

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



environmental affairs

Department:
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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	<p>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.</p> <p>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.</p> <p>Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column.</p> <p>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.</p> <p>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.</p>
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA

Part	Section	Heading	Content
			<p>will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, 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 <u>Part C</u>.</p> <p>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 <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>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 (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> 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</p>

Part	Section	Heading	Content
			<p>approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>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 <u>Part B: section 1</u>.</p>
		Appendix 1	<p>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.</p>

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)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - 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)	<p><u>Role</u> 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.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - 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)	<p><u>Role</u> 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.</p> <p>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</p>

Responsible Person(s)	Role and Responsibilities
	<p>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.</p> <p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - 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
	<ul style="list-style-type: none"> - 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.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>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.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - 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
	<ul style="list-style-type: none"> - 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	<p><u>Role</u></p> <p>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.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - 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)	<p><u>Role</u></p> <p>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</p>

Responsible Person(s)	Role and Responsibilities
	<p>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:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - 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 contractor 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.

In order to construct the substation (subject of this EMPr), a temporary construction laydown area will be required. Limited extent permanent construction laydown area(s) may also be required. The construction laydown area(s) proposed for the Oya Energy facility will also be used in the construction of the substation which forms part of the Oya Power Line project (part of separate BA process with DEFF Ref No.: 14/12/16/3/3/1/2265). There will therefore be two (2) EMPrs governing the use of the construction laydown area(s). Where there are any discrepancies between the two (2) EMPrs regarding the use of the construction laydown area(s), then the Oya Energy facility (DEFF Ref No.: 14/12/16/3/3/3/2/2009) EMPr shall prevail.

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
<ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> 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

<p>b) Mitigation measures to be implemented when carrying out specific activities;</p> <p>c) Emergency preparedness and response procedures;</p> <p>d) Emergency procedures;</p> <p>e) Procedures to be followed when working near or within sensitive areas;</p> <p>f) Wastewater management procedures;</p> <p>g) Water usage and conservation;</p> <p>h) Solid waste management procedures;</p> <p>i) Sanitation procedures;</p> <p>j) Fire prevention; and</p> <p>k) Disease prevention.</p> <p>– A record of all environmental awareness training courses undertaken as part of the EMPr must be available;</p> <p>– Educate workers on the dangers of open and/or unattended fires;</p> <p>– A staff attendance register of all staff to have received environmental awareness training must be available.</p> <p>– Course material must be available and presented in appropriate languages that all staff can understand.</p>						
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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
<ul style="list-style-type: none"> – 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	<p>Method Statement compilation and communication of Method Statements to employees.</p> <p>Use of EIA and Specialist Studies to locate site camps</p>	Prior to construction	ECO	Monthly	<p>Signed Method Statements;</p> <p>signed proof of communication register;</p> <p>Liaison with ECO regarding site camp placement</p>

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
<ul style="list-style-type: none"> - 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 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 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

<ul style="list-style-type: none"> - 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
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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
<ul style="list-style-type: none"> - 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

<ul style="list-style-type: none"> - 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. 						
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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
<ul style="list-style-type: none"> - 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: 	Contractor and Applicant	Application to DWS where applicable.	Construction	ECO	Monthly	Proof of water source used;

<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. 		Implementation of mitigation measures				submission of above proof to DWS
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Employ methods to prevent water pollution	Construction	ECO	Weekly	Inspection of areas where construction takes place near watercourses

<ul style="list-style-type: none"> - 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. 					
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Following good waste management practices outlined in approved method statement	Construction	ECO	Weekly	Waste safe disposal slips; Service Level Agreements

<ul style="list-style-type: none"> - 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. 					
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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
<ul style="list-style-type: none"> - 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 	Contractor	Method statements; Stormwater Management Plan	Construction	ECO	Weekly	Method Statement compliance

<ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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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
<p>General:</p> <ul style="list-style-type: none"> – 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; 	<p>Contractor and Applicant</p>	<p>Specialist recommendations;</p> <p>Method statement;</p> <p>Search and Rescue Plan;</p> <p>Alien vegetation removal Plan;</p> <p>Approved plans and strategies used by Eskom;</p> <p>Site awareness</p>	<p>Pre-Construction, Construction and Operation</p>	<p>ECO</p>	<p>Pre-Construction and weekly during construction</p>	<p>Compliance to method statements and Search and Rescue Plan;</p> <p>Alien vegetation removal Plan.</p> <p>approved plans and strategies used by Eskom</p>

