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

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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 information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once

Part	Section	Heading	Content
			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)	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.

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 variation, not allowed for in the

Responsible Person(s)	Role and Responsibilities
	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; - Measure and communicate environmental performance to the Contractor;

Responsible Person(s)	Role and Responsibilities
	- 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.
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

Responsible Person(s)	Role and Responsibilities
	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;	**ECO and cEO**	**Environmental Induction training; Toolbox talks; other pertinent training aids**	**Initially prior to construction commencing ECO to induct Construction Management and cEO, and thereafter repeated for all new employees and yearly. Toolbox talks to be presented weekly**	**ECO**	**Monthly**	**Signed induction and toolbox talk, or training registers**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
b) Mitigation measures to be implemented when carrying out specific activities; 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**	**Method Statement compilation and communication of Method Statements to employees. Use of EIA and Specialist Studies to locate site camps**	**Prior to construction**	**ECO**	**Monthly**	**Signed Method Statements; signed proof of communication register; Liaison with ECO regarding site camp placement**

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**	**Use of EIA/BA and Specialist Studies to locate sensitive areas and 'no-go' areas**	**Prior to construction in new areas**	**ECO**	**Monthly**	**Contractor compliance with sensitive areas and 'no-go' areas identified in EIA/BA and Specialist Studies**

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 croplands – Access roads must only be developed on a pre-planned and approved roads.	**Contractor**	**Implementation of mitigation measures**	**Ongoing.**	**ECO**	**Monthly**	**Signed access agreements and maintenance of access 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; – 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;	**Contractor and Applicant**	**Implementation of the mitigation measures**	**Ongoing.**	**ECO**	**Monthly**	**Site observation; public complaints register**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 and Applicant**	**Application to DWS where applicable. Implementation of mitigation measures**	**Construction**	**ECO**	**Monthly**	**Proof of water source used; submission of above proof to DWS**

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**	**Employ methods to prevent water pollution**	**Construction**	**ECO**	**Weekly**	**Inspection of areas where construction takes place near watercourses**

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**	**Following good waste management practices outlined in approved method statement**	**Construction**	**ECO**	**Weekly**	**Waste safe disposal slips; Service Level Agreements**

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**	**Method statements; Stormwater Management Plan**	**Construction**	**ECO**	**Weekly**	**Method Statement compliance**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
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 form part of the Environmental Audit Report; – Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;	**Contractor and Applicant**	**Specialist recommendations; Method statement; Search and Rescue Plan; Alien vegetation removal Plan (approved plans and strategies used by Eskom), site awareness**	**Pre-Construction and Construction and Operation**	**ECO**	**Pre-Construction and weekly during construction**	**Compliance to method statements and Search and Rescue Plan; Alien vegetation removal Plan. Approved plans and strategies used by Eskom.**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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.						

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 a person representing the landowner being present;	**Contractor**	**Method statement and adherence to**	**Construction**	**ECO**	**Weekly**	**Public complaints register;**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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.		**exclusion/no-go zones; site awareness**				**adherence to exclusion/no-go zones and method statements**

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**	**Method Statement; Heritage management plan**	**Pre-construction and construction**	**ECO**	**Weekly and daily for zones highlighted by Heritage Specialist where potsherds were found**	**Monitoring of construction areas, adherence to management plan if change finds found.**

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**	**Landowner agreements; Method Statement**	**Construction**	**ECO**	**Weekly**	**Site works barricaded, safe working site maintained, public complaints register.**

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; 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;	**Contractor**	**Service level agreement with Service provider; Method statement; site awareness**	**Construction**	**ECO**	**Weekly**	**Service level agreement with service provider, proof of safe disposal of waste**

– 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; – 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.	**Contractor**	**Method statement, awareness training**	**Construction**	**ECO**	**Monthly**	**Method statement, proof of awareness 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 contain the spill or leak must be implemented (see ***Hazardous Substances section 5.17***).	**Contractor**	**Environmental Emergency Response Action Plan**	**Construction**	**ECO**	**Monthly**	**Adherence /compliance to ERAP**

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 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	**Contractor**	**Method Statement, OHS requirements; adequate and responsible use and storage of Hazardous Substances, Hazardous Substances storage register**	**Construction**	**ECO**	**Weekly**	**Hazardous Substance Storage Register, MSDS, Method Statement**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
impermeable lining must extend to the crest of the bund and the volume inside the bund must be 110% of the total capacity of all the storage tanks/ bowsers; – 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; – 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;						

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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;	**Contractor**	**Method Statement, OHS requirements; Hazardous Substances storage register, vehicle daily checklist,**	**Construction**	**ECO**	**Weekly**	**Method Statement, Hazardous Substances storage register, vehicle daily checklist,**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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***.		**vehicle service register**				**vehicle service register**

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	**Contractor**	**Method Statement**	**Construction**	**ECO**	**Weekly**	**Compliance to mitigation and method statement**

– 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 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;	**Contractor**	**Method Statement, Vehicle Speed**	**Construction**	**ECO**	**Monthly**	**Site observations, dust**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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; – 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.		**limit, dust suppression**				**suppression register**

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**	**Relevant legislation and regulation**	**Construction**	**ECO**	**Monthly**	**Public complaints register; proof of registration of blasting contractor.**

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**	**Restriction of site hours to working**	**Construction**	**ECO**	**Monthly**	**Public Complaints Register**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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.		**hours Monday to Friday**				

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;	**Contractor**	**Emergency Response Action**	**Construction**	**ECO**	**Monthly**	**Public complaints register;**

– 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.		**Plan; Method Statement**				**compliance to ERAP**

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 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.);	**Contractor**	**Method Statement**	**Construction**	**ECO**	**Monthly**	**Method Statement and site observations**

– Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.						

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 vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;	**Contractor**	**Method Statement**	**Construction**	**ECO**	**Monthly**	**Site observation**

– 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 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***.	**Contractor**	**Method Statement and Engineering Drawings**	**Construction**	**ECO**	**Weekly**	**Adherence to method statements**

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**	**Method Statement**	**Construction**	**Contractor and ECO**	**Weekly**	**Method Statement and site observations**

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	**Contractor**	**Method Statement**	**Construction**	**ECO**	**Weekly**	**Method Statement and site observation**

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***.						

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**	**Method Statement**	**Construction**	**ECO**	**Weekly**	**Site Observations**

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**	**Method Statement, adherence to exclusion zones**	**Construction**	**ECO**	**Weekly**	**Site observations**

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**	**Method Statement**	**Construction**	**ECO**	**Weekly**	**Site observation**

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	**Contractor**	**Landowner Agreements; Issues and Complaints Register**	**Construction**	**ECO**	**Monthly**	**Landowner Agreement; Issues and Complaints Register**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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.						

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;	**Contractor**	**Method statement**	**Construction – when applicable**	**ECO**	**Monthly – when applicable**	**Method statement** **ECO reports**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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; – 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;	**Contractor**	**Method statement**	**Construction and decommissioning**	**ECO**	**Monthly – when applicable**	**Site observation**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 – 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;	**Contractor**	**Method Statements; erosion protection; alien eradication plan**	**Concurrent with Construction**	**ECO**	**Monthly**	**Adequately revegetated work areas; no erosion or**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 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;						**invasive plant species**

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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						

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: **South Africa Mainstream Renewable Power Developments (Pty) Ltd**

Name of applicant: **Eugene Marais**

Tel No: **073 871 5781**

Fax No: **021 671 5665**

Postal Address**: PO Box 45063, CLAREMONT, Cape Town**

Physical Address: **4th Floor Mariendahl House, Newlands on Main, Cnr Main Road and Campground, Claremont, Cape Town**

7.1.2 Details and expertise of the EAP:

Name of applicant: **SiVEST SA (Pty) Ltd**

Tel No: **+27 11 798 0634**

Fax No: **N/A**

E-mail address: **rendanir@sivest.com**

Expertise of the EAP (Curriculum Vitae included): **Yes, included in the BA Application**

7.1.3 Project name:

Proposed Development of the 200MWa11c Karee Wind Energy Facility (WEF), Battery Energy Storage System (BESS), and associated infrastructure located near Ceres in the Witzenberg Local Municipality, Cape Winelands District in the Western Cape Province - SUBSTATION INFRASTRUCTURE EMPR

7.1.4 Description of the project:

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') is proposing to construct the Karee Wind Energy Facility (WEF), Battery Energy Storage System (BESS), and associated infrastructure near the town of Ceres in the Witzenberg Local Municipality, in the Cape Winelands District Municipality (DFFE Reference Number: To be allocated). The proposed development will have a maximum export capacity / contracted capacity of up to approximately 200-megawatt (MW) ac and will be referred to as the Karee WEF. The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy and to feed into the national grid, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes or potential private offtake entities.

SiVEST Environmental Division has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment (BA) process for the proposed construction of the Karee WEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department Forestry, Fisheries and the Environment (DFFE). The BA for the proposed development will be conducted in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act, Act No. 107 of 1998 (NEMA). The provincial authority (i.e. the Western Cape Department of Environmental Affairs and Development Planning - WC DEADP) will also be consulted.

The proposed WEF, BESS and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), as published in terms of Section 24(5) of the NEMA in GN R114 of 16 February 2018. Accordingly, a BA process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project.

The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy to feed into the national grid, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes or potential private offtake entities. The proposed development will have a maximum total generation capacity of up to a 200 megawatt (MWac) and will be referred to as the Karee WEF.

The on-site substation will be a step-up substation and will include an Independent Power Producer (IPP) portion (33kv portion/yard of the shared 33/132kv onsite substation) and an Eskom portion (132kv portion/yard of the shared 33kv/132kv onsite substation – this portion will be ceded to Eskom once the onsite substation is constructed and the necessary transfer of rights undertaken), hence the IPP portion (33kv portion/yard of the shared 33/132kv onsite substation) has been included in the WEF BA process (i.e. this application) and the Eskom portion (132kv portion/yard of the shared 33kv/132kv onsite substation) and associated 132kv overhead line, included in grid connection infrastructure BA process. This will facilitate an ease of transfer over to Eskom once the onsite substation is constructed.

Two (2) options have been identified for the 33kv portion/yard of the shared 33/132kV onsite substation:

- **Option 1: The location of the 33kv portion/yard of the shared 33/132kV onsite substation is located near an existing gravel road, making access to the onsite substation easier. The associated grid connection route to the Kappa Main Transmission Substation is shorter i.e. approximately 8.5km – 10.5km in length (Preferred).**
- **Option 2: The location of the 33kv portion/yard of the shared 33/132kV onsite substation is located central to the land parcel, thereby reducing the energy loss associated with the wind turbines. The associated grid connection route to the Kappa Main Transmission Substation is slightly longer i.e. approximately 10.4km to 11.4km in length.**

Two (2) grid corridors have been identified for the 132kv overhead line and 132kv portion/yard of the shared 33kv/132kv onsite substation – these applications will be prepared and assessed under separate BA application processes.

It should be noted that Mainstream is proposing the 250MW Patatskloof WEF adjacent to the proposed Karee WEF. This WEF will be assessed under a separate BA process / application.

