilets shall be adequately screened from public view.
- Ablution facilities shall be maintained in a hygienic state and serviced regularly.
- Toilet paper shall be provided.
- The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that a licensed service provider removes the contents from site. Disposal of such waste is only acceptable at a licensed waste disposal facility (proof of disposal to be provided).
- Should shower facilities be provided for use by staff on site, the following controls shall be imposed:
  - Proper positioning of the shower, and specifically its discharge point, shall be carried out to ensure that erosion and build-up of detergents does not occur;
  - All discharge from the shower and other washing facilities shall be managed to prevent environmental contamination; and
  - Use of the shower facilities shall be limited to staff or authorised persons only.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Schedule for cleaning toilets. • Service agreements with sanitation service providers. • Training and awareness creation.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Maintenance register for ablution facilities. • Waste disposal records.

		• Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.15 Management of Visual Aspects

Management Objective:

- Minimise impacts to the aesthetics / visual quality of the surrounding area.
- Ensure that the visual appearance of the construction site is not an eyesore the adjacent areas.

Target:

No verified complaints regarding impacts to visual quality.

Management Actions:

- Retain/maintain natural vegetation within and around the development footprint where possible.
- Limit the construction footprint to only the development area.
- Carefully plan to minimize the construction duration.
- Plant indigenous vegetation and/or sow seeds from indigenous vegetation types from the surrounding the site where possible.
- Implement dust suppression activities.
- Regulate the speed of vehicles on site in accordance with specialist recommendations.
- All infrastructure should be always kept in a presentable condition.
- Choose lighting types that reduce spill light and glare.
- Only focus light where it is needed.
- Advertising and lighting shall be in accordance with relevant standards.
- Undertake on-going housekeeping to maintain a tidy construction area.
- After the construction phase, the areas disturbed that are not earmarked for operational purposes (part of infrastructure footprint) shall be suitably rehabilitated.
- See requirements in EMPr for *Management of Reinstatement and Rehabilitation*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Method statement for rehabilitation. • Training.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.16 Management of Water

During the construction stage, water will be required for various purposes, such as concrete batching, washing of plant and equipment in dedicated areas, dust suppression, potable use by construction workers, etc.

Management Objective:

- Minimise environmental impacts associated with stormwater as well as water services for construction workers.

Target:

- No visual evidence of erosion caused by wastewater or stormwater practices.
- No environmental contamination associated with wastewater or stormwater practices.
- No water wastage (water conservation).

Management Actions:

- The necessary negotiations should be undertaken with the local municipality or landowners to obtain water from approved sources.
- Any water to be sourced directly from natural watercourses or groundwater will require the necessary authorisation in terms of Section 21 of the NWA, as relevant.
- Prevent leakages from pipes or taps.
- Establish a dedicated vehicle maintenance area and wash-bay, where suitable storm water management measures are in place to prevent pollution.
- Develop a method statement for the management of stormwater and erosion.
- Manage stormwater from construction site to avoid environmental contamination and erosion.
- Erosion protection measures to be installed where there are possibilities of surface water sheet flow causing erosion.
- Stormwater runoff from workshops, vehicle maintenance area, wash-bay and other potential pollution sources shall be collected and treated in hydrocarbon separation pits/tanks before being discharged in to drains and/or waterways.
- All wastewater discharges shall comply with legal requirements associated with the NWA.
- Wastewater discharges to be monitored.
- Prevent erosion on access roads due to construction traffic.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Monitoring of water abstraction volumes. • Monitoring of treated wastewater discharges. • Inspection of water abstraction point. • Training and awareness creation. • Method statement for managing stormwater.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Proof of registration from DWS, if relevant. • Monitoring records of water use. • Visual inspections (photographic records). • Approved method statement. • Proof of training.

12.2.17 Management of Topsoil & Soil

Management Objective:

Ensure suitable removal, storage and transportation of topsoil for re-use during rehabilitation.

Target:

- At least 95% of recovered topsoil from disturbed areas is to be stored for future use.
- No visual evidence of erosion from topsoil stockpiles.
- No visual evidence of erosion from areas where topsoil has been reinstated.

Management Actions:

- Stabilisation of cleared areas to prevent and control erosion.
- Determine the average depth of the topsoil prior to excavations.
- Topsoil from the construction activities shall be stored for post-construction rehabilitation work.
- Identify suitable areas to store topsoil.
- Remove topsoil from areas to be affected by construction activities.
- Establish and demarcate topsoil stockpiling areas, in order to prevent the mixing of topsoil with subsoil and spoil material.
- Topsoil shall be adequately protected from contamination from construction activities and material.
- Protect stored topsoil from compaction.
- Topsoil shall be stored in such a way that does not compromise its plant-support capacity.
- Wind and water erosion-control measures shall be implemented to prevent loss of topsoil.
- Following the construction phase, the topsoil shall be placed as the final soil layer prior to seeding.
- An ecologically-sound stormwater management plan shall be implemented during construction and appropriate water diversion systems shall be put in place.
- Topsoil stripped must be stored in such a way that it can be replaced at the same location to limit the mixing of plant species between habitats.
- See requirements in EMPr for Management of Flora, and Management of Reinstatement and Rehabilitation.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation

Contractor & cEO	• Site plan.
	• Inspection of topsoil stockpile areas.
	• Method statements for:
	  ○ Managing topsoil.
	  ○ Rehabilitation.
	• Training and awareness creation.
		Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statements. • Visual inspections (photographic records). • Proof of training.

12.2.18 Management of Excavations

Management Objective:

Minimise environmental impacts associated with excavations.

Target:

- No damage to sensitive environmental features outside construction area during excavations.
- No harm to people or animals as a result of excavations.

Management Actions:

- Construction activities shall remain within the designated construction area.
- Suitable barricading shall be erected around open excavations, as per the Construction Regulations (2014) or the prevailing legislation.
- Provide signage as a warning of open excavations.
- Divert runoff away from excavations, where necessary.
- Inspect excavations at least daily to ensure that animals have not become trapped. Such animals will be safely removed and released, where possible. Special equipment for handling of venomous snakes shall be available on site to ensure safe removal.
- Make adequate provision for subsidence.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation

Contractor & cEO	• Excavation Register.
	• Method statements for:
	  ○ Managing excavations.
	  ○ Managing spoil material.
	  ○ Rehabilitation.
	• Barricading and signage.
	• Training and awareness creation.
		Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Updated Excavation Register. • Visual inspections (photographic records). • Proof of training.

12.2.19 Management of Storage and Handling of Non-Hazardous Material

Management Objective:

Effective and safe management of materials on site, in order to minimise the impact of non-hazardous materials on the environment.

Target:

- No pollution due to handling, use and storage of non-hazardous material.

Management Actions:

- Materials shall be suitably stored to prevent environmental contamination and visual impacts. Storage requirements to be determined based on chemical qualities of material and Material Safety Data Sheet (MSDSs).
- Where required, stored material shall be protected from rain and run-off to avoid environmental contamination.
- Materials shall be appropriately transported to avoid environmental contamination.
- Loose loads (e.g., sand, stone chip, refuse, paper and cement) shall be covered when vehicles travel on public roads.
- Suitable remedial measures, depending on the nature of the contaminant and the receiving environment, shall be instituted for spillages.
- Materials shall be suitably used to prevent environmental contamination.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site plan. • Inspection of storage areas. • MSDS register. • Barricading and signage. • Training and awareness creation.	Construction phase

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Records (e.g., copies of MSDS). • Visual inspections (photographic records).

		• Proof of training.