<ul style="list-style-type: none"> - 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. 					
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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
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; 	Contractor	Method statement and adherence to exclusion / no-go zones; site awareness	Construction	ECO	Weekly	Public complaints register; adherence to exclusion / no-go zones and

<ul style="list-style-type: none"> - 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. 						method statements
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Method Statement;	Pre-construction and construction	ECO	Weekly and daily for zones	Monitoring of

<ul style="list-style-type: none"> - 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. 		Heritage management plan			highlighted by Heritage Specialist	construction areas, adherence to management plan if chance finds found.
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Landowner agreements; Method Statement	Construction	ECO	Weekly	Site works barricaded; Safe working site maintained; Public complaints register;

- Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.						
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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
<ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> 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; 	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;

<ul style="list-style-type: none"> e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 						
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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
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - 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 (ERAP)	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
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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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 impermeable lining must extend to the crest of the bund and 	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; Material Safety Data Sheets (MSDS); Method Statement

<p>the volume inside the bund must be 110% of the total capacity of all the storage tanks/ bowsers;</p> <ul style="list-style-type: none"> - 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; - 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 					
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concerning storm and waste water management and 5.8 for solid and hazardous waste management .						
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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
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management. 	Contractor	Method Statement; OHS requirements; Hazardous Substances storage register; Vehicle daily checklist; Vehicle service register;	Construction	ECO	Weekly	Method Statement; Hazardous Substances storage register; Vehicle daily checklist; 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
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; 	Contractor	Method Statement	Construction	ECO	Weekly	Compliance to mitigation and method statement

– Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation .						
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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
<ul style="list-style-type: none"> – Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; – Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; 	Contractor	Method Statement; Vehicle Speed limit; Dust suppression	Construction	ECO	Monthly	Site observation; Dust suppression register

<ul style="list-style-type: none"> - 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. 					
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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
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	Contractor	Restriction of site hours to working hours Monday to Friday	Construction	ECO	Monthly	Public Complaints Register

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
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two-way swap of contact details between ECO and FPA. 	Contractor	Emergency Response Action Plan (ERAP); Method Statement	Construction	ECO	Monthly	Public complaints register; 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

<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 	Contractor	Method Statement	Construction	ECO	Monthly	Method Statement and site observations
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Method Statement	Construction	ECO	Monthly	Site observation

<ul style="list-style-type: none"> - 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; - 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. 					
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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
<ul style="list-style-type: none"> - 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; 	Contractor	Method Statement and Engineering Drawings	Construction	ECO	Weekly	Adherence to method statements

<ul style="list-style-type: none"> – 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. 					
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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
<ul style="list-style-type: none"> – 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

<ul style="list-style-type: none"> - Management of dust must be conducted in accordance with Section 5. 20: Dust emissions; - Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 	Contractor	Method Statement	Construction	ECO	Weekly	Method Statement and site observation
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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
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - 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
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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
<ul style="list-style-type: none"> – Develop and implement communication strategies to facilitate public participation; – Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; – Sustain continuous communication and liaison with neighboring owners and residents – Create work and training opportunities for local stakeholders; and – Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 	Contractor	Landowner Agreements; Issues and Complaints Register	Construction	ECO	Monthly	Landowner Agreement; Issues and Complaints Register

5.33 Temporary closure of site

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - 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. 	Contractor	Method statement	Construction - when applicable	ECO	Monthly - when applicable	Method statement ECO reports

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
<ul style="list-style-type: none"> - All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; - Oil containing equipment must be stored to prevent leaking or be stored on drip trays; - All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; - Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; - The Contractor must also be equipped to contain and clean up any pollution causing spills; and - Disposal of unusable material must be at a licensed waste disposal site. 	Contractor	Method statement	Construction and decommissioning	ECO	Monthly - when applicable	Site observation