- **250MW Patatskloof WEF – DFFE Reference Number: To be Allocated (part of a separate BA process / application).**

Although the WEF and associated grid connection infrastructure will be assessed separately, a single (1) public participation process is being proposed to consider all of the proposed developments i.e. Two (2) WEF BA and two (2) grid connection infrastructure BAs. This is however, subject to approval from the DFFE. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

7.1.5 Project location:

The proposed WEF and associated grid infrastructure is located approximately 20km north (respectively) of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality. (Error! Reference source not found.**). The project site is approximately 11 841 hectares (ha) in extent. A smaller development area (790 ha) has been identified within the project site where the WEF is planned to be located.**

The application site for the proposed WEF development incorporates the following three (3) farm portions / properties:

- **Farm Sadawa No 239;**
- **Farm Tier Berg No 258; and**
- **Farm Voetpads Kloof No 253.**

The proposed development will affect the following) farms / properties:

NO	FARM NAME(if applicable)	FARM NUMBER(if applicable)	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE
1	**Farm Sadawa No 239[1]**	**239**	**Farm Sadawa No 239**	**-**	**Refer below**	
2	**Farm Voetpads Kloof No 253**	**253**	**Farm Voetpads Kloof No 253**	**-**	**Refer below**	
3	**Farm Tierberg No 258**	**258**	**Farm Tierberg No 258**	**-**	**Refer below**	
KAREE SUBSTATION, BESS, CONSTRUCTION LAYDOWN/O&M BUILDINGS						

SITE ALTERNATIVE	**SOUTH**	**EAST**
OPTION 1 (Preferred)	***S33° 8'58.55"***	***E19°56'43.55"***
OPTION 2	S33°10'7.19"	E19°56'37.06"

[1] *Note whilst Mainstream will no longer be proceeding with turbines on Sadawa 239 (northernmost land parcel), it will remain part of the Development Area / Development Envelop but not the Development Footprint.*

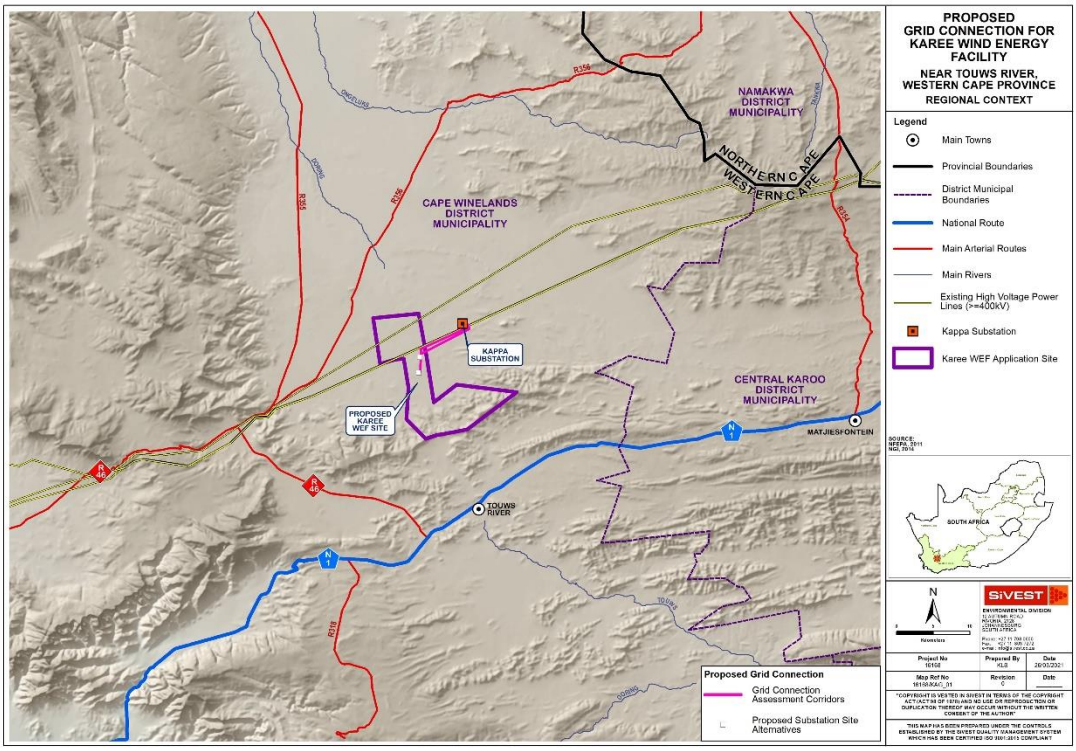

Figure 1: Regional Context

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.

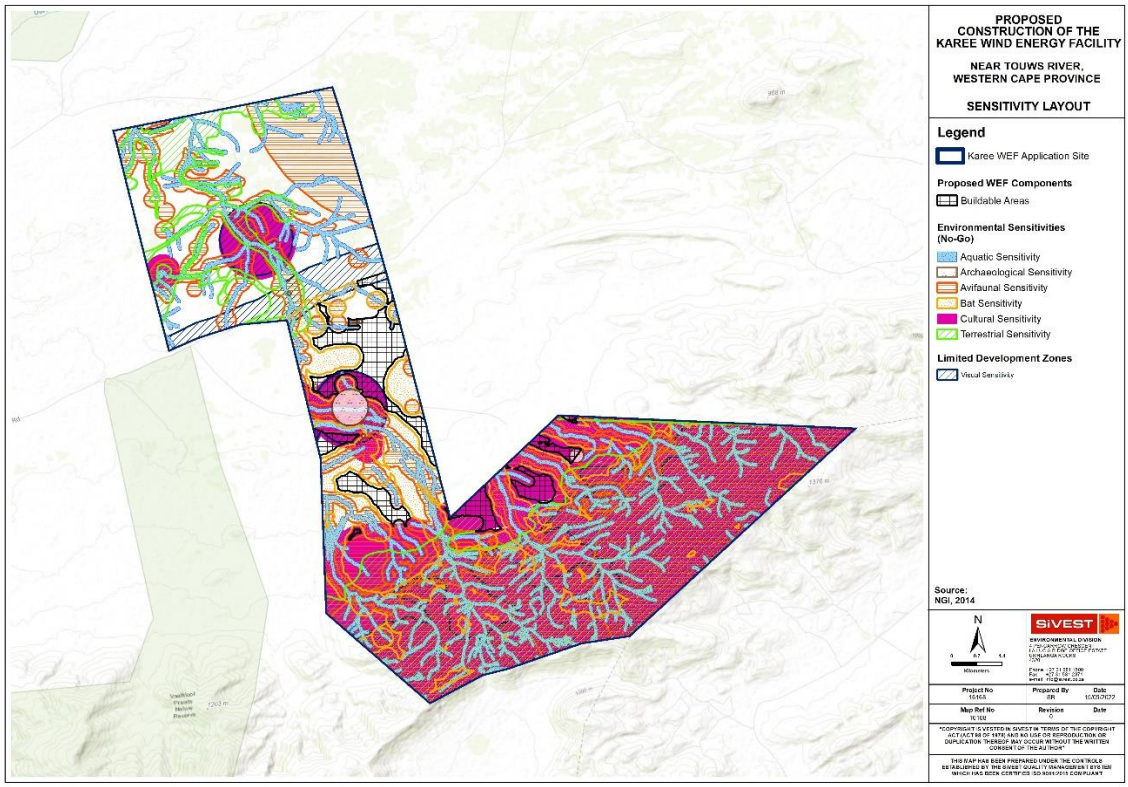

Figure 2: Environmental Sensitivity Overlay (Final)

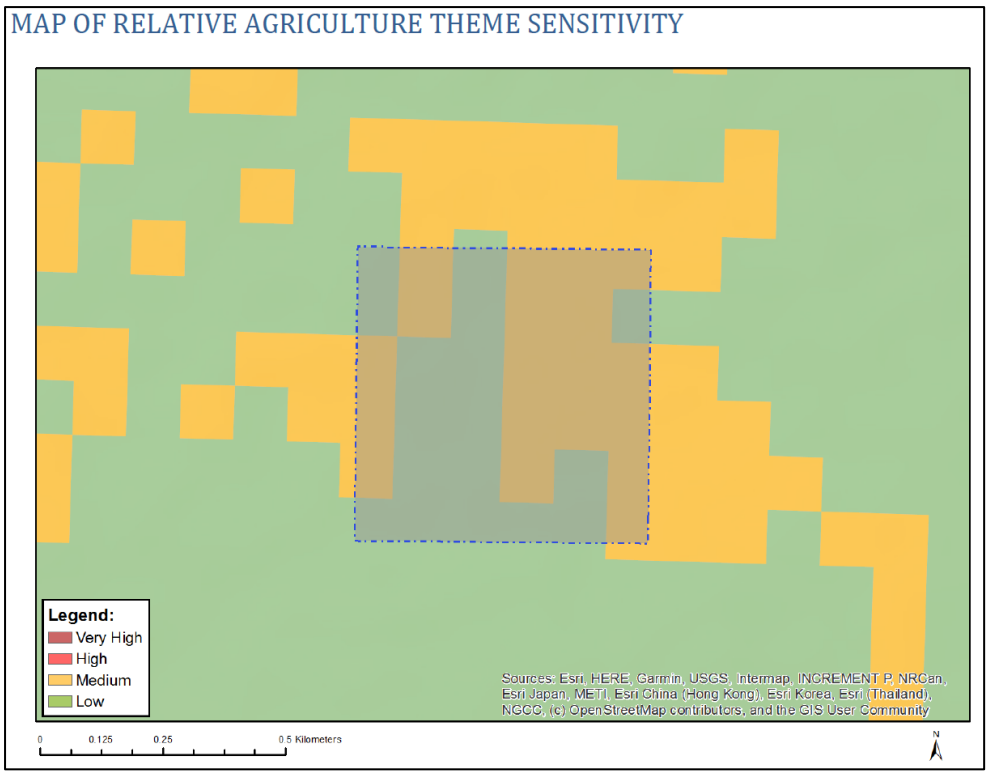

Figure 3: Map showing substation location in relation to the Agriculture Theme Sensitivity (DFFE Screening Tool)

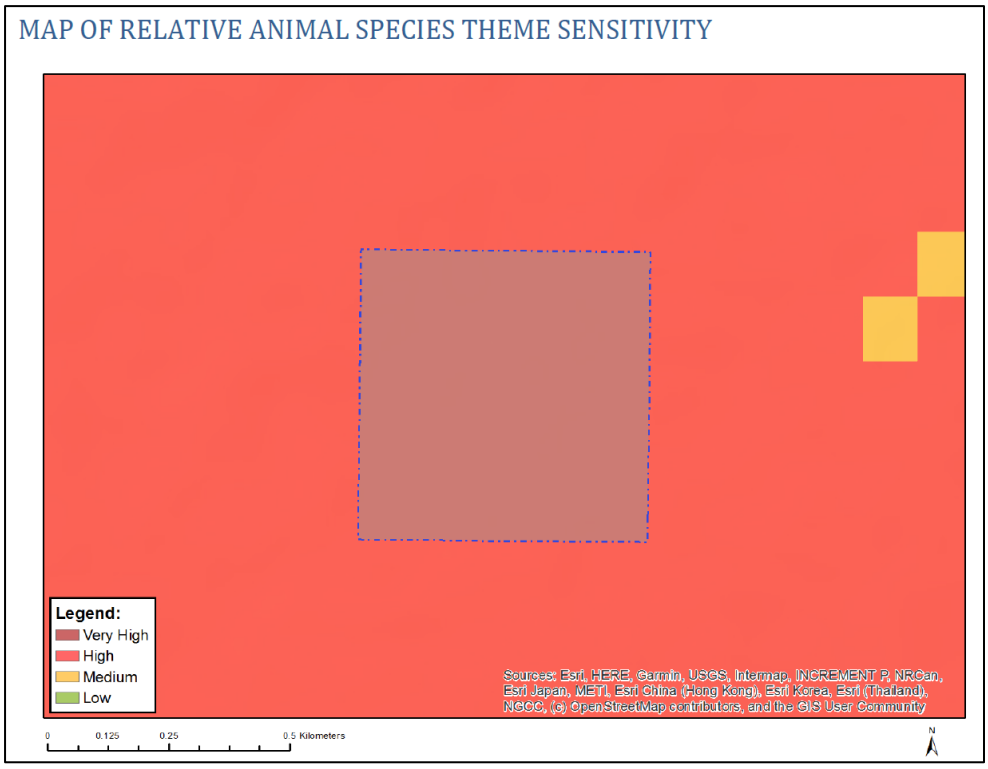

Figure 4: Map showing substation location in relation to the Animal Species Theme Sensitivity (DFFE Screening Tool)