12.2.20 Management of Storage and Handling of Hazardous Material

Management Objective:

Ensure the protection of the natural environment and the safety of personnel on site, as well as the community, by the correct management and handling of hazardous substances.

Target:

- No pollution due to handling, use and storage of hazardous material.
- In the event of a spill, appropriate containment, clean up and disposal of contaminated material. Spills to be cleaned within 24 hours or sooner (depending on the nature of the spill).

Management Actions:

- An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date.
- Hazardous substances shall be stored and handled in accordance with the appropriate legislation and standards, which include the Hazardous Substances Act (Act No. 15 of 1973), Occupational Health and Safety Act (No. 85 of 1993), relevant associated Regulations and applicable SANS and international standards.
- Storage and use of hazardous materials will be strictly controlled to prevent environmental contamination and will adhere to the requirements stipulated on the MSDSs.
- Appropriate signage shall be displayed at storage areas for hazardous substances.
- Where flammable liquids are being used, applied or stored the workplace will be effectively ventilated.
- No person shall smoke in any place in which flammable liquid is used or stored.
- Install an adequate number of fire-fighting equipment in suitable locations around the flammable liquids store.
- Where flammable liquids are decanted, the metal containers shall be bonded or earthed.
- No flammable material (e.g. paper, cleaning rags or similar material) shall be stored together with flammable liquids.
- Staff that will be handling hazardous materials will be trained to do so.
- Any hazardous materials (apart from fuel) shall be stored within a lockable store with a sealed floor. Suitable ventilation shall be provided.
- All storage tanks containing hazardous materials shall be placed in bunded containment areas with impermeable surfaces. These bunded areas must be able to contain 110% of the total volume of the stored hazardous material.
- MSDSs, which contain the necessary information pertaining to a specific hazardous substance, shall be present for all hazardous materials stored on the site.
- Spill kits will be available for the cleanup of hazardous material spillages.
- Provide secondary containment where a risk of spillage exists.

- Drip trays shall be placed under parked heavy vehicles, equipment and other receptacles of hazardous material to prevent spillages.
- In the event of spillages of hazardous substances the appropriate clean up and disposal measures shall be implemented. Any major incidents to be reported to the DFFE as per the requirements of Section 30 of NEMA.
- Spill reporting procedures shall be displayed at all locations where hazardous substances are being stored.
- Hazardous materials will be disposed of at registered sites or handed to registered hazardous waste disposal facilities for disposal / recycling. Proof of adequate disposal shall be provided.
- Proper and timeous notification will be undertaken of any pollution incidents associated with hazardous materials.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site plan. • Method statement for managing hazardous substances. • HCS Control Sheet & registers for MSDS. • Personal Protective Equipment (PPE) register. • Signage. • Fire-fighting equipment. • Training and awareness creation. • Inspection of storage areas.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Records (e.g., HCS Control Sheet, copies of MSDS, PPE register, spills). • Visual inspection of storage areas, signage, spill kits, etc. (photographic records). • Disposal records. • Proof of training.

12.2.21 Management of Waste

Management Objective:

- Minimise negative environmental impacts associated with waste.
- Apply waste management principles to prevent, minimise, recycle or re-use material, with disposal as a last option.

Target:

- No littering on construction site.

- Maintain a clean and tidy construction site.
- A 100% record of all waste generated and disposed of at waste disposal facilities.
- Valid disposal certificates for all waste disposed.
- Provision of adequate waste containers that are easily accessible and maintained.
- Waste bins to be removed and cleaned weekly.

Management Actions:

- Waste management activities shall comply with the NEM:WA.
- The storage of general or hazardous waste in a waste storage facility shall comply with the norms and standards in GN No. R. 926 of 29 November 2013.
- Vermin / weatherproof bins shall be provided in sufficient numbers and capacity to store domestic waste. These bins shall be kept closed to reduce odour build-up and emptied regularly to avoid overfilling and other associated nuisances.
- Where possible, waste shall be separated at source (e.g., containers for glass, paper, metals, plastics, organic waste and hazardous wastes).
- Establish and monitor recycling targets.
- Provide waste skips at the construction areas. These skips shall be sufficient in number, the skip storage area shall be kept clean, and skips shall be emptied and replaced before overflowing or spillage occurs.
- Ensure suitable housekeeping.
- The Contractor shall ensure that no burying, dumping or burning of waste materials, vegetation, litter or refuse occurs. All waste will be disposed of at suitable licensed disposal sites, based on the waste type (general versus hazardous).
- Ensure that waste is transported so as to avoid waste spills *en-route*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Method statement for waste management. • Service agreements with waste service providers. • Training and awareness creation.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Waste management and disposal records. • Visual inspections of waste management facilities (photographic records). • Related entries into Public Complaints Register. • Proof of training.

12.2.22 Management of Blasting

Management Objective:

Minimise environmental impacts associated with blasting (if required).

Target:

- Compliance with blasting-related legislation and standards.
- No blasting-related impacts to existing structures and infrastructure, private property, livestock, fauna or human health.
- Blasting operations to be controlled to ensure sound pressure levels are kept below the generally accepted 'no damage' level.

Management Actions:

- Prior to commencing with blasting activities, the blasting Contractor shall submit a Method Statement which shall comply with the Explosives Regulations (2003) and all relevant SANS standards and health and safety standards for mitigating blasting.
- Prior notice should be given to surrounding communities of noisy event such as blasting.
- If a risk exists of damage taking place on a property as a result of construction, a condition survey should be undertaken prior to construction.
- The Contractor shall employ industry standard methods to control the impact of blasting and limit the risk of damage to buildings and structures by reducing blast vibrations induced in the rock mass, eliminating fly rock and limiting air-blast and noise to acceptable levels.
- Blast mats shall be used wherever there is a risk that fly-rock may result in damage to any infrastructure or where it could result in death or injury of animals, livestock, game, or where damage could be caused to sensitive environmental features.
- All explosives shall be transported, stored and handled in accordance with applicable laws and good design engineering and constructions practices.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Compliance with blasting-related legislation and standards. • Method statement for blasting. • Notifications. • Noise and vibration levels. • Training and awareness creation.	Prior to blasting up to safe completion of blasting.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Proof of notification of landowners.

		• Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.2.23 Management of Workshop and Equipment

Management Objective:

Minimise environmental impacts associated with workshops and equipment use.

Target:

No environmental contamination associated with workshops and equipment use.

Management Actions:

- Maintenance of equipment and vehicles will be performed in such a manner so as to avoid any environmental contamination (e.g., use of drip trays).
- Construction plant (heavy machinery and large equipment used on construction site) to be washed in dedicated areas.
- Drip trays will be provided for the stationary plant and for the "parked" plant.
- All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment will be repaired immediately or removed from the site.
- Suitable storage and disposal of hydraulic fluids and other vehicle oils (see requirements in the EMPr for *Management of Storage and Handling of H*azardous *Material*).
- Wastewater from workshop shall be disposed in accordance with the requirements in the EMPr for *Management of Water*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Vehicle & Equipment maintenance programme. • Training and awareness creation.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Updated maintenance schedule. • Visual inspection of workshop, storage areas, signage, spill kits, plant, etc. (photographic records). • Disposal records. • Proof of training.

12.2.24 Management of Pollution Generation Potential

Management Objective:

Ensure that all possible causes of pollution are mitigated as far as possible to minimise impacts to the surrounding environment.