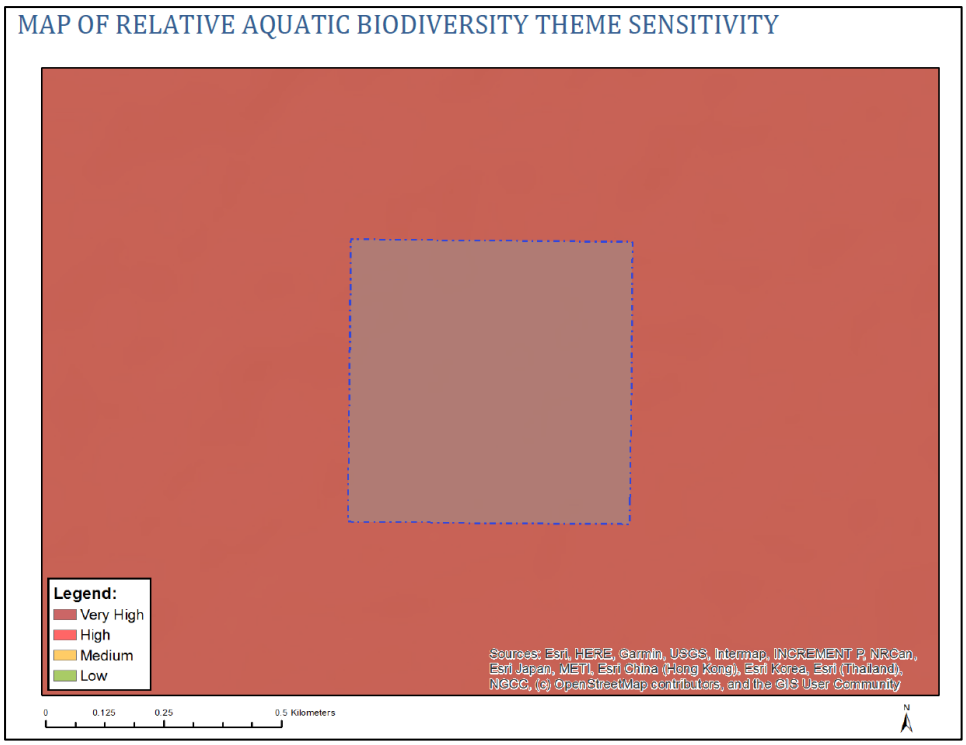

Figure 5: Map showing substation location in relation to the Aquatic Biodiversity Theme Sensitivity (DFFE Screening Tool)

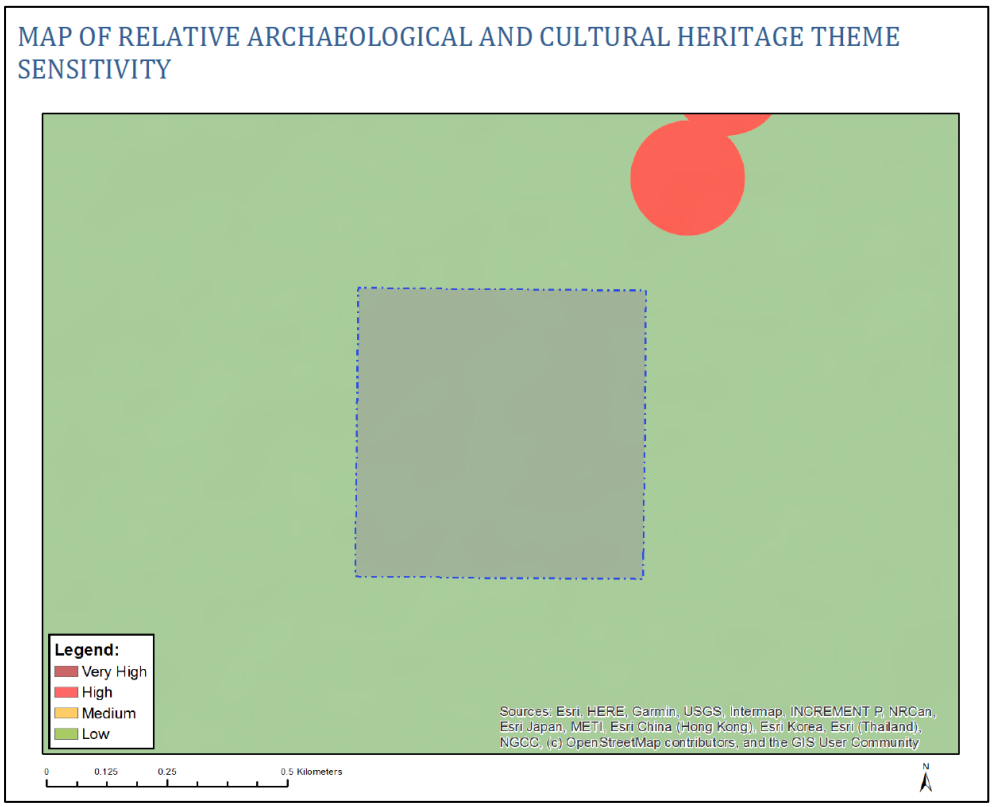

Figure 6: Map showing substation location in relation to the Archaeological and Cultural Heritage Theme Sensitivity (DFFE Screening Tool)

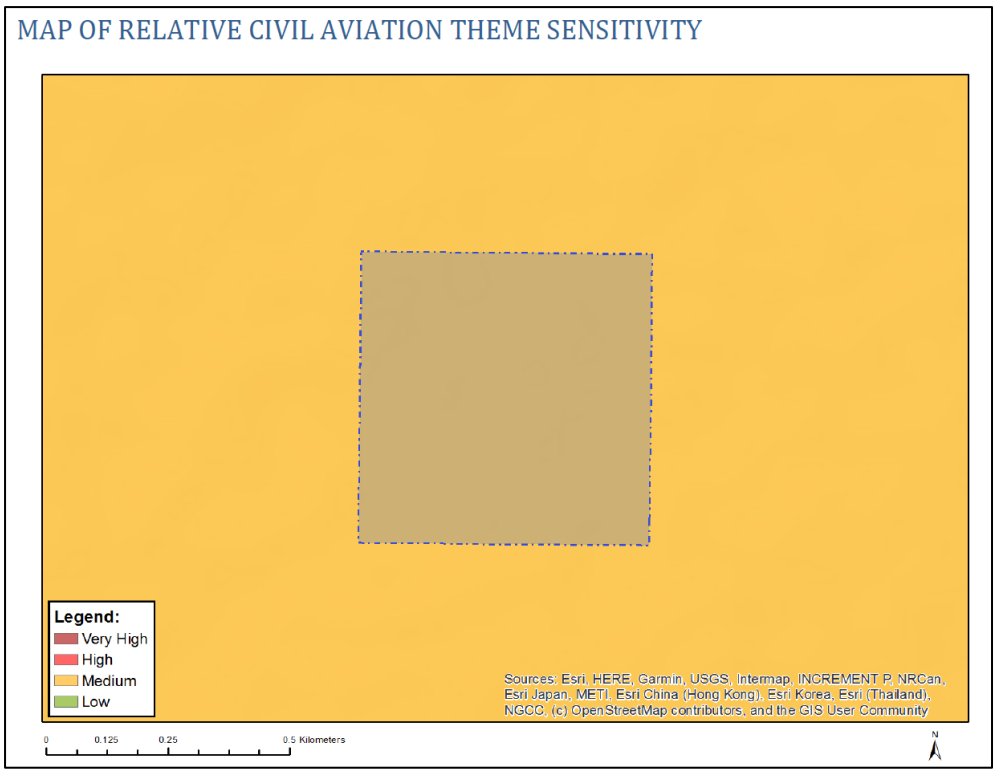

Figure 7: Map showing substation location in relation to the Civil Aviation Theme Sensitivity (DFFE Screening Tool)

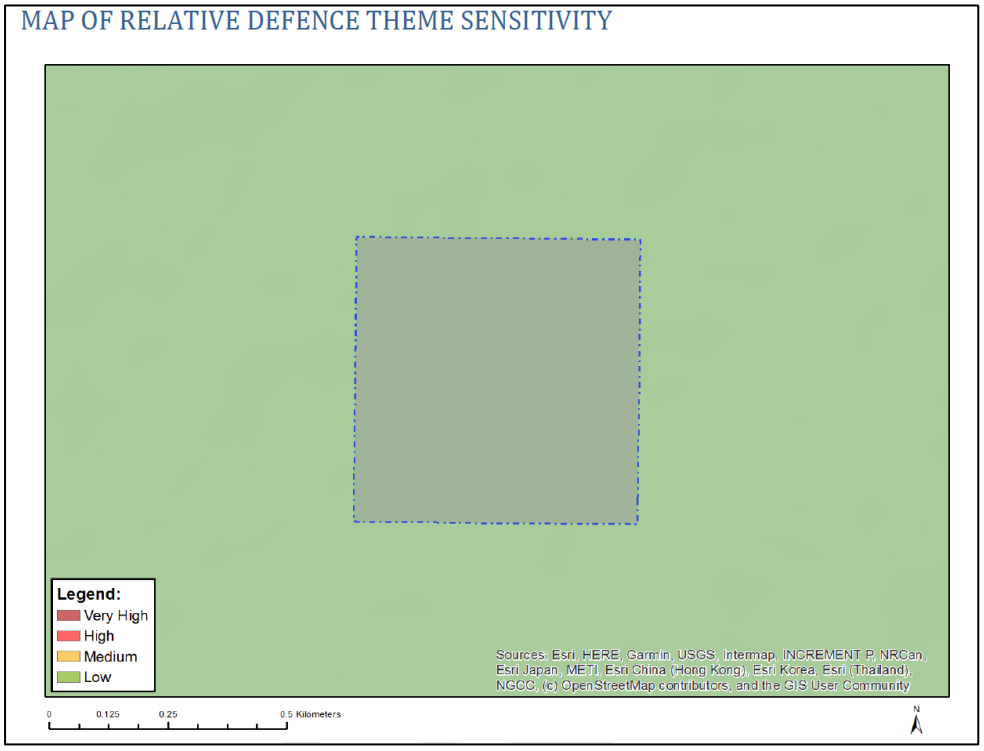

Figure 8: Map showing substation location in relation to the Defence Theme Sensitivity (DFFE Screening Tool)

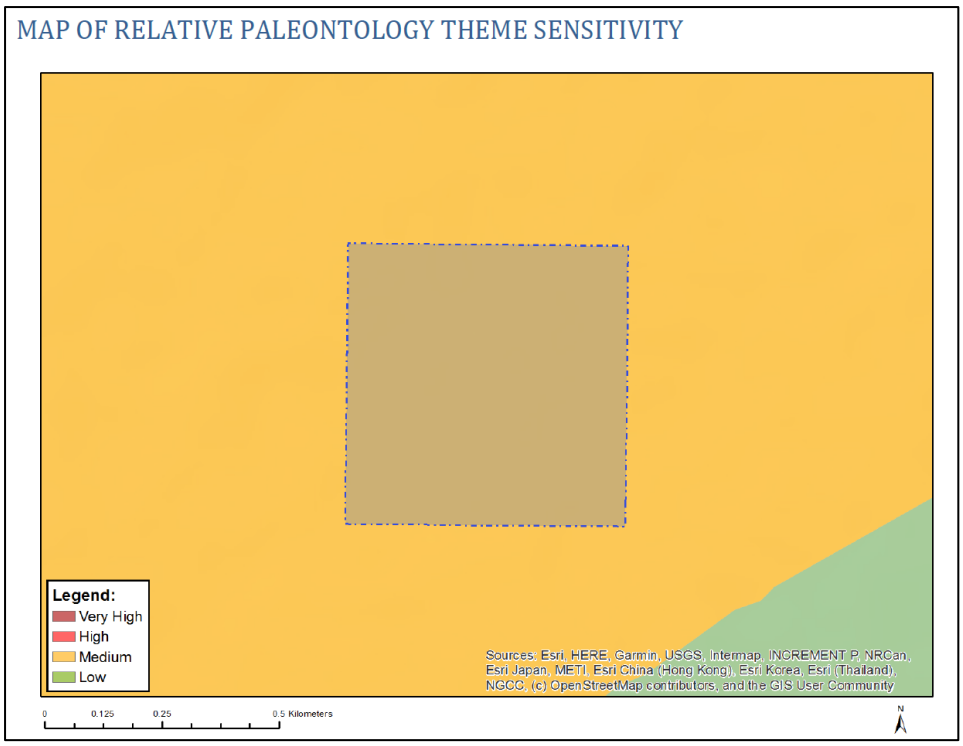

Figure 9: Map showing substation location in relation to the Palaeontology Theme Sensitivity (DFFE Screening Tool)

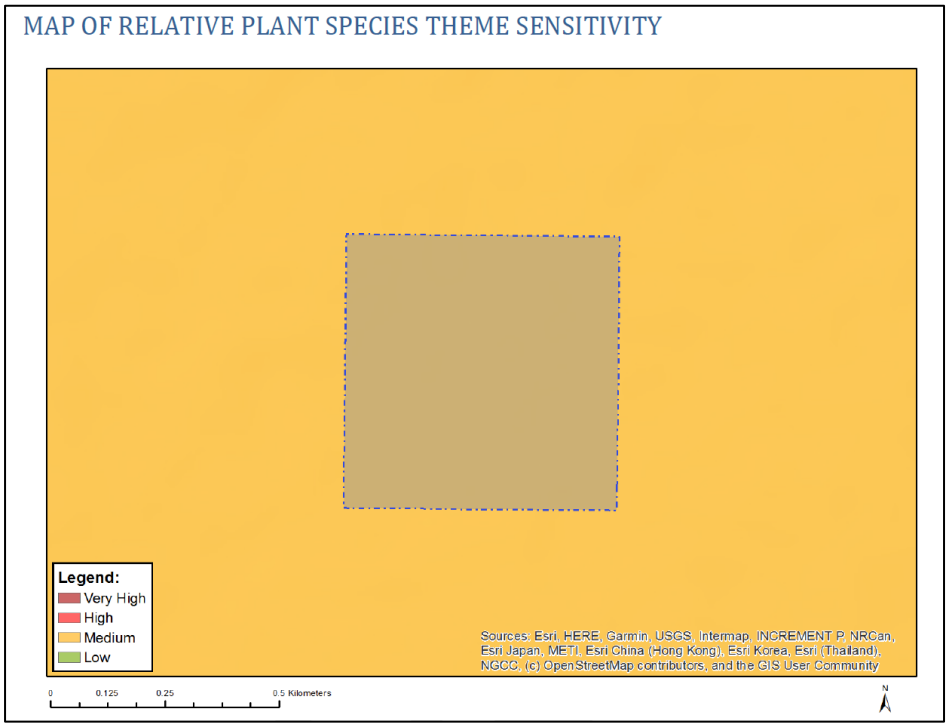

Figure 10: Map showing substation location in relation to the Plant Species Theme Sensitivity (DFFE Screening Tool)

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

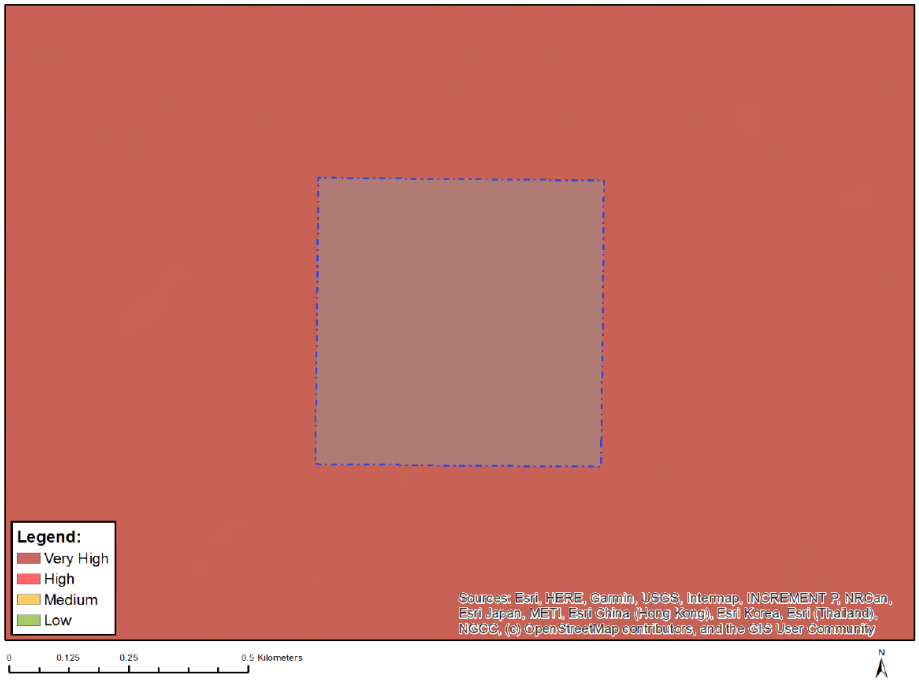

Figure 11: Map showing substation location in relation to the Terrestrial Biodiversity Theme Sensitivity (DFFE Screening Tool)

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 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 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.

The following specialist studies were undertaken as part of this project:

- Agricultural and Soils Compliance Statement
- Avifauna Impact Assessment (incl. pre-construction monitoring);
- Biodiversity Impact Assessment;
- Desktop Geotechnical Impact Assessment;
- Heritage Impact Assessment (including Palaeontology, Archaeology & Cultural Landscape);
- Noise Impact Assessment;
- Desktop Social Impact Assessment;
- Surface Water Impact Assessment;
- Transportation Impact Assessment; and
- Visual Impact Assessment.

The mitigation measures provided by the Specialists through the Impact Assessment process are included below.

Pre-construction walk-through of the approved development footprint will be conducted to ensure that sensitive habitats and species are avoided where possible.

Agriculture and Soils:

Management plan for the planning and design phase (pre-construction phase)

Impact	Mitigation/ Management objectives and outcomes	Mitigation /Management actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
Aspect: Protection of soil resources					
Erosion	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	1. Design an effective system of stormwater run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion. This is included in the stormwater management plan.	1. Ensure that the storm water run-off control is included in the engineering design.	1. Once-off during the design phase.	1. Holder of the EA

Agriculture and Soils:

Management plan for the construction phase

Impact	Mitigation /Management objectives and outcomes	Mitigation /Management actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
Aspect: Protection of soil resources					
Erosion	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	1. Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.	1. Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	1. Every 2 months during the construction phase	1. Environmental Control Officer (ECO)
Erosion	That vegetation clearing does not pose a high	1. Maintain where possible all vegetation cover and	• Undertake a periodic site	• Every 4 months during the	• Environmental Control Officer

Impact	Mitigation /Management objectives and outcomes	Mitigation /Management actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
	erosion risk.	facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	construction phase	(ECO)
Topsoil loss	That topsoil loss is minimised	1. If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.	• Record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.	• As required, whenever areas are disturbed.	• Environmental Control Officer (ECO)

Agriculture and Soils:

Management plan for the operational phase

Impact	Mitigation/Management objectives and outcomes	Mitigation / Management actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
Aspect: Protection of soil resources					
Erosion	That existence of hard surfaces causes no erosion on or downstream of the site.	1. Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.	• Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	• Bi-annually	• Facility Environmental Manager
Erosion	That denuded areas are re-vegetated to stabilise	1. Facilitate re-vegetation of denuded areas	• Undertake a periodic site	• Bi-annually	• Facility Environmental

Impact	Mitigation/Management objectives and outcomes	Mitigation / Management actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
	soil against erosion	throughout the site	inspection to record the progress of all areas that require re-vegetation.		Manager

Agriculture and Soils:

Management plan for the decommissioning phase

Impact	Mitigation/Management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Aspect: Protection of soil resources					
Erosion	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	1. Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and	• Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any	• Every 2 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final	• Environmental Control Officer (ECO)

Impact	Mitigation/Management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		it must prevent any potential down slope erosion.	erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	sign-off is achieved.	
Erosion	That vegetation clearing does not pose a high erosion risk.	1. Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	• Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	• Every 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.	• Environmental Control Officer (ECO)
Topsoil loss	That topsoil loss is minimised	1. If an activity will mechanically disturb the soil below surface in any way, then any available	• Record GPS positions of all occurrences of below-surface soil	• As required, whenever areas are disturbed.	• Environmental Control Officer (ECO)

Impact	Mitigation/Management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.	disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.		

Avifauna:

Management Plan for the Pre-Construction Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Avifauna: Mortality due to collisions with the turbines					
Mortality of priority avifauna due to collisions with the wind turbines	Prevent mortality of priority avifauna	1. The results of the pre-construction monitoring must guide the lay-out of the turbines, especially as far as proposed no-turbine zones are concerned. No turbines must be constructed in the buffer zones which were identified based on the results of the pre-construction monitoring, with a specific view to limiting the risk of collisions to a variety of birds, including several Red Data species.	• Design the facility with 200m buffers around dams and water troughs, and 150m buffers around major drainage lines. • A 3.7km circular high-risk turbine exclusion zone must be implemented around the Verreaux's Eagle nests 1 – 9 to the south of the PAOI, • A 5km high-risk turbine exclusion zone must be implemented	• Once-off during the planning phase.	• Project Developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
			around the Martial Eagle present tower 26 of the Kappa – Muldersvlei 1 transmission line.		
Avifauna: Mortality due to electrocution					
Electrocution of raptors on the internal 33kV poles	Prevent electrocutions	1. Use underground cabling as much as is practically possible. 2. Where the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted to ensure that a raptor friendly pole design is used, and that appropriate mitigation is implemented pro-actively for complicated pole structures e.g. insulation of live components to prevent electrocutions on	• Design the facility with underground cabling. • Consult with Avifaunal Specialist during the design phase of the overhead lines.	• Once-off during the planning phase.	• Project Developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		terminal structures and pole transformers.			

Avifauna:

Management Plan for the Construction Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
Avifauna: Displacement due to disturbance					
The noise and movement associated with the construction activities at the development footprint will be a source of disturbance which would lead to the displacement of avifauna from the area	Prevent unnecessary displacement of priority avifauna by ensuring that contractors are aware of the requirements of the Construction Environmental Management Programme (CEMPr.)	A site-specific CEMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr must specifically include the following: 1. No off-road driving. 2. Maximum use of existing roads. 3. Measures to control noise and dust	• Implementation of the CEMPr. Oversee activities to ensure that the CEMPr is implemented and enforced via site audits and inspections. Report and record any non-compliance. • Ensure that construction personnel are made aware of the impacts relating to off-road driving. • Construction access roads must be	• Daily • Monthly • Monthly • Monthly • Monthly	• Contractor and ECO • Contractor and ECO • Contractor and ECO • Contractor and ECO • Contractor and ECO

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		according to latest best practice. 4. Restricted access to the rest of the property. 5. Strict application of all recommendations in the botanical specialist report pertaining to the limitation and rehabilitation of the footprint.	demarcated clearly. Undertake site inspections to verify. • Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance. • Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.		
Avifauna: Displacement due to habitat transformation					
Total or partial displacement of avifauna due to habitat transformation	Prevent unnecessary displacement of avifauna by ensuring that the rehabilitation of transformed areas is	1. Develop a Habitat Restoration Plan (HRP) and ensure that it is approved.	• Appointment of rehabilitation specialist to develop Habitat	• Once-off • Once a year	• Operations Manager • SHE Manager

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
associated with the vegetation clearance and the presence of the wind turbines and associated infrastructure.	implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study.	2. Monitor rehabilitation via site audits and site inspections to ensure compliance. Record and report any non-compliance. 3. Vehicle and pedestrian access to the site should be controlled and restricted to the facility footprint as much as possible to prevent unnecessary destruction of vegetation.	Restoration Plan (HRP). • Site inspections to monitor progress of HRP.		• SHE Manager • Operations Manager