Target:

1. No verified complaints regarding pollution.
2. No measurable signs of pollution.
3. Dust fallout -
    a. Fence line sites = Industrial Band (600 to 1200 mg/m^2/day);
    b. Community sites = Residential Band (< 600 mg/m^2/day);
    c. Comply with ASTM D1739; *SANS 1929, SANS 69.*
2. Noise (ambient noise levels) -
    a. Adhere to standards for L_{Aeq} (equivalent continuous sound level) during daytime hours (06:00 to 22:00);
    b. Adhere to standards for L_{Aeq} during night-time hours (22:00 to 06:00); and
    c. Comply with SANS 10103:2008.
3. Construction work should take place during working hours – defined as 07h00 to 17h00 on weekdays and 07h00 to 14h00 on Saturdays. Should overtime work be required, that will generate noise, consultation with the affected community or landowner should take place.
4. Blasting operations to be controlled to ensure sound pressure levels are kept below the generally accepted 'no damage' level.
5. Water quality – construction activities may not cause an adverse impact that results in more than a 10% change in baseline values.
6. All water discharges to comply with legal requirements associated with the NWA, including GN No. 399.

Management Actions:

- **<u>Noise</u>** -
    - The provisions of SANS 10103:2008 will apply to all areas at the perimeter of the site, within audible distance of residents. Noise shall be monitored at the nearest sensitive receptor and where the noise is generated.
    - Construction work shall take place during working hours, which need to be agreed upon with the DPM. Should overtime work be required that will generate noise, consultation with the affected community shall take place.
    - No amplified music will be allowed on the site. The use of radios, tape recorders, compact disc players, television sets etc. will not be permitted unless at a level that does not serve as an intrusion to adjacent community.
    - The Contractor will implement preventative measures (e.g., screening, muffling, timing, pre-notification of affected parties) to minimise complaints regarding noise and vibration nuisances from sources such as power tools.

- Proper design and maintenance of silencers on diesel-powered equipment, systematic maintenance of all forms of equipment, training of personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events.
- Environmental noise monitoring shall be carried out regularly to detect deviations from pre-construction noise levels and to enable corrective measures to be taken, where warranted.

- **Dust** -
  - Appropriate dust suppression measures or temporary stabilising mechanisms shall be used when dust generation is unavoidable (e.g., dampening with water, chemical soil binders, straw, brush packs, chipping, etc.), particularly during prolonged periods of dry weather.
  - Dust suppression shall be undertaken for all bare areas, including construction area, access roads, site yard, etc.
  - Note that all dust suppression requirements shall be based on the results from the dust monitoring and the proximity of construction activities to sensitive receptors.
- **Lights** -
  - Prior to construction the position and type of lighting will be planned to ensure that unnecessary light pollution will be eliminated.
  - All lighting installed on site must not lead to unacceptable light pollution to the surrounding community and natural environment (e.g., use of down-lighters).
- **Erosion** -
  - Protect areas of the construction site that are susceptible to erosion through suitable measures (e.g., watering, planting, retaining structures, commercial anti-erosion compounds, etc.).
  - Any erosion channels caused by construction activities shall be suitably stabilised and rehabilitated.
  - Reasonable efforts must be made to prohibit ponding on surface and to ensure stormwater runoff is channelled from the site. The method used will be appropriate to the expected stormwater flows and the topography and geology of the site.

- **Cement and Concrete Batching** -
  - Cement mixing shall take place on an impervious surface (e.g., cement mixing pit).
  - Batching operations shall take place in a designated area, which will be kept clean at all times.
  - The location of batching plant will be approved by the DPM, with due consideration of the relevant management measures contained in the EMPr (see requirements in the EMPr for *Site Clearing*, *Site Establishment*, *Management of Water*, *Management of Waste*, etc.).
  - Ensure separation of clean and dirty water from batching plant.
  - Wastewater from batching operations shall be disposed in accordance with the EMPr section on *Management of Water*. Contaminated water will not be discharged to the environment. Prevent overflow from contaminated wastewater storage area.
  - Waste concrete and cement sludge shall be removed on a regular basis (to prevent overflowing) and shall be disposed of at a suitable facility.

- Unused cement bags will be stored in an area not exposed to the weather and packed neatly to prevent leakage of cement.
- Used cement bags will be stored so as to prevent windblown dust and potential water contamination. Used bags will be disposed of adequately at a licenced waste disposal facility.
- Concrete transportation will not result in spillage.
- Cleaning of equipment and flushing of mixers will not result in pollution, with all contaminated wash water entering the wastewater collection system.
- To prevent spillage onto roads, ready mix trucks will rinse off the delivery shoot into a suitable sump prior to leaving the site.
- Suitable screening and containment will be in place to prevent windblown contamination from cement storage, mixing, loading and batching operations.
- All visible remains of excess concrete will be physically removed on completion of the plastering or concrete pouring and disposed of in an acceptable manner.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Noise and dust monitoring. • Dust suppression schedule. • Code of Conduct. • Method statement for managing batching plants. • Inspection of batching areas and cement storage areas. • Training and awareness creation.	Construction phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Results from noise and dust monitoring. • Updated dust suppression schedule. • Approved method statement. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Disposal records. • Proof of training.

12.2.25 Management of Flora

Management Objective:

- Manage impacts to protected flora species within the construction domain.
- Preserve protected flora species outside of the construction domain.
- Prevent the direct and indirect loss and disturbance of floral species and communities (including any potential SCC).

- Prevent the further loss and fragmentation of vegetation communities within the CBA areas in the vicinity of the project area.
- Control alien invasive plants and noxious weeds.

Target:

- No unpermitted disturbance to protected flora species.
- Ongoing eradication of alien invasive plants and noxious weeds. 100% alien invasive plants controlled within areas affected by construction activities.

Management Actions:

- Include mitigation measures identified as part of environmental pre-construction survey.
- All planned activities should be realigned to prioritise development within the 'Very Low' to 'Low' sensitivity areas. Medium impact activities followed by appropriate restoration are allowed within the 'medium' sensitive rocky area. It is recommended that areas to be developed/disturbed be specifically demarcated so that during the construction/activity phase, only the demarcated areas be impacted upon.
- Areas of dense and heathy indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.
- All vehicles and personnel must make use of existing roads and walking paths, especially construction/operational vehicles.
- Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded.
- Areas that are denuded during construction that are not within the proposed footprint area need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds and to support the adjacent habitat. This will also reduce the likelihood of encroachment by alien invasive plant species.
- It should be made an offence for any staff to take/bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.
- Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.
- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas.
- Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the project site.
- Any individual of the protected plants that are present needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. Hi visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program.

- Should it not be possible to avoid protected plants, the plants should be removed from the soil and relocated/ re-planted in similar habitats where they should be able to resprout and flourish again.
- The implementation of an Alien Invasive Plant Management Plan is very important, especially because of the invasive species identified on site which, if left unchecked, will continue to grow and spread prolifically leading to further and more significant deterioration to the health of the natural environment within the project area.
- The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas.
- Ensure that the control of exotic or invasive plants is undertaken by suitable contractors using appropriate methods such hoeing, hand pulling, digging, mowing or herbicide applications.
- The use of any pesticides or herbicides shall not have negative impacts on the surrounding environment.
- See requirements in EMPr for additional control measures for the protection of flora –
  - *Specialist Environmental Investigations*;
  - *Construction Site Planning and Layout*;
  - *Environmental Awareness Creation*;
  - *Site Clearing*;
  - *Site Establishment*;
  - *Management of Topsoil*;
  - *Management of Water*;
  - *Management of Storage and Handling of Hazardous Material;*
  - *Management of Pollution Generation Potential;*
  - *Management of Fauna*; and
  - *Management of Reinstatement and Rehabilitation*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Compile reports capturing findings of pre-construction survey. • Method Statement for managing SCC. • Method Statement for managing alien invasive species. • Applications for permits. • Daily register of herbicide usage. • Barricading and signage. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Pre-construction survey report. • Permits on record. • Records of herbicide usage.