Avifauna:

Management Plan for the Operational Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Avifauna: Mortality due to collisions with the wind turbines					
Bird collisions with the wind turbines	Prevention of the collision mortality on wind turbines.	1. Formal live-bird monitoring and carcass searches should be implemented at the start of the	• Appoint Avifaunal Specialist to compile operational monitoring	• Once-off • Years 1,2, 5 and every five years after that for the	• Operations Manager • Operations Manager • Operations Manager

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins *et al*. 2015) to assess collision rates. The exact time when operational monitoring should commence, will depend on the construction schedule, and should commence when the first turbines start operating. The Best Practice Guidelines require that, as an absolute minimum, operational monitoring should be undertaken for the first two (preferably three) years of operation, and then repeated again in year 5, and again every five years thereafter for the operational	plan, including live bird monitoring and carcass searches. • Implement operational monitoring plan. • Design and implement mitigation measures if mortality thresholds are exceeded. • Compile quarterly and annual progress reports detailing the results of the operational monitoring and progress with any recommended mitigation measures.	duration of the operational lifetime of the facility.	• Operations Manager

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		lifetime of the facility. 2. If estimated annual collision rates indicate unacceptable mortality levels of priority species, i.e if it exceeds mortality thresholds as determined by the avifaunal specialist in consultation with BLSA and other avifaunal specialists, additional measures will have to be implemented which could include shut down on demand or other proven measures.			
Avifauna: Mortality due to collisions and electrocutions on the 33kV network					
Bird electrocutions on the overhead sections of the internal 33kV cables	Prevention of electrocution mortality on the overhead sections of the 33kV internal cable network.	1. Conduct regular inspections of the overhead sections of the internal reticulation network to look for carcasses.	• Carcass searchers under the supervision of the Avifaunal Specialist. • Design and implement mitigation measures if	• At least once every two months.	• Operations Manager

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
			mortality thresholds are exceeded. • Compile quarterly and annual progress reports detailing the results of the operational monitoring and progress with any recommended mitigation measures.		

<u>Avifauna:</u>

Management Plan for the Decommissioning Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Avifauna: Displacement due to disturbance associated with the dismantling activities					
The noise and movement associated with the de-commissioning activities at the WEF footprint will be a source of disturbance which would lead	Prevent unnecessary displacement of avifauna by ensuring that contractors are aware of the	A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction	• Implementation of the EMPr. Oversee activities to ensure that the EMPr is	• On a daily basis • Monthly • Monthly	• Contractor and ECO • Contractor and ECO

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
to the displacement of avifauna from the area	requirements of the EMPr.	activities must be conducted. All contractors are to adhere to the EMPr and should apply good environmental practice during construction. The EMPr must specifically include the following: 1. No off-road driving. 2. Maximum use of existing roads. 3. Measures to control noise and dust according to latest best practice. 4. Restricted access to the rest of the property. 5. Strict application of all recommendations in the botanical specialist report pertaining to the limitation of the footprint.	implemented and enforced via site audits and inspections. Report and record any non-compliance. • Ensure that construction personnel are made aware of the impacts relating to off-road driving. • Access roads must be demarcated clearly. Undertake site inspections to verify. • Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance. • Ensure that the footprint area is demarcated	• Monthly • Monthly	• Contractor and ECO • Contractor and ECO • Contractor and ECO

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
			and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.		

Bat:

Management Plan for the Construction Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
The destruction of features that could serve as potential roosts, such as rock formations and the removal of trees on site. The destruction of derelict holes, such as aardvark holes, and any fragmentation of woody habitat which include dense bushes. The removal of limited trees	• Construction activities must be kept out of all 'no-go' and high bat sensitive areas apart from access roads • Rock formations occurring along the ridge lines should be avoided during construction, as	1. Apart from access roads, construction activities to be kept out of all 'no-go' and high bat sensitive areas. 2. Rock formations occurring along the ridge lines should be avoided during construction, as these	• Monitor the efficiency of the EMPR. • Monitor whether proposed measures are adhered to. • ECO should be trained to recognize bat species and roost	• During construction phase. • ECO should be trained before construction commences. • Erosion and pollution monitoring during construction phase.	• Project Developer • Bat specialist and ECO.

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
and bushes would have an impact on all bats that could potentially roost in and on the foraging habitat of clutter and clutter-edge species.	these serve as roosting space for bats. • Destruction of trees should be avoided during construction. • Care should be taken if any dense bushes are destroyed. • Aardvark holes or any large derelicit holes or excavations should not be destroyed before careful examination for bats. The ECO or a responsible appointed person or site manager should contact a bat specialist before construction commences so that they know what to look out for during construction.	serve as roosting space for bats. 3. Destruction of trees should be avoided during construction. 4. Care should be taken if any dense bushes are destroyed. 5. Aardvark holes or any large derelict holes or excavations should not be destroyed before careful examination for bats. The Environmental Control Officer (ECO), or a responsible appointed person or site manager, should contact a bat specialist before construction commences so that they know what to look out for during construction.	locations before construction starts.	• Monitoring of off-road driving during construction phase. • Monitor before anything is removed that could contain a bat roost.	

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Creating new habitat amongst the turbines which might attract bats. This includes buildings with roofs that could serve as roosting space or open water sources from quarries or excavation where water could accumulate.	• Completely seal off roofs of new buildings (e.g., substations and site buildings). Note, a small bat species could enter a hole the size of 1 cm^2. • Roofs need to be regularly inspected during the lifetime of the WEF, and any new holes need to be sealed. Excavation areas, quarries or any other artificial depressions should be filled and rehabilitated to avoid creating new areas of open water sources which could attract bats during rainy spells.	1. Completely seal off roofs of new buildings (e.g., substations and site buildings). Note, a small bat species could enter a hole the size of 1 cm^2. 2. Roofs need to be regularly inspected during the lifetime of the WEF, and any new holes need to be sealed. **3.** Excavation areas, quarries or any other artificial depressions should be filled and rehabilitated to avoid creating new areas of open water sources which could attract bats during rainy spells.	• Visual inspection and continuous monitoring of high sensitivity areas, erosion prevention, chemical pollution and vehicle activity to prevent habitat destruction. • If buildings, trees or structures providing potential roosts need to be demolished, the ECO is required to investigate the features before commencement of the works.	• Throughout construction • ECO to be present during all site clearance activities • Access to bat specialist if ECO needs information or confirmation concerning bat presence	• Project Developer. • Holder of EA to appoint ECO. • Appointed bat specialist to train the ECO, if necessary.
Construction noise, especially during night-time.	• Prevent disturbance to bat activity and behaviour.	1. Nightly construction activities should be avoided, or if necessary, minimised to the shortest period possible.	• Monitor construction to reduce noise and minimise disturbance in bat sensitive areas.	Throughout construction phase.	Project Developer and construction site manager.

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		2. Except for compulsory civil aviation lightning, artificial lightening during construction should be minimised, especially bright lights or spotlights. **3.** Lights should avoid skyward illumination. Turbine tower lights should be switched off when not in operation, where possible.	• Avoid construction activities at night, as far as possible**.**		

Bat:

Management Plan for the operation Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Fatality through direct collision or barotrauma of resident bats occupying the airspace amongst the turbines. The		1. All turbines and turbine components, including the rotor swept zone, should be kept out of all 'no-go' and high sensitivity zones. 2. Mitigation, as proposed, should be applied as soon as	• Regular bat monitoring reports, informed by the relevant SABAA operational bat monitoring guidelines.	Throughout operation and during operational bat monitoring period.	Site manager, Project developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
turning blades of the turbines during operation are the most important aspect of the project that would impact negatively on bats. High flying species have predominantly been confirmed at the proposed Karee WEF site.		the test period of turbines are completed, and turbines start turning. 3. Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. 4. A bat specialist should be appointed **before** the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 5. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020), or later versions of the guidelines valid at the time of	• Adhere to the mitigation measures as indicated by the EA and Section 9 of the Bat Monitoring report. • Maintain a register of bat mortality/injury. • Regular communication between bat specialist and site manager.		

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. 6. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions. 7. Except for compulsory lighting required in terms of civil aviation, artificial lighting should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. 8. It is understood that static bat monitoring equipment on turbines has a cost			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Karee WEF. Therefore, the installation of more than one monitoring system at height, is important.			
Bat fatality during migration. A limited number of calls like *Miniopterus natalensis* (Natal Long-fingered bat), a Near Threatened migration species, have been recorded. Not much research has been conducted on	• Mitigate potential impacts on bats during operation of wind farm. • Reduce bat mortality during the operational lifetime of the wind farm. • Supervise all bat monitoring activities.	1. Care should be taken during post construction monitoring to verify the activity of *M. natalensis*, especially within the rotor swept area of the turbine blades. Carcasses should be identified so as to establish the fatality of this species. 2. All turbines and turbine components, including the rotor swept zone, should be kept out of all 'no-go' and high sensitivity zones.	• Regular bat monitoring reports, informed by the relevant SABAA operational bat monitoring guidelines. • Adhere to the mitigation measures as indicated by the EA and Section 9 of the Bat Monitoring report. • Maintain a register of bat mortality/injury.	Throughout operation and during operational bat monitoring period.	Site manager, Project developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
migration of bats in South Africa, and some of the other species occurring on site could also migrate.		3. Mitigation, as proposed, should be applied as soon as the test period of turbines are completed and turbines start turning. 4. Mitigation, as proposed for medium sensitivity zones proposed, should be applied after testing, as soon as turbines start to turn. 5. A bat specialist should be appointed **before** the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 6. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020), or later versions of the guidelines	• Regular communication between bat specialist and site manager		

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. 7. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied. 8. Except for compulsory lighting required in terms of civil aviation, artificial lighting should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. 9. It is understood that static bat monitoring equipment on turbines has a cost implication. Although it is not			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Karee WEF. Therefore, the installation of more than one monitoring system at height, is important.			
Loss of bats of conservation value.	•	1. Loss of bats of conservation value. A limited number of calls like the red *data Miniopterus natalensis* have been recorded, as well as the endemic *E. hottentotus.* Proven mitigation measures, such as curtailment, should be timeously applied if high activity of bats of conservation value is recorded, or if high numbers of carcasses are collected, during post-construction. 2. All turbines and turbine components, including the rotor swept zone, should be		Throughout operation and during operational bat monitoring period.	Site manager, Project developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		kept out of all 'no-go' and high sensitivity zones. 3. Mitigation, as proposed, should be applied as soon as the test period of turbines are completed and turbines start turning. 4. Mitigation, as proposed for medium sensitivity zones proposed, should be applied after testing, as soon as turbines start to turn. 5. A bat specialist should be appointed **before** the turbines start to turn and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 6. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		(Aronson, et.al., 2020), or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. 7. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions. 8. Except for compulsory lighting required in terms of civil aviation, artificial lighting should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible.			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		9. It is understood that static bat monitoring equipment on turbines has a cost implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Karee WEF. Therefore, the installation of more than one monitoring system at height, is important.			
Bat fatality due to the attraction of bats to turbine blades.	Avoid activities that will attract bats to turbines.	1. Bat mortality due to the attraction of bats to wind turbines (Horn, et al., 2008). Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation. 2. Except for compulsory lighting required in terms of civil aviation, artificial lighting should be minimised, especially bright lights. Lights	Reduce lights as far as possible.	Ongoing	Site manager/Project Developer

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. 3. Little is known about this impact, and mitigation could be adapted if more research becomes available.			
Loss of habitat and foraging space during operation of the wind turbines.	• Mitigate the loss of habitat and foraging space to avoid bat mortality. • Reduce bat mortality during the operational lifetime of the wind farm.	1. All turbines and turbine components, including the rotor swept zone, should be kept out of all 'no-go' and high sensitivity zones. 2. Mitigation, as proposed in should be applied as soon as the test period of turbines are completed and turbines start turning. 3. Mitigation, as proposed for medium sensitivity zones proposed, should be applied after testing, as soon as turbines start to turn. 4. A bat specialist should be appointed **before** the turbines start to turn, and operational bat monitoring should start when all the	Adaptive mitigation plan.	During operations.	Site manager/Project Developer and ECO

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 5. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020), or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. 6. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		specific mitigation measures should be applied. 7. Except for compulsory lighting required in terms of civil aviation, artificial lighting should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. 8. It is understood that static bat monitoring equipment on turbines has a cost implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Karee WEF. Therefore, the installation of more than one monitoring system at height, is important.			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
Reduction in size, genetic diversity, resilience, and persistence of bat populations.	Monitor potential impacts on bats during operation of wind farm. Prevent activities that will attract bats to high-risk areas on site.	1. Proven mitigation measures, such as curtailment, should be applied if high activity of bats of conservation value is recorded, or if high numbers of carcasses are collected, during post-construction. 2. All turbines and turbine components, including the rotor swept zone, should be kept out of all 'no-go' and high sensitivity zones. 3. Mitigation, as proposed, should be applied as soon as the test period of turbines are completed, and turbines start turning. 4. Mitigation, as proposed for medium sensitivity zones should be applied after testing, as soon as turbines start to turn. 5. A bat specialist should be appointed **before** the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or	Adaptive mitigation plan.	During operations.	Project Developer/Site manager and ECO.