		• Visual inspections (photographic records), including relocated species and presence of alien invasive species. • Approved method statement. • Proof of training.

12.2.26 Management of Fauna

Management Objective:

- Ensure the protection of fauna.
- Reduce the negative fragmentation effects of the development and enable the safe movement of faunal species.
- Prevent the direct and indirect loss and disturbance of faunal species and communities (including any potential SCC).

Target:

- No direct / indirect harm to fauna from construction activities.

Management Actions:

- Include mitigation measures identified as part of environmental pre-construction survey.
- No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this. These actions are illegal in terms of provincial environmental legislation.
- The area must be walked though by a qualified ecologist prior to construction to ensure that no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.
- Any holes/deep excavations must be dug in a progressive manner in order to allow burrowing animals time to move off and to prevent trapping. Should the holes remain open overnight they must be covered temporarily to ensure no fauna species fall in.
- The proposed area to be developed must be disturbed by walking the area, prior to clearing of the area. This will allow fauna to move off from the area.
- The areas to be developed (or activity areas) must be specifically demarcated to prevent the movement of staff or equipment/vehicles into the surrounding environments. Signs must be put up to enforce this.
- The duration of the construction should be minimized to as short a term as possible, to reduce the period of disturbance on fauna.
- Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited. Speed bumps should be built to force slow speeds.

- Noise must be kept to a minimum during the evenings/ at night to minimize all possible disturbances to amphibian species and nocturnal mammals.
- Signs must be put up in order to show the importance and sensitivity of surrounding areas and their functions. This especially pertains to the ridge and wetland areas.
- Only use environmentally friendly dust suppressant products.
- No dogs or other domestic pets are allowed on site.
- Prepare an emergency response procedure for dealing with snake bites, as venomous species may occur in the area.
- Photographs of protected and sensitive fauna species must be displayed in the construction camp to heighten awareness.
- Educate personnel about venomous snakes, scorpions and spiders and that these species are not to be harmed. Should any such species be encountered they are to be safely moved outside of the construction domain by a suitably qualified person.
- Specific mitigation measures identified by the Avifaunal Specialist during the EIA:
    - The areas to be developed must be specifically demarcated to prevent movement into surrounding environments.
    - High sensitivity areas must be declared No-go areas, they must be demarcated to ensure no vehicles or people move int these areas.
    - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.
    - Solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass concrete foundations, to reduce the negative effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity.
    - Indigenous vegetation to be maintained under the solar panels to ensure biodiversity is maintained and to prevent soil erosion (Beatty et al, 2017; Sinha *et al*, 2018).
    - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.
    - A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.
    - No cement/concrete may be mixed on site and must be brought in off site to ensure the water sources does not get polluted and that successful rehabilitation of the construction areas can take place

- Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.
- A fire management plan needs to be complied to restrict the impact of fire.
- All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.
- The duration of the construction should be kept to a minimum to avoid disturbing avifauna.
- Outside lighting should be designed and limited to minimize impacts on avifauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (red/green) lights should be used wherever possible.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limit (20 km/h), to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.
- All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to avifauna population in the region
- All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.
- The design of the proposed PV and grid lines must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (Jenkins *et al*., 2015).
- Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used.
- The loop in loop out lines must join in at the closest point to the existing line as possible.
- All the parts of the infrastructure must be nest-proofed and anti-perch devices placed on areas that can lead to electrocution.
- Use environmentally friendly cleaning and dust suppressant products.
- Fencing mitigations for ClearVu or similar fencing:
    - If needed, any top strands must be smooth wire, barbed wire must be avoided;
    - Routinely monitor all fencing for any collisions and mortality, as well as trapped fauna.
    - Place markers/diverters on fences, especially towards the top
    - A specialist must be consulted if any collisions or mortalities are observed.
    - Conventional fencing mitigations:
    - Top 2 strands must be smooth wire
    - Routinely retention loose wires
    - Minimum 300 mm between wires

- Place markers on fences

- As far as possible power cables within the project site should be thoroughly insulated and preferably buried.
- Any exposed parts must be covered (insulated) to reduce electrocution risk.
- The BESS must be enclosed in a structure with a non-reflective surface.
- Non-polarising white strips must be fitted along the edges of the panels to reduce reflection and therefore similarity to water and deter birds and insects (Horvath *et al*, 2010).
- Overhead cables/lines must be fitted with bird diverters or flappers (Shaw *et al*. 2021, Prinson et al 2012).
- There is little to no information on the recovery of the avifauna community subsequent to the closure of Solar PV facilities within South Africa. A post-closure monitoring regime is recommended for the proposed project to document any impacts and this data must be used for improving rehabilitation measures.
- All infrastructure including powerlines must be removed if the facility is decommissioned

- See requirements in EMPr for additional control measures for the protection of fauna –
  - *Specialist Environmental Investigations*;
  - *Construction Site Planning and Layout*;
  - *Environmental Awareness Creation*;
  - *Site Clearing*;
  - *Site Establishment*;
  - *Management of Access and Traffic*;
  - *Management of Storage and Handling of Hazardous Material;*
  - *Management of Pollution Generation Potential;*
  - *Management of Flora*; and
  - *Management of Reinstatement and Rehabilitation*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Compile reports capturing findings of pre-construction survey. • Method Statement for managing SCC. • Applications for permits. • Barricading and signage. • Training and awareness creation.	Pre-construction & construction phases

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Pre-construction survey report. • Permits on record. • Records of herbicide usage. • Visual inspections (photographic records), including relocated species and presence of alien invasive species. • Approved method statement.

		• Proof of training.

12.2.27 Management of Watercourses

Management Objective:

- Ensure that the watercourses (streams, natural channels, drainage lines, wetlands) are protected and incur minimal negative impact to their resource quality (flow, water quality, habitat and aquatic biota).
- Structure and functions of watercourses affected by construction activities to be returned to pre-construction state as part of reinstatement and rehabilitation.

Target:

- Unaltered downstream flow regime for watercourses affected by construction activities.
- No visible evidence of erosion caused by wastewater or stormwater practices.
- No dewatering of sediment-laden or cement laden water into natural water resources.

Management Actions:

- The entire footprint should avoid the delineated boundaries of watercourses as well as its buffer zones;
- Effective stormwater management plans should be in place during both the construction and operational phases. This should also be monitored as part of the EMPr;
- Appropriate stormwater structures should be in place to control run-off and minimize the risk of pollution;
- Panels should be fitted with stormwater gutters to control the runoff in an ecologically sensitive manner to prevent erosion;
- All areas where vegetation was cleared should be re-vegetated in order to limit the erosion potential;
- Sedimentation protection measures (such as sand bags, silt traps and fences) should be installed prior to construction;
- Prevent uncontrolled access of vehicles in and around the watercourse which can impact the hydrology and alluvial soil structure; and,
- All no-go areas should be clearly demarcated prior to commencement of construction activities.
- See requirements in EMPr for additional measures to manage impacts to watercourses, including -
  - *Specialist Environmental Investigations;*
  - *Construction Site Planning and Layout;*
  - *Management of Water;*
  - *Management of Pollution Generation Potential; and*
  - *Management of Reinstatement and Rehabilitation.*

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Site plan • Method Statement for managing stormwater • Inspections of watercourse crossings • Rehabilitation Method Statement to include watercourses affected by the development • Barricading and signage • Training and awareness creation	Pre-construction & construction phases

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Visual inspections (photographic records) • Approved method statement • Approved drawings • Visible signage • Barricading • Proof of training

12.2.28 Management of Cultural Heritage & Palaeontological Features

Management Objective:

Comply with legislative requirements with regards to cultural heritage and palaeontological features.