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		described by the latest South African bat guidelines. 6. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020), or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. 7. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied. 8. Except for compulsory lighting required in terms of			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		civil aviation, artificial lighting should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. 9. It is understood that static bat monitoring equipment on turbines has a cost implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Karee WEF. Therefore, the installation of more than one monitoring system at height, is important. should be minimised, especially bright lights. Lights should rather be turned downwards.			

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
		10. Turbine tower lights should be switched off when not in operation, if possible, depending on civil aviation laws. 11. At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020) or later versions of the guidelines valid at the time of monitoring. 12. Prolonged post construction mitigation, beyond the prescribed two years, might be necessary if advised by the operational bat specialist.			

Bat:

Management Plan for the decommissioning Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	***Frequency***	***Responsibility***
DECOMMISSIONING PHASE					
Removal of turbines Bat disturbance due to decommissioning activities and associated noise, especially during night-time.	Mitigate disturbance due to decommissioning activities.	1. Except for compulsory lighting required in terms of civil aviation, artificial lighting during construction should be minimised, especially bright lights or spotlights. 2. Lights should avoid skyward illumination. 3. Night-time decommissioning activities should be avoided as far as possible.	Implement a de-commissioning and rehabilitation plan to reduce the development footprint.	During decommissioning phase.	Site manager/ECO

Biodiversity

Pre-construction Phase Specific Mitigations:

A pre-construction walkthrough by the ecologist is recommended, who can assist with the development of the Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout.

Biodiversity

Construction Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Loss of species of special concern: The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	1. Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site 2. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Alien Plant Management Plan Implemented Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	3. Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.				
Loss of terrestrial habitats – flora and vegetation: The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	1. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints. 2. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and 3. Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Alien Plant Management Plan Implemented Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	Continuous
Loss of terrestrial species – fauna: Although most of the species observed are	1. Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
mobile, the increase in vehicle movement could result in an increase in road mortalities.	of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; 2. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; 3. All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; 4. Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.			Alien Plant Management Plan Implemented Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	

Biodiversity

Operation Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Loss of terrestrial species - fauna Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	1. Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; 2. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; 3. All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; 4. Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.	Holder of the EA/Contractor	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Ensure the conditions of the EA are adhered to. Alien Plant Management Plan Implemented Open Space Management Plan Plant Rehabilitation Implemented	Continuous

Biodiversity

Decommissioning Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Loss of species of special concern: The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	1. Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site 2. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and 3. Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re-	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Alien Plant Management Plan Implemented Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	establishment of plant cover is desirable to prevent erosion.				
Loss of terrestrial habitats – flora and vegetation: The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	1. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints. 2. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and 3. Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re-establishment of plant cover is desirable to prevent erosion.	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Alien Plant Management Plan Implemented Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	Continuous
Loss of terrestrial species – fauna: Although most of the species observed are mobile, the increase in vehicle movement could result in an	1. Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers;	Holder of the EA ECO/specialist	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Alien Plant Management Plan Implemented	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
increase in road mortalities.	2. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; 3. All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; 4. Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.			Plant Rehabilitation Implemented Ensure the conditions of the EA are adhered to.	

Geotechnical

Pre-construction Phase Specific Mitigations:

None.

Geotechnical

Construction Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Disturbance/ displacement/ removal of soil and Rock: **Ground disturbance during access road construction, foundation earthworks, platform earthworks**	1. Design access roads and pylon locations to minimise earthworks and levelling based on high resolution ground contour information. 2. Correct topsoil and spoil management.	Engineer/ Contractor	Undertake regular audits	Erosion plan implemented and hydrological measures in place Ensure the EMPr is adhered to.	Continuous
Soil Erosion: **Increased erosion due to vegetation clearing, alteration of natural drainage**	1. Avoid development in preferential drainage paths. 2. Appropriate engineering design of road drainage and watercourse crossings. 3. Temporary berms and drainage channels to divert surface runoff where needed. 4. Landscape and rehabilitate disturbed areas timeously (e.g. regressing).	Engineer/ Contractor	Undertake regular audits	Erosion plan implemented and hydrological measures in place Ensure the EMPr is adhered to.	Continuous

	5. Use designated access and laydown areas only to minimise disturbance to surrounding areas.				

Geotechnical

Operation Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Soil Erosion: **Increased erosion due to alteration of natural drainage**	1. Maintain drainage channels. 2. Monitor for erosion and remediate and rehabilitate timeously.	Holder of EA	Undertake regular audits	Erosion plan implemented and hydrological measures in place Ensure the EMPr is adhered to.	Continuous

Geotechnical

Decommissioning Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Disturbance/ displacement/ removal of soil and Rock: **Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface**	1. Restore natural site topography. 2. Landscape and rehabilitate disturbed areas timeously (e.g. regrassing).	Holder of EA	Undertake regular audits	Erosion plan implemented and hydrological measures in place Ensure the EMPr is adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
infrastructure					
Soil Erosion: **Increased erosion due to ground disturbance** during rehabilitation activities	1. Temporary berms and drainage channels to divert surface runoff where needed. 2. Restore natural site topography. 3. Use designated access and laydown areas only to minimise disturbance to surrounding areas.	Holder of EA	Undertake regular audits	Erosion plan implemented and hydrological measures in place Ensure the EMPr is adhered to.	Continuous

Archaeological:

Pre-construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Archaeological sites that were rated as low (**Karee_2, Karee_8**) but don't fall within the proposed development area.	1. As the site is located within the area that is not demarcated for development, it is unlikely that it will be impacted. **No mitigation is required**.	Applicant, ECO and Archeologist	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Archaeological site that was rated as medium heritage significance (**Karee_12, Karee_15**)	1. A 30-meter buffer around the site must be kept if any development is to occur in its vicinity. 2. If development occurs within 30m of the site, a Phase 2 survey be conducted, that will include a representative sampling of the assemblages.	Applicant, ECO and Archaeologist	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Archaeological rock art site that was rated as high heritage significance (**Karee_6**)	1. The site should be demarcated with a 100-meter buffer and should be treated as a No-Go-Zone 2. If development occurs within 100m of the site, the rock shelter will need to be satisfactorily studied and recorded before impact occurs.	Applicant, ECO and Archaeologist	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Archaeological site that was rated as high heritage significance (**Karee_18**)	1. A 30-meter buffer around the site must be kept if any development is to occur in its vicinity. 2. If development occurs within 30m of the site, a Phase 2 survey be conducted, that will include a representative sampling of the assemblages.	Applicant, ECO and Archaeologist	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Historical Structures that were rated as low (**Karee_11**)	1. A 30m buffer around the site must be kept if any development is to occur in its vicinity 2. If development occurs within the 30m buffer of the site , it needs to be satisfactory studied and recorded before impact. 3. Recording of the structure i.e (a) map indicating the position and footprint of the structure (b) photographic recording of the structure (c) measured drawings of the floor plans of the structure.	Applicant, ECO and Archaeologist	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	4. A Mitigation report must be compiled for the site within which the recorded drawings from the previous item as well as all existing information on the farmstead can be included. 5. The completed mitigation report must be submitted to the relevant heritage authorities with a permit application to allow for the destruction of the site			
Historical Structure that was rated as medium heritage significance (**Karee_10**)	1. A 500m buffer around the farmstead must be kept if any development is to occur in its vicinity. 2. As Karee_10 is located within the area that is not demarcated for development, it is unlikely that it will be impacted. **No mitigation is required.**	Applicant, ECO and Archaeologist	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report

Archaeological:

Construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Same as pre-construction				

Archaeological:
Operation Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
None identified				

Archaeological:
Decommissioning Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
None identified				

Palaeontology:

Pre-Construction Phase Specific Mitigations:

Aspect	Mitigation measures	Phase	Target
None identified			

Palaeontology:

Construction Phase Specific Mitigations:

Aspect	Mitigation measures	Phase	Target
Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface	Monitoring of substantial, deeper excavations (> 1m)	Construction	Reporting and safeguarding of significant new fossil finds (*e.g.* vertebrate bones, teeth, petrified wood, shells) to

Aspect	Mitigation measures	Phase	Target
clearance and bedrock excavations	Submission of Work Plan to / application for Fossil Collection permit from responsible Heritage Resources Agency (PHRA) Recording and sampling / collection of significant new fossil finds that have been reported by ECO / ESO Palaeontological mitigation reporting to responsible Heritage Resources Agency (PRHA)		Heritage Western Cape for potential mitigation. Conservation and recording of new fossil material of scientific / conservation value within project area Conservation and recording of new fossil material of scientific / conservation value within project area

Palaeontology:

Operation Phase Specific Mitigations:

Aspect	Mitigation measures	Phase	Target
None identified			

Palaeontology:

Decommissioning Phase Specific Mitigations:

Aspect	Mitigation measures	Phase	Target
None identified			

Cultural Landscape:

Pre-construction Phase Specific Mitigations

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Cultural landscape - Ecological	1. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. 2. No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines. 3. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	character of the Karoo landscape, and often on the mid-slopes. 4. Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use and continued access to these resources be maintained. 5. Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.			
Cultural landscape - Aesthetic	1. Where additional infrastructure (i.e. roads) is needed, the upgrade of existing roads to accommodate the development should be the first consideration. 2. Avoid development of infrastructure (such as buildings, wind turbines and power lines), on crests or ridgelines due to the impact on the visual sensitivity of skylines. The visual impact of turbines can be reduced by distancing them from viewpoints such as roads and farmsteads, and placing them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape. 3. Significant and place-making viewsheds of surrounding ridgelines and distant mountain should	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	be maintained by limiting the placement of turbines or associated infrastructure on opposing sides of any of the regional roads, so that at any time a turbine-free view can be found when travelling through the landscape or at the historic farmsteads. 4. Retain view-lines and vistas focused on prominent natural features such as mountain peaks or hills, such as Tooverberg, Pramberg and the Pienaarspoort, as these are important place making and orientating elements for experiencing the cultural landscape. 5. Prevent the construction of new buildings/structures/ new roads on visually sensitive, steep, elevated or exposed slopes, ridgelines and hillcrests. 6. Turbine and new road placement to avoid slopes steeper than 10% with existing farm roads to be used for access to turbines as far possible. 7. Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road. 8. Due to the impact of the noise and shadow flicker of wind turbines on residents, the turbines should be placed at 1km from any occupied homestead. 9. Alternative Option 2 for the grid corridor is preferred in terms of cultural landscape assessment as it limits the construction to a smaller footprint on the			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	landscape and locates the infrastructure close to existing industrial elements. 10. Neither substation option location is preferred as they are proposed for slopes of 3%-10% which would increase their visibility in the flat terrain of the surrounding alluvial plains. An option should be found in an area below 3% slope without impacting on the CBAs or other cultural landscape buffers. 11. The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.			
Cultural landscape - Historic	1. Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road should be maintained for no development associated with the WEF other than	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	sensitive road upgrades, which must not impact on the views from the road. 2. The integrity of the historic farmsteads and their associated cultivated areas and relationship to the riverine corridors and other natural elements, such as Tooverberg, should be maintained and protected. Location of proposed turbines should be limited to a 1000m buffer around the farmsteads as far possible to limit impact to the farmsteads. 3. Any development that impacts the inherent character of the werf component should be discouraged and a development buffer of 50m around the outer boundary of farm werfs and 300m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure. 4. The existing names of places, routes, watercourses and natural features in the landscape that are related to its use, history and natural character should be retained and used as heritage resources related to intangible heritage. Public access to these sites should be encouraged. 5. Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No development closer than 100m			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	from the boundary of any burial grounds or unmarked graves. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. 6. Commonages and outspans were located at water points, and these places were likely gathering points before the arrival of colonists and continued to provide communal resources. In the mid-20th century, many old commonages came under the ownership of the Municipality, and have since been rented out to private individuals or organisations. The Municipality should facilitate the use of common land in a way that promotes the well-being and quality of life of the public. These sites can play a restorative role within the community, for instance for those who have limited alternative opportunities for recreation. 7. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails. 8. Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) current living heritage in the form of tangible and intangible associations to place.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	9. Alterations and additions to conservation-worthy structures should be sympathetic to their architectural character and period detailing.			
Cultural landscape - Socio-economic	1. The findings of this report must be shared with identified interested and affected parties, including non-landowner residents on the development properties, in the EIA public participation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. A specialist qualified in recognising and discussing significance of intangible heritage resources should be present during the public meetings. The findings should inform the recommendations for appropriate mitigation for impacts to the cultural landscape. 2. The continued use of the landscape for human habitation and cultivation by historic residents of the area should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. 3. The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long-term economic benefit and local employment opportunities must be prevented. 4. Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. 5. Local residents must be offered employment training opportunities associated with WEF developments at all phases.			

Cultural Landscape:

Construction Phase Specific Mitigations

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Cultural landscape - Ecological	1. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. 2. No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	3. Remaining areas of endemic and endangered natural vegetation should be conserved. 4. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. 5. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. 6. Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost. 7. Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed. 8. Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. 9. Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character. 10. Water use for the construction/ decommissioning phase of the development must not negatively impact on the water resources in the area and must not negatively impact on the access or usage of water and water infrastructure for local inhabitants.			
Cultural landscape - Aesthetic	1. Encourage mitigation measures (for instance use of vegetation) to 'embed' or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc; 2. The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and is exacerbates the foreign intrusion on the natural matte landscape. 3. Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site. 4. The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion.	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	5. Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction/ decommissioning traffic must operate at speeds that reduce dust and noise as far possible.			
Cultural landscape - Historic	1. Historic farmsteads must be protected from the impacts of heavy construction vehicles and increased numbers of people. No construction traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features. 2. Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads.	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	Construction decommissioning traffic must operate at speeds that reduce dust and noise as far possible. 3. Accommodation of construction staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation. 4. Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. A buffer of 50m around such planting patters should be maintained. 5. Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	6. Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed. 7. Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not destroyed, as they add to the layering of the area. 8. Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left intact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. 9. Where the historic function of a building/site is still intact, the function has heritage value and should be protected. 10. Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Karee should be maintained and integrity as a communal road for farm residents must be retained.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	11. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the Voetpadskloof over the Bontebergen. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails.			
Cultural landscape - Socio-economic	1. An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application. This report should include a detailed assessment of the socio-economic impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved. 2. The continued use of the landscape for human habitation and cultivation by historic residents of the area should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. 3. The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long-term economic benefit and local employment opportunities must be prevented. 4. Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. 5. Local residents must be offered employment training opportunities associated with WEF developments at all phases. 6. Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.			

Cultural Landscape:

Operation Phase Specific Mitigations

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Cultural landscape - Ecological	1. Areas of endemic and endangered natural vegetation should be conserved. 2. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected. 3. Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity	Holder of the EA/Contractor	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	of the area. Care should be taken that habitats are not needlessly destroyed. 4. Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. Access to these resources should be made available to those who have had historic access to them. 5. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. 6. Water use for the operatoinal phase of the development must not negatively impact on the water resources in the area and must not negatively impact on the access or usage of water and water infrastructure for local inhabitants.			
Cultural landscape - Aesthetic	1. Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. 2. Prevent the construction of new buildings/structures on visually sensitive, steep (over 3%), elevated or exposed	Holder of the EA/Contractor	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	slopes, ridgelines and hillcrests or within 1000m of the farmsteads and 500m of the district roads. 3. Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads. 4. Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible. 5. The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Cultural landscape - Historic	1. Historic farmsteads must be protected from the impacts of operational facility vehicles and increased numbers of people. No WEF operations traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features. 2. Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. 3. Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged and a buffer of 100m around all burial ground or unmarked graves should be in place. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened.	Holder of the EA/Contractor	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	4. Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed. 5. Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not destroyed, as they add to the layering of the area. 6. Roads running through the area may have historic stone way markers. Where these are found care should be taken that they are left intact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. 7. Where the historic function of a building/site is still intact, the function has heritage value and should be protected. 8. Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Karee should be maintained and integrity as a communal road for farm residents must be retained.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	9. Accommodation of WEF staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation. 10. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible. 11. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails.			
Cultural landscape - Socio-economic	1. The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long-term economic benefit and local employment opportunities must be prevented.	Holder of the EA/Contractor	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	2. The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. 3. Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. 4. Local residents must be offered employment training opportunities associated with WEF developments at all phases. 5. Crop cultivation, sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.			

Cultural Landscape:

Decommissioning Phase Specific Mitigations

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Cultural landscape - Ecological	1. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	from development of the wind turbines or any associated development during all phases. 2. No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines 3. Remaining areas of endemic and endangered natural vegetation should be conserved. 4. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. 5. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. 6. Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost. 7. Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	8. Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. 9. Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character. 10. Water use for the construction/ decommissioning phase of the development must not negatively impact on the water resources in the area and must not negatively impact on the access or usage of water and water infrastructure for local inhabitants.			
Cultural landscape - Aesthetic	1. Encourage mitigation measures (for instance use of vegetation) to 'embed' or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc; 2. The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	is exacerbates the foreign intrusion on the natural matte landscape. 3. Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site. 4. The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion. 5. Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction/ decommissioning traffic must operate at speeds that reduce dust and noise as far possible.			
Cultural landscape - Historic	1. Historic farmsteads must be protected from the impacts of heavy construction vehicles and increased numbers of people. No construction traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	2. Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction decommissioning traffic must operate at speeds that reduce dust and noise as far possible. 3. Accommodation of construction staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation. 4. Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. A buffer of 50m around such planting patters should be maintained.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	5. Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. 6. Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed. 7. Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not destroyed, as they add to the layering of the area. 8. Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left intact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. 9. Where the historic function of a building/site is still intact, the function has heritage value and should be protected.			

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	10. Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Karee should be maintained and integrity as a communal road for farm residents must be retained. 11. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the Voetpadskloof over the Bontebergen. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails.			
Cultural landscape - Socio-economic	1. An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application. This report should include a detailed assessment of the socio-economic impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved. 2. The continued use of the landscape for human habitation and cultivation by historic residents of the area should be retained and encouraged as far possible to sustain the continual use pattern and	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. 3. The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented. 4. Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. 5. Local residents must be offered employment training opportunities associated with WEF developments at all phases. 6. Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.			

Noise

Pre-construction Phase Specific Mitigations:

The developer must know that community involvement needs to continue throughout the project. Annoyance is a complicated psychological phenomenon, as with many industrial operations, expressed annoyance with sound can reflect an overall annoyance with the project, rather than a rational reaction to the sound itself. At all stages, surrounding receptors should be informed about the project, providing them with factual information without setting unrealistic expectations. It is counterproductive to suggest that the activities (or facility) will be inaudible due to existing high residual noise levels. The magnitude of the sound levels will depend on a multitude of variables and will vary from day to day and from place to place with environmental and operational conditions. Audibility is distinct from the sound level because it depends on the relationship between the sound level from the activities, the spectral character and that of the surrounding soundscape (both level and spectral character).

The developer must implement a line of communication (i.e., a help line where complaints could be lodged). All potential sensitive receptors should be made aware of these contact numbers. The proposed WEF should maintain a commitment to the local community (people staying within 2,000 m from construction or operational activities) and respond to noise concerns in an expedient fashion. Sporadic and legitimate noise complaints could be raised. For example, sudden and sharp increases in sound levels could result from mechanical malfunctions or perforations or slits in the blades. Problems of this nature can be corrected quickly and it is in the developer's interest to do so.

Continuing management objectives would be:

- Ensure that total daytime construction noise levels are less than 52 dBA at all potential NSDs (dwellings used for residential purposes);
- Ensure that total noise levels due to operational activities are less than 45 dBA at all potential NSDs (dwellings used for residential purposes); and
- Prevent the generation of nuisance noises.

Noise

Construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Noise Special Conditions	1. Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised. 2. The applicant includes a component covering environmental noise in the Health and Safety Induction to sensitize all employees and contractors about the potential impact from noise, especially those employees and contractors that have to travel past receptors at night or might be required to do work close (within 1,000m) to NSRs at night. 3. The developer must investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction activities are taking place or operational wind turbine is present. A complaints register must be kept on site. 4. The developer must minimize night-time construction traffic if the access roads are closer than 150 m from any NSD, alternatively, the access road must be relocated further than 120 m from NSDs (night-time traffic passing occupied houses).	Holder of EA/Contractor	Noise and lighting managed according to approved Method Statement Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	5. The developer should implement a noise monitoring programme at NSD06 before the construction phase, as well as a noise measurement programme during the operational phase. If the noise levels exceed 45 dBA, a noise abatement program should be developed and implemented.			
Noise impacts during the day: Construction activities relating to hardstand areas, digging of foundations for wind turbines, civil works as well as erection of wind turbines	1. No specific mitigation measures recommended for construction activities at the WTG locations or for substations. 2. Continuing management objectives would be: • Ensure that total daytime construction noise levels are less than 52 dBA at all potential NSDs (dwellings used for residential purposes); • Ensure that total night-time construction noise levels are less than 45 dBA at all potential NSDs (dwellings used for residential purposes); • Ensure that total noise levels due to operational activities are less than 45 dBA at all potential NSDs (dwellings used for residential purposes); and • Prevent the generation of nuisance noises.	Holder of EA/Contractor	Noise and lighting managed according to approved Method Statement Ensure the EMPr is adhered to.	Continuous
Noise impacts at night: Construction activities relating to civil works as well as erection of wind turbines	1. Night-time construction activities closer than 1,000 m from and NSD06 to be minimized. 2. Night-time construction activities (closer than 800 m) are not recommended and it should be minimized where possible. If construction activities take place closer than 800 m at night (such as the pouring of concrete), NSD should be notified of the activity that will be taking place at night.	Holder of EA/Contractor	Noise and lighting managed according to approved Method Statement Ensure the EMPr is adhered to.	Continuous

Noise

Operation Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Noise impacts during the night: Noises from operating wind turbines.	• The developer may relocate the WTG located to the north of NSD06 further than 800 m from this NSD. No WTG should be located within 800 m from this NSD; or • The developer can use a mitigated WTG with a sound power emission level less than 107.2 dBA (re 1 pW) (all WTGs closer than 1,000m from NSD 06).	Holder of EA/Contractor	Noise and lighting managed according to approved Method Statement Ensure the EMPr is adhered to.	Continuous

Noise

Decommissioning Phase Specific Mitigations:

None

Social

Pre-application Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Annoyance and health risks	1. Plan the sitting of turbines, substations and power lines so as to avoid sensitive areas such as dwellings **2.** Keep a record of level satisfaction but tracking the frequency of complaints laid and the time lag between notification of the complaint and resolution	Project developer and contractors	To minimise the effect of annoyance and health risks on local communities	Weekly/monthly

Social

Construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Hazard exposure to the public and employees associated with construction and operational activities and construction and	1. Restrict public access to construction areas. 2. Only allow site access after appropriate induction and use of appropriate personal protective equipment. 3. Impose vehicle speed restrictions and display appropriate signage.	Project Developer and Contractors	To ensure, as far as is reasonable and practical, an environment that is safe and without risk to the health of employees and the general public who	Continuous recording of accidents and incidents and related investigations, findings and corrective

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
operational related traffic.	4. Ensure use and storage of hazardous materials is in accordance with Health and Safety regulations. 5. Keep a record of all accidents or transgressions of safety in accordance with the OHS Act and implement corrective action. 6. Ensure that fires are not lit on site. 7. Engage a safety officer		come into contact with activities associated with the project. Level of compliance with the OHS Act	action in accordance with the OHS Act over the construction and operational phases of the project
Degraded air quality and potential impact on human and animal health and accumulation of dust on vegetation used for grazing.	1. Wet gravel roads regularly. 2. Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. 3. Ensure that all vehicles are roadworthy, and drivers are qualified and made aware of the potential noise and dust issues. 4. Ensure that drivers adhere to speed limits. 5. Re-vegetate disturbed areas as soon as is practical after construction. 6. Appoint a community liaison officer to deal with complaints and grievances from the public.	Project Developer and Contractors	Reduction in dust generation and emissions from the site works, plant and vehicle movements along access road. Overall public satisfaction	Maintain a record of complaints containing full details including dates and times of significant events. Over the construction and operational phase of the project

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	7. If complaints reach unacceptable levels an air quality survey should be undertaken to assess the situation, identify the source and rectify			
General nuisance factor resulting from construction and operational activities and associated traffic	1. Schedule the delivery hours to avoid peak hour traffic, weekends, and evenings. 2. Limit the need for transportation over long distances by sourcing as much materials and goods as is feasible from local suppliers 3. Alert traffic authorities well in advance of any heavy loads that will be transported on local roads and elicit their assistance in controlling traffic associated with the transportation of these loads. 4. Alert the workforce to the need to behave in a socially responsible manner, being considerate towards residents 5. Establish a code of conduct for the workforce. 6. Restrict work activities that require power tools and plant that generates noise to normal working hours and limit such activities over weekends. 7. Ensure that local by-laws are always adhered to. 8. Appoint a community liaison officer.	Project Developer and Contractor		Weekly/monthly monitoring and evaluating of performance over the construction and operational phase of the project

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	9. Ensure that a grievance/complaint reporting procedure is in place, appropriately implemented and that all submissions received are managed by: ➢ Recording grievance submission date. ➢ Keeping complainant informed of progress towards corrective action. ➢ Keeping a record of corrective action taken and recording closure date. 10. Introduce an incident reporting system to be tabled at weekly/monthly project meetings.			
Employment opportunity for local people and business opportunity for local businesses	1. Ensure that the majority of the low-skilled workforce are recruited locally, where possible. 2. Undertake a skills audit to determine the level of skills and what development and training programmes are required 3. Commence with skill development programmes within the first month of construction. 4. Identify employment opportunities for women and ensure that they receive appropriate training. **5.** Identify opportunities for local businesses and ensure that the services from local businesses are prioritised.	Human Resources, Project developer and contractor	Composition of the labour force and value of procurement from local businesses. Level of skills imparted to the local workforce	From the appointment of contractors and throughout the construction and operational phases

Social

Operation Phase Specific Mitigations:

Same as Construction phase

Surface Water

Pre-application Phase Specific Mitigations:

A pre-construction walkthrough with an aquatic specialist is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout

Surface Water

Construction Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Damage or loss of riparian and alluvial systems in the construction phase Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are	1. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: 2. Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles.	Holder of the EA	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations. Ensure the conditions of the EA are adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
required or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	3. River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. 4. Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. 5. Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). 6. A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.				
Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and	1. All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to	Holder of the EA	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
decommissioning phases: During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the	contain likely worst-case scenario leak or spill in that facility, safely. 2. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). 3. Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. 4. All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting. 5. Littering and contamination associated with construction activity must be avoided through effective construction camp management; No stockpiling should take place within or near a water course 6. All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;			Ensure the conditions of the EA are adhered to.	

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system.					

Surface Water

Operation Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Impact on aquatic systems through the possible increase in surface water runoff on form and function	1. A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. This stormwater	Holder of the EA/Contractor	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommendations.

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
during the operational phase: Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas.	control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks			Erosion Management Plan and Rehabilitation Plan Implemented Ensure the conditions of the EA are adhered to.

Surface Water

Decommissioning Phase Specific Mitigations:

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Damage or loss of riparian and alluvial systems in the construction phase Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are required or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	1. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: 2. Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. 3. River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. 4. Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. 5. Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through	Holder of the EA	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommend ations. Ensure the conditions of the EA are adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). 6. A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.				
Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases: During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes,	1. All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. 2. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). 3. Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. 4. All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting.	Holder of the EA	Construction Monitoring and audit reports	Impacts avoided or managed as per specialist recommend ations. Ensure the conditions of the EA are adhered to.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system.	5. Littering and contamination associated with construction activity must be avoided through effective construction camp management; No stockpiling should take place within or near a water course 6. All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;				

Transportation

Pre-application Phase Specific Mitigations:

None

Transportation

Construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Additional Traffic Generation: **Increase in Traffic**	1. Ensure staff transport is done in the 'off peak' periods and by bus. 2. Stagger material, component and abnormal loads 3. Construction of an on-site concrete batching plant to reduce trips.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase of Incidents with pedestrians and livestock**	1. Upgrade of existing / new access points 2. Reduction in speed of vehicles 3. Adequate enforcement of the law 4. Implementation of pedestrian safety initiatives 5. Regular maintenance of farm fences & access cattle grids 6. Construction of an on-site concrete batching plant to reduce trips.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase in Dust from gravel roads**	1. Upgrade of existing / new access point Reduction in speed of the vehicles 2. Construction of gravel roads in terms of TRH20	Holder of the EA/Contractor	All staff members are aware of the	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	3. Implement a road maintenance program under the auspices of the respective transport department. 4. Possible use of an approved dust suppressant techniques 5. Construction of an on-site batching plant and tower construction to reduce trips.		EMPr requirements relevant to them Ensure the EMPr is adhered to.	
Additional Traffic Generation: **Increase in Road Maintenance**	1. Implement a road maintenance program under the auspices of the respective transport department. 2. Construction of an on-site batching plant to reduce trips.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Abnormal Loads	1. Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. 2. Adequate enforcement of the law	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Internal Access Roads: **Increase in Dust from gravel roads**	1. Enforce a maximum speed limit on the development 2. Appropriate, timely and high quality maintenance required in terms of TRH20 3. Possible use of an approved dust suppressant techniques	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Internal Access Roads: **New / Larger Access points**	1. Adequate road signage according to the SARTSM 2. Approval from the respective roads department	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous

Transportation

Operation Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Additional Traffic Generation: **Increase in Traffic**	1. The increase in traffic for this phase of the development is negligible and will not have a significant impact	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase of Incidents with pedestrians and livestock**	2. The increase in traffic for this phase of the development is negligible and will not have a significant impact	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Additional Traffic Generation: **Increase in Dust from gravel roads**	3. The increase in traffic for this phase of the development is negligible and will not have a significant impact	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase in Road Maintenance**	4. The increase in traffic for this phase of the development is negligible and will not have a significant impact	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Abnormal Loads	5. The increase in traffic for this phase of the development is negligible and will not have a significant impact	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Internal Access Roads: **New / Larger Access points**	6. Adequate road signage according to the SARTSM.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous

Transportation

Decommissioning Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Additional Traffic Generation: **Increase in Traffic**	1. Ensure staff transport is done in the 'off peak' periods and by bus. 2. Stagger material, component and abnormal loads.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase of Incidents with pedestrians and livestock**	1. Reduction in speed of vehicles 2. Adequate enforcement of the law 3. Implementation of pedestrian safety initiatives 4. Regular maintenance of farm fences & access cattle grids.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Traffic Generation: **Increase in Dust from gravel roads**	1. Reduction in speed of the vehicles 2. Appropriate, timely and high quality maintenance required in terms of TRH20	Holder of the EA/Contractor	All staff members are aware of the EMPr	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	3. Possible use of an approved dust suppressant techniques 4. Implement a road maintenance program under the auspices of the respective transport department. 5. Construction of an on-site batching plant and tower construction to reduce trips.		requirements relevant to them Ensure the EMPr is adhered to.	
Additional Traffic Generation: **Increase in Road Maintenance**	1. Implement a road maintenance program under the auspices of the respective transport department.	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Additional Abnormal Loads	1. Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. 2. Adequate enforcement of the law	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous
Internal Access Roads: **Increase in Dust from gravel roads**	1. Enforce a maximum speed limit on the development	Holder of the EA/Contractor	All staff members are	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	2. Appropriate, timely and high quality maintenance required in terms of TRH20 3. Possible use of an approved dust suppressant techniques		aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	
Internal Access Roads: **New / Larger Access points**	1. Adequate road signage according to the SARTSM 2. Approval from the respective roads department	Holder of the EA/Contractor	All staff members are aware of the EMPr requirements relevant to them Ensure the EMPr is adhered to.	Continuous

Visual

Pre-Construction Phase Specific Mitigations:

None

Visual

Construction Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Potential alteration of the visual character and sense of place Potential visual impact on receptors in the study area	1. Carefully plan to mimimise the construction period and avoid construction delays. 2. Inform receptors within 500m of the proposed power line servitude of the construction programme and schedules. 3. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. 4. Maintain a neat construction site by removing rubble and waste materials regularly. 5. Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. 6. Make use of existing gravel access roads where possible. 7. Limit the number of vehicles and trucks travelling to and from the construction site, where possible. 8. Unless there are water shortages, ensure that dust suppression techniques are implemented: - on all access roads;	Holder of the EA	Ensure the EMPr is adhered to.	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	- in all areas where vegetation clearing has taken place; - on all soil stockpiles.			

Visual

Operation Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Potential alteration of the visual character and sense of place. Potential visual impact on receptors in the study area.	1. Where possible, limit the number of maintenance vehicles using access roads. 2. Where possible, limit the amount of security and operational lighting present at the on-site substation. 3. Light fittings for security at night should reflect the light toward the ground and prevent light spill. 4. Buildings on the substation site should be painted with natural tones that fit with the surrounding environment. 5. Non-reflective surfaces should be utilised where possible.	Holder of the EA/Contractor	Noise and lighting managed according to approved Method Statement All waste managed according to approved Method Statement	During operation

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
			Plant Rehabilitation Implemented	

Visual

Decommissioning Phase Specific Mitigations:

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and Potential visual intrusion of any remaining infrastructure on the site.	1. All infrastructure that is not required for post-decommissioning use should be removed. 2. Carefully plan to minimize the decommissioning period and avoid delays. 3. Maintain a neat decommissioning site by removing rubble and waste materials regularly. 4. Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. 5. Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. 6. All cleared areas should be rehabilitated as soon as possible. 7. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.	Holder of the EA	Noise and lighting managed according to approved Method Statement All waste managed according to approved Method Statement Plant Rehabilitation Implemented	During operation

Cumulative impacts:

- Where possible, limit the number of maintenance vehicles using access roads.
- Non-reflective surfaces should be utilised where possible.
- Where possible, limit the amount of security and operational lighting present at the on-site substation.
- Light fittings for security at night should reflect the light toward the ground and prevent light spill.

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.