Target:

No cultural heritage and palaeontological features to be damaged during construction.

Management Actions:

- Include mitigation measures identified as part of environmental pre-construction survey.
- A buffer of at least 30m must be placed around both sites to ensure that during construction there is no indirect impact which could damage any structures.
- The materials demarcating the 30m buffer must be highly visible and made of durable material
- If any impact is anticipated, then a permit will be required for the alteration or destruction of any of the structures (from NW PHRA or SAHRA).
- If any changes are made to the final design footprint prior to construction, monitoring of the site clearance activities must be undertaken by a heritage specialist to identify any additional historical structure remains.

- If any changes are made to the final design footprint prior to construction, monitoring of the site clearance activities must be undertaken by an archaeologist to identify any additional archaeological material
- In the event of any identified site or feature be impacted on, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site.
- Contractors and workers should be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA, Section 51(1).
- See requirements in EMPr for additional measures to manage impacts to cultural heritage and palaeontological features, including -
  - *Specialist Environmental Investigations;*
  - *Construction Site Planning and Layout; and*
  - *Environmental Awareness Creation*.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Compile reports capturing findings of pre-construction survey. • Implement Chance Finds Procedure. • Applications for permits. • Barricading and signage. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Pre-construction survey report. • Permits on record. • Inspection of barricading and visible signage (photographic records). • Visual inspections (photographic records). • Records of chance finds. • Proof of training.

12.2.29 Management of Emergency Procedures

Management Objective:

Minimise environmental impacts associated with emergency procedures.

Target:

- Approved emergency response procedures.
- No site fires to be caused by construction activities and workers.

Management Actions:

- Compile an Emergency Response Action Plan (ERAP) prior to the commencement of construction for approval by the DPM and ECO. This plan must deal with accidents, potential spillages and fires in line with relevant legislation.
- All staff must be made aware of emergency procedures as part of environmental training and awareness creation.
- Prepare and display a list of emergency contact numbers.
- **Fire** -
  - Comply with the National Veld and Forest Fire Act (No. 101 of 1998) and National Veld and Forest Fire Bill (B122B of 1998).
  - Work closely with the local Fire Protection Association. Determine requirements and add to list of emergency telephone numbers.
  - Keep a fire danger index displayed on site and comply with requirements.
  - Fire breaks will be agreed with neighbours and the local Fire Protection Association.
  - Proper emergency response procedure shall be in place for dealing with fires.
  - Identify ignition risks and prevent risk of fires from these sources.
  - Manage construction domain to prevent the build-up of combustible material.
  - Burning of waste is not permitted.
  - Suitable precautions will be taken (e.g., suitable fire extinguishers, water bowsers, welding curtains) when working with welding or grinding equipment.
  - Provide adequate fire control mechanisms (fire-fighting equipment).
  - All fire control mechanisms (fire-fighting equipment) will be routinely inspected by a qualified investigator for efficacy thereof and shall be approved by local fire services.
  - All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to alert to the presence of a fire. The contact details of the emergency services must be displayed and easily accessible on site.
  - No fires are allowed on site.
  - Firebreaks shall be made for construction areas, as required.
  - Dedicated smoking areas to be provided.
- **Accidental Leaks and Spillages** -
  - Proper emergency response procedure shall be in place for dealing with spills and leaks.

- Ensure that the necessary materials and equipment for dealing with spills and leaks are available on site, where practicable.
- Remediation of the spill areas will be undertaken to the satisfaction of the Engineer.
- In the event of a hydrocarbon spill, the source of the spillage will be isolated and contained. The area will be cordoned off and secured. The Contractor will ensure that there is always a supply of an appropriate absorbent material readily available to absorb, breakdown and where possible, encapsulate a minor hydrocarbon spillage.
- All staff on site will be made aware of actions to be taken in case of a spillage.
- Provide contact details of person and emergency services to be notified in a case of spillages – signage to be displayed at strategic points within the construction domain (e.g., workshop, fuel storage area, hazardous material containers).
- All major incidents (i.e., uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property) to be reported to DFFE and/or other relevant authorities.

- **Loss of vegetation due to fuel and chemical spills**
  - Appropriate measures must be implemented in order to prevent potential soil pollution through fuel, oil leaks and spills.
  - Ensure construction vehicles are maintained and serviced to prevent oil and fuel leaks.
  - An emergency response contingency plan will be implemented to address clean-up measures should a spill and/or a leak occur.
  - All plant and machinery must be inspected every day, serviced and maintained regularly, and any leaking plant/machinery must be removed from site for repair.
  - Implement measures to avoid leakages and spillages on to bare ground.
  - Emergency on-site maintenance must be done over appropriate drip trays and all oil or fuel must be disposed of according to regulatory requirements. Safe disposal certificates must always be obtained from the registered waste disposal site, and proof of disposal kept on site.
  - Drip-trays must be placed under vehicles and equipment when not in use.
  - Washing and cleaning of equipment must be done within bunded areas, in order to trap any cement and prevent excessive soil erosion. These sites must be re-vegetated after construction has been completed.
  - Spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans will be implemented during the construction phase.
  - Spill kits will be made available on site for clean-up of spills and leaks of contaminants.
  - The site must have a suitable area for the safe cleaning of cement contaminated tools and equipment. Cleaning such tools/equipment results in water contaminated with cement, which is hazardous to the environment. Cement contaminated water must not be released or otherwise disposed of into the environment, including stormwater drains. The contaminated water must be contained and allowed to evaporate. The remaining residue can be disposed of as building rubble once dry.

- Plant and machinery must be issued with a drip tray on site. The drip tray must be placed underneath the plant/machinery when it has shutdown. Drip trays must be in good working order and must be able to hold liquid adequately if/when needed.
- The contents of drip trays, including rainwater, must not be disposed of into the environment, but decanted into suitable, sealable, containers. These containers must be labelled and the contents disposed of as hazardous waste. Proof of disposal at a licenced waste disposal site must be obtained.

- See requirements in EMPr for additional control measures related to potential emergency event:
  - *Management of Construction Camp*;
  - *Management of Labour Force*;
  - *Environmental Awareness Creation*;
  - *Management of Storage and Handling of Hazardous Material;*
  - *Management of Workshop and Equipment; and*
  - *Management of Pollution Generation Potential.*

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• ERAP. • Emergency contact list. • Document all fire control mechanisms with an inspection and maintenance schedule. • Signage. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Compliance with approved ERAP. • Emergency contact list displayed. • Updated maintenance schedule for fire-fighting equipment. • Visual inspections (photographic records). • Records of incidents and corrective measures taken. • Proof of training.

12.2.30 Management of Health and Safety

Management Objective:

Provide a safe working environment to construction workers and the public.

Target:

- Approved Health and Safety Plan.
- No incidents.
- Compliance with the Occupational Health and Safety Act (Act No. 85 of 1993), Construction Regulations (2014) and other relevant regulations.

Management Actions:

- Contractor to submit a Health and Safety Plan, prepared in accordance with the Health and Safety Specification, for approval prior to the commencement of work. These requirements are aligned with the Construction Regulations (2014).
- Fencing and barriers will be in place in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993).
- Applicable notice boards and hazard warning notices will be put in place and secured.
- Night hazards will be suitably indicated (e.g., reflectors, lighting and traffic signage).
- Emergency contact details will be prominently displayed.
- Two-Way Radio Systems shall be used where cell phone coverage is poor.
- All construction personnel shall be clearly identifiable. All employees will also be issued with employee cards for identification purposes.

- All workers will be supplied with the required Personal Protective Equipment as per the Occupational Health and Safety Act (Act No. 85 of 1993).
- Maintain access control to prevent access of the public to the construction domain, as far as practicable.
- Use approved communication channels to inform the community of Occupational Health and Safety measures to prevent incidents involving community members.
- Contractors shall establish HIV/AIDs awareness programmes at their site camps.
- Put in place a monitoring system to monitor health risks throughout the life of the project.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Occupational Health and Safety system. • Risk Assessment. • Health and Safety Plan. • Signage. • Training and awareness creation.	Pre-construction & construction phases.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Visual inspections (photographic records). • Records of incidents and corrective measures taken. • Proof of training.

12.2.31 Management of Reinstatement and Rehabilitation

Management Objective:

- Adequate reinstatement and rehabilitation of construction domain.
- Conduct concurrent or progressive rehabilitation of areas affected by construction activities.

Target:

- Complete site clean-up.
- Reinstate and rehabilitate areas disturbed by construction activities.

Management Actions:

- Rehabilitation Method Statement to be developed, which will include additional measures identified during construction to supplement the reinstatement and rehabilitation provisions included in the EMPr. Targets to be specified for re-growth.
- Ensure that rehabilitation is in line with the surrounding natural environment and pre-construction state of the affected area.
- Cordon off areas that are under rehabilitation as no-go areas.

- **Removal of structures and infrastructure** -
  - Clear and completely remove from site all construction plant, equipment, storage containers, temporary fencing, temporary services and fixtures.
  - Ensure that all temporary access roads utilised during construction and which are not earmarked for use during the operational phase, are returned to a usable state and/or a state no worse than prior to construction.
- **Inert waste and rubble** -
  - Clear the site of all inert waste and rubble, including surplus rock, foundations and batching plant aggregates. After the material has been removed, the site shall be re-instated and rehabilitated.
  - Load and haul excess spoil and inert rubble to fill in borrow pits/dongas or to dump sites indicated/approved by the DPM.
  - All remaining combustible biomass from bush clearing operations must be removed from the area, unless it is to be used in rehabilitation measures.
- **Domestic waste** -
  - Remove from site all domestic waste and dispose of in the approved manner at a registered waste disposal site.
- **Hazardous waste and pollution control** -
  - Remove from site all pollution containment structures.
  - Remove from site all temporary sanitary infrastructure and wastewater disposal systems. Take care to avoid leaks, overflows and spills and dispose of any waste in the approved manner.
  - Comply with relevant provisions under the following EMPr sections –
    - *Management of Storage and Handling of* H*azardous Material*;
    - *Management of Water*;
    - *Management of Waste*; and
    - *Management of Pollution Generation Potential.*
- **Topsoil replacement and soil amelioration** -
  - Execute top soiling activity prior to the rainy season or any expected wet weather conditions.
  - Execute topsoil placement only after all construction work has ceased.
  - Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes. Replace topsoil to the original depth.
  - Place topsoil in the same area from where it was stripped. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality. The soil brought in must not come from areas infested by alien and invasive plant species. The suitability of substitute material must be determined.

- Do not use topsoil suspected to be contaminated with the seed of alien vegetation. Alternatively, the soil is to be appropriately treated.
- Ensure that stormwater run-off is not channelled alongside the gentle mounding, but that it is taken diagonally across it.
- Shape remaining stockpiled topsoil not utilised elsewhere in an acceptable manner so as to blend in with the local surrounding area.
- After topsoil placement is complete, spread available stripped vegetation randomly by hand over the top-soiled area.

- **Ripping and scarifying** -
  - Rip and/or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers. Whether ripping and/or scarifying is necessary it will be based on the site conditions immediately before these works commence.
  - Rip and/or scarify all disturbed (and other specified) areas of the construction site, including temporary access routes and roads, compacted during the execution of the works.
  - Do not rip and/or scarify areas under wet conditions, as the soil will not break up.
- **Planting** -
  - All plant species to be used for rehabilitation must be approved by a suitably qualified specialists prior to use on site.
  - Revegetation must match the vegetation type which previously existed, unless otherwise indicated by a suitably qualified specialist.
  - Although the use of indigenous vegetation is promoted, where there is a risk of soil erosion a suitable specialist must be consulted to determine the most appropriate stabilisation measures.
- **Grassing** -
  - Suitably trained personnel must undertake grassing by making use of the appropriate equipment and indigenous grass species, as specified by a suitably qualified specialist.
  - Sodding may be done at any time of the year, but seeding must be done by sowing appropriate seed mixtures at the most suitable time under the guidance of a suitably qualified specialist.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Contractor & cEO	• Rehabilitation Method Statement. • Pre-construction survey – established baseline. • Signage. • Training.	Throughout construction period, as relevant to the concurrent or progressive reinstatement and rehabilitation of affected areas. Up to end of defects liability period.

Monitoring:

Responsible person	Frequency	Evidence of compliance
dEO & ECO	Monthly	• Approved method statement. • Pre-construction survey report. • Visible signage. • Related entries into Public Complaints Register. • Visual inspections (photographic records). • Proof of training.

12.3 Operational Phase

Where relevant, all management actions are to be carried forward from the construction phase to the operational phase. Specific management measures for the operational phase follow:

12.3.1 Management of Access, Routine Maintenance Inspections and Maintenance Works

Management Objective:

- Manage environment impacts associated with operation and maintenance activities.
- Restrict operation and maintenance activities to the development footprint.
- Safeguarding of sensitive environmental features and existing services.
- Ensure proper access control.

Target:

- No damage to be caused to sensitive environmental features (including heritage resources, protected flora and fauna, watercourses, existing structures and infrastructure, etc.) outside of the development footprint.
- No reports of operation and maintenance vehicles using unauthorised access points and routes.
- No verified complaints regarding poor practices during operation and maintenance.

Management Actions:

- Restrict operation and maintenance activities to the development footprint. Where this is not possible, the landowners need to be notified and adequate arrangements made in advance.
- During maintenance related activities, damage to access roads as well as existing structures and infrastructure, will be restored to its original condition.
- Maintain access control to the PV Plant.
- Strict adherence to speed limits by operation and maintenance vehicles.
- All roads used for maintenance inspections and maintenance works shall be maintained and repaired where necessary.
- The internal gravel roads will require grading with a grader to obtain a camber of between 3% and 4% (to facilitate drainage) and regular maintenance blading will also be required.
- Monitoring to be conducted to detect erosion (e.g., crossing of drainage lines).
- Protect all areas susceptible to erosion resultant from operation and maintenance activities.
- Maintenance work shall be undertaken as per the provisions of the EMPr for the pre-construction and construction phases, as relevant.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Compliance with relevant management actions. • Training.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Evidence of erosion. • Verified damage to existing structures and infrastructure. • Concern or complaint raised as part of GRM. • Visual inspections (photographic records). • Proof of training.

12.3.2 Management of Wastewater & Stormwater

Management Objective:

- Manage site drainage.
- Minimise environmental impacts associated with stormwater.

Target:

- No visual evidence of erosion caused by stormwater practices.
- No environmental contamination associated with wastewater or stormwater practices.

Management Actions:

- Manage stormwater from Solar PV Plant to avoid environmental contamination and erosion.
- Separate clean and dirty water, as necessary.
- Stormwater runoff from operation and maintenance building as well as other potential pollution sources shall be collected and treated before being discharged in to drains and/or waterways.
- All wastewater discharges shall comply with legal requirements associated with the NWA.
- Wastewater discharges to be monitored.
- Prevent erosion on access roads.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Monitoring of treated wastewater discharges. • Training and awareness creation. • Inspect stormwater system.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Visual inspections (photographic records). • Proof of training.

12.3.3 Management of Storage and Handling of Hazardous Material

Management Objective:

Ensure the protection of the natural environment and the safety of operational staff, as well as the community, by the correct management and handling of hazardous substances.

Target:

- No pollution due to handling, use and storage of hazardous material.
- In the event of a spill, appropriate containment, clean up and disposal of contaminated material. Spills to be cleaned within 24 hours or sooner (depending on the nature of the spill).

Management Actions:

- Hazardous substances shall be stored and handled in accordance with the appropriate legislation and standards, which include the Hazardous Substances Act (Act No. 15 of 1973), Occupational Health and Safety Act (No. 85 of 1993), relevant associated Regulations and applicable SANS and international standards.
- Storage and use of hazardous materials will be strictly controlled to prevent environmental contamination and will adhere to the requirements stipulated on the MSDSs.
- Appropriate signage shall be displayed at storage areas for hazardous substances.
- Where flammable liquids are being used, applied or stored the workplace will be effectively ventilated.
- No person shall smoke in any place in which flammable liquid is used or stored.
- Install an adequate number of fire-fighting equipment in suitable locations around the flammable liquids store.
- No flammable material (e.g., paper, cleaning rags or similar material) shall be stored together with flammable liquids.
- Operational staff that will be handling hazardous materials will be trained to do so.
- All storage tanks containing hazardous materials shall be placed in bunded containment areas with impermeable surfaces. These bunded areas must be able to contain 110% of the total volume of the stored hazardous material.
- MSDSs, which contain the necessary information pertaining to a specific hazardous substance, shall be present for all hazardous materials stored on the site.
- Spill kits will be available for the cleanup of hazardous material spillages.
- Provide secondary containment where a risk of spillage exists.
- In the event of spillages of hazardous substances the appropriate clean up and disposal measures shall be implemented. Any major incidents to be reported to the DEFF as per the requirements of Section 30 of NEMA.
- Spill reporting procedures shall be displayed at all locations where hazardous substances are being stored.
- Hazardous materials will be disposed of at registered sites or handed to registered hazardous waste disposal facilities for disposal / recycling. Proof of adequate disposal shall be provided.

- Proper and timeous notification will be undertaken of any pollution incidents associated with hazardous materials.
- Undertake a detailed risk assessment based on the type of BESS technology selected and the final design of the Solar PV Plant. Implement safe work procedures identified in the risk assessment.
- Use environmentally friendly cleaning products for PV panels and other facilities at the Solar PV plant.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Compliance with relevant management actions. • Designated person. • ERAP. • Inspection of storage areas for hazardous material. • MSDS register. • PPE register. • Signage. • Training and awareness creation. • BESS specifications.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Updated inspection register. • Records (e.g., copies of MSDS, PPE register, spills). • Visual inspection of storage areas, signage, etc. (photographic records). • Disposal records. • Records of incidents and corrective measures taken. • Proof of training.

12.3.4 Management of Waste

Management Objective:

- Minimise negative environmental impacts associated with waste.
- Apply waste management principles to prevent, minimise, recycle or re-use material, with disposal as a last option.

Target:

- No littering at the Solar PV Plant.
- Maintain a clean and tidy facility.
- Provision of adequate waste receptacles that are easily accessible and maintained.

Management Actions:

- Waste management activities shall comply with the NEM:WA.
- The storage of general or hazardous waste in a waste storage facility shall comply with the norms and standards in GN No. R. 926 of 29 November 2013.
- Where possible, waste shall be separated at source (e.g., containers for glass, paper, metals, plastics, organic waste and hazardous wastes).
- Establish and monitor recycling targets.
- Provide waste receptacles at the facility.
- Ensure suitable housekeeping.
- No burying, dumping or burning of waste materials, vegetation, litter or refuse will be permitted.
- All waste will be disposed of at suitable licensed disposal sites, based on the waste type (general versus hazardous).
- Ensure that waste is transported so as to avoid waste spills *en-route*.
- Waste generated during maintenance or replacement of panels and inverters will be sent to suitable disposal sites.
- With regards to the BESS, used batteries will be removed by the suppliers who will be responsible for ensuring compliance with all relevant legal requirements

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Service agreements with waste service providers. • Training and awareness creation.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Waste management and disposal records. • Visual inspections of waste management facilities (photographic records). • Related entries into Public Complaints Register. • Proof of training.

12.3.5 Management of Emergency Procedures and Risk to BESS

Management Objective:

Minimise environmental impacts associated with emergency procedures during operational phase.

Target:

- Approved emergency response procedure for operational phase.
- No fires caused by the Solar PV Plant.
- No loss of sensitive environmental features as a result of environmental incidents.

Management Actions:

- Compile an ERAP for the operational phase. This plan must deal with *inter alia* accidents, potential spillages and fires in line with relevant legislation.
- All operational staff must be made aware of emergency procedures as part of environmental training and awareness creation.
- Prepare and display a list of emergency contact numbers at the facility.
- Develop and communicate an appropriate emergency evacuation procedure.
- Establish suitable communication system for emergencies.
- **Fire** -
  - The Solar PV Plant will operate under the general principle of fire avoidance.
  - The ERAP must include a standard operating procedure for dealing with fires at the Solar PV Plant.
  - Designated person to be appointed to monitor conditions at and surrounding the facility related to fire management. This person needs to be given site specific training to carry out the monitoring role.
  - Comply with the National Veld and Forest Fire Act (No. 101 of 1998), National Veld and Forest Fire Bill (B122B of 1998) and OHS Act.
  - Ensure compliance with requirements of the local fire service authority.
  - Obtain a hot work permit for welding, cutting and grinding activities that are undertaken on site, as relevant.
  - Work closely with the local Fire Protection Association. Determine requirements and add to list of emergency telephone numbers.
  - Maintain a fire break around the Solar PV Plant. Fire breaks will be used to prevent naturally occurring fires from damaging buildings and infrastructure.
  - Proper emergency response procedure shall be in place for dealing with fires.
  - Identify ignition risks and prevent risk of fires from these sources.
  - The BESS surfaces may not have reflective surfaces which can lead to veld fires.
  - Manage Solar PV Plant to prevent the build-up of combustible material. Ensure proper housekeeping to reduce waste and dry vegetation.
  - Burning of waste is not permitted.
  - Provide adequate fire control mechanisms (fire-fighting equipment).

- Portable fire extinguishers must be located in easily identifiable locations throughout the facility. Ensure that their locations and suitability for use take into consideration the various types of fires that may be encountered (e.g., electrical, flammable liquids, ordinary combustibles).
- All fire control mechanisms (fire-fighting equipment) will be routinely inspected by a qualified investigator for efficacy thereof and shall be approved by local fire services.
- All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to alert to the presence of a fire. The contact details of the emergency services must be displayed and easily accessible on site.
- No fires are allowed on site.
- Dedicated smoking areas to be provided.
- Undertake fire drills at regular intervals, in accordance with legal requirements and best practices.
- Regularly inspect operational vehicles.
- Undertake a detailed risk assessment based on the type of BESS technology selected and the final design of the Solar PV Plant. Implement safe work procedures identified in the risk assessment.
- The BESS must incorporate adequate explosion prevention protection.
- Provide signage that identifies the contents of the BESS to alert first responders to the potential hazards associated with the installation.
- BESS facility to be located outside of power line servitude.
- Use of perimeter fence around BESS facility.
- Earthing system installed at BESS as per normal electrical facilities.
- Separation distances between battery packs in accordance with manufacturer recommendations
- BESS area will have a non-flammable buffer area to prevent the spread of fire.
- BESS will have electrical and fire protection measures in the form of battery temperature monitoring, circuit breakers, fire detection and fire suppression. Adhere to specifications of the BESS supplier.
- Use of appropriately qualified maintenance personnel for BESS.

- **Accidental Leaks and Spillages** -
  - The ERAP must include a standard operating procedure for dealing with spills and leaks (e.g., transformer oils) at the Solar PV Plant.
  - Ensure that the necessary materials and equipment for dealing with spills and leaks are available at the Solar PV Plant, where practicable.
  - Remediation of the spill areas will be undertaken.
  - All staff on site will be made aware of actions to be taken in case of a spillage.
  - All major incidents (i.e., uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property) to be reported to DEFF and/or other relevant authorities.

Table 12: Proposed management of risk to BESS (based on Arup, 2018)

No.	Risk	Possible Consequences	Control Measures
1	Risk posed by veld fires (external to site) to BESS facility	Damage to BESS	Implementation of a fire break around the site Include measures to deal with veld fires in the Emergency Response Plan Coordination with local fire authorities Provide fire extinguishers on site
2	Damage caused to cells by an external event	Lithium Ion Cell leakage	Lithium batteries do not contain free liquid electrolytes Individual cells are used which minimises extent of release
3	Damage to batteries from vehicle collision	Damage to battery cells Electrical risks	Use of perimeter fence around BESS facility Appropriately designed internal access roads Limit of speed limit within fenced facility Earthing system installed as per normal electrical facilities
4	Transformer oil leakage due to corrosion of tank base or leakage of oil tank	Leakage of transformer oil to environment, with resultant pollution	Use of fully bunded oil storage for transformers Regular tank inspections
5	Collapse or fall of overhead electricity line onto BESS facility	Damage to BESS facility	BESS facility to be located outside of power line servitude
6	Security breach into BESS facility for theft of components	Theft of equipment or risk to personnel	Installation of security fencing around entire Solar PV Plant and around the BESS facility Installation of security system to monitor key areas Inspections to monitor for security breaches
7	Spread of fire across BESS facility between battery packs	Localised fire causing damage by spreading to BESS facility	Separation distances between battery packs in accordance with manufacturer recommendations Adherence to fire management measures Provide fire extinguishers on site BESS area will have a non-flammable buffer area to prevent the spread of fire. BESS will have electrical and fire protection measures in the form of battery temperature monitoring, circuit breakers, fire detection and fire suppression
8	Electrocution due to electrical fault	Electrical fault causing personnel injury	Normal electrical standards and installation of appropriate earthing system Use of appropriately qualified maintenance personnel
9	Lightning striking BESS facility	Lightning strike causing damage to facility or personnel	Include lightning protection measures, if deemed necessary
10	High rainfall and flooding to site	Damage to electrical equipment	BESS facility to be developed outside of the 1:100 year floodline of any watercourse
11	High wind events and seismic events	Structural damage to equipment or battery packs	Appropriate design of BESS facility, taking into consideration *inter alia* climatic and geotechnical conditions

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Compliance with relevant management actions. • Designated person. • ERAP. • Emergency contact list. • Document all fire control mechanisms with an inspection and maintenance schedule. • Inspection of ignition sources. • Signage. • Training and awareness creation. • BESS specifications.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Compliance with ERAP. • Emergency contact list displayed. • Updated maintenance schedule for fire-fighting equipment. • Visual inspections (photographic records). • Records of incidents and corrective measures taken. • Proof of training.

12.3.6 Management of Flora and Fauna

Management Objective:

- Control alien invasive plant species within the Solar PV plant.
- Ensure the protection of animals.

Target:

- No direct / indirect harm to animals from operation and maintenance activities.
- Ongoing eradication of alien invasive plants and noxious weeds. 100% alien invasive plants controlled within areas affected by construction activities.

Management Actions:

- Implement eradication programme for alien invasive plants and noxious weeds at the facility.
- Prevent contamination of natural vegetation by any maintenance activities.
- As much vegetation growth as possible must be promoted post construction within the permanent development footprint. This will serve to reduce the percentage of the surface area which is left as bare ground, and may also screen the facility. Indigenous vegetation is to be used for this purpose.
- The areas affected by operation and maintenance activities must be reinstated and rehabilitated.

- No hunting/trapping/snaring or collecting of faunal species is allowed.
- Vehicles to use the facility's access roads as far as possible.
- Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas.
- Specific mitigation measures identified by the Avifaunal Specialist during the EIA:
  - Produce a map every year showing the development of the PV footprint in relation to the High and Medium sensitivity habitats. Data must be available in georeferenced shapefile format. Initiate an offset strategy if clearing of sensitive land is anticipated or has happened incidentally.
  - Illustrate and briefly discuss habitat loss maps in a brief environmental annual ops report.
  - Commission annual external audit of the EMPr compliance as well as annual ops report.
  - Create bird and other biodiversity awareness signs and posters (interesting species and who to call regarding incidents).
  - Conduct post-construction monitoring (in line with Regime 2 protocol) which involve both general avifaunal monitoring and fatality monitoring:
    - General monitoring should involve two three-day site visits (peak summer and early winter) that repeat the methodologies used here (point counts and incidental searches) per year for two years.
    - Fatality monitoring should involve standardised carcass searches conducted on a bi-monthly (every second month) basis during the two-year post-construction monitoring period. Progress reports should be submitted every six months and an annual report submitted yearly. Carcass searches should occur around PV infrastructure but most importantly along the wetland beneath crossing points.
  - Increase awareness and the training undertaken by staff through incorporating biodiversity aspects (e.g., sensitive areas and species and who to report an incident or carcass to) into inductions.
  - In the annual environmental ops report, document noise, dust and light levels. Suggest what actions could be taken to minimise these disturbances wherever possible.
- Prevent disturbance of natural areas during operation and maintenance activities.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Eradication programme for alien invasive plants and noxious weeds. • Training and awareness creation.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc.*	• Compliance with Eradication programme. • Visual inspections (photographic records). • Records of incidents related to flora and fauna.

		• Proof of training.

12.3.7 Management of Socio-Economic Environment

Management Objective:

- Minimise impacts to the socio-economic environment.
- Establish and maintain a record of all complaints against the project and ensure that these are timeously and effectively verified and responded to..

Target:

- No justifiable complaints.
- No direct harm to public / livestock / fauna due to inadequate fencing arrangements.
- Disturbed or damaged perimeter fencing to be reinstated / replaced.

Management Actions:

- Establish lines of communications with stakeholders.
- Implement GRM in operational phase.
- Prevent unauthorised access to the facility.
- Prevent livestock from entering the facility.
- Maintain the facility's perimeter fencing.

Implementation:

Responsible person	Method of implementation	Timeframe for implementation
Operator	• Compliance with relevant management actions. • Develop and implement GRM. • Inspection of fencing. • Training and awareness creation.	Operational Phase.

Monitoring:

Responsible person	Frequency	Evidence of compliance
Operator's designated person	Varies from daily to *ad hoc*	• Documented and functional GRM. • Proof of communication. • Visual inspections (photographic records). • Records of incidents to members of the public / livestock. • Proof of training.