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
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); 	Contractor	Method Statements; Erosion protection; Alien eradication plan	Concurrent with Construction	ECO	Monthly	Adequately revegetated work areas; No erosion or invasive plant species

<ul style="list-style-type: none"> - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> 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 						
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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: **Oya Energy (Pty) Ltd**

Name of applicant: **Dr Kilian Hagemann**

Tel No: **021 300 0613**

Fax No: **086 768 9830**

Postal Address: **5th Floor, 125 Buitengracht Street, Cape Town, 8001**

Physical Address: **5th Floor, 125 Buitengracht Street, Cape Town, 8001**

7.1.2 Details and expertise of the EAP:

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

Tel No: **033 347 1600**

Fax No: **033 347 5762**

E-mail address: liandras@sivest.co.za

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

7.1.3 Project name:

PROPOSED DEVELOPMENT OF THE 301MW OYA ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR MATJIESFONTEIN, WESTERN CAPE PROVINCE – SUBSTATION INFRASTRUCTURE EMPr

7.1.4 Description of the project:

Oya Energy (Pty) Ltd (hereafter referred to as "Oya") is proposing to construct an energy facility and associated infrastructure near the town of Matjiesfontein in the Western Cape Province of South Africa (hereafter referred to as the "proposed development") (**DEFF Ref No.: 14/12/16/3/3/2/2009**). The proposed development will have a maximum export capacity of up to 301 megawatts (MW)¹ and will be referred to as the Oya Energy Facility. The overall objective of the proposed development is to generate the bulk of the electricity by means of renewable energy technology with supporting infrastructure, capturing and storing energy to feed into the national grid, which will be procured under either the

¹ The facility will have installed electricity generation capacity of 155MW (generating electricity by solar PV), while the FBGF can generate 106MW of energy (through fuel burn). Both generation assets can generate at different capacity factors (i.e. the % of time the asset can generate at full capacity). An additional 40MW of electricity (generated from either the PV or FBGF in the case of this application, but the BESS may be charged by other developments co-located and thus may be charged by wind) which is not directly evacuated to the on-site substation will be stored in the BESS and dispatched as and when required. The facility can thus generate and evacuate up to a maximum of 301MW of electricity at any given time (should it be required to).

Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP), other government run procurement programmes or for sale to private entities, if required.

The proposed hybrid facility will include photovoltaic (PV) fields (arrays) comprising multiple PV modules (up to 155MW), a Battery Energy Storage Facility (BESS) (40MW storage capacity²), a Fuel Based Generation Facility (FBGF) (up to 106MW), one (1) on-site substation, one (1) O&M building and one (1) temporary construction camp. ***It should be noted that only the technical details of the proposed on-site substation are provided in this EMPr (see below), as the EMPr for the Oya Energy Facility includes technical details for the entire proposed hybrid energy facility, including all associated infrastructure.***

The proposed development will include the construction of one (1) new 33/132kV³ (i.e. 33kV from BESS MV switchgear to on-site substation) on-site substation, occupying an area of up to approximately 4ha, will be constructed. The on-site substation will consist of a 33kV voltage yard which will be owned and operated by the Applicant as well as a 132kV yard which will be owned and operated by Eskom. It should be noted that the 33kV yard portion of the substation which will be owned by the Applicant will occupy an area of up to approximately 2ha. In addition, the proposed substation will act as a step-up substation and will contain transformer(s) for voltage step-up from medium voltage to high voltage. Direct Current (DC) power from the PV modules will be converted into Alternating Current (AC) power in the inverters and the voltage will be stepped up to medium voltage in the inverter transformers.

The proposed development is located approximately 52km north-west of the town of Matjiesfontein, within the Witzenberg Local Municipality, in the Cape Winelands District Municipality of the Western Cape Province. It should be noted that the proposed development is largely a renewable energy facility and falls entirely within Renewable Energy Development Zone (REDZ) 2 (namely the Komsberg REDZ), which was formally gazetted on 16 February 2018 by the Minister of Environmental Affairs (GN 114). The associated infrastructure [namely the Battery Energy Storage System (BESS) and Fuel-Based Generation Facility (FBGF)] are outside of the parameters of the REDZ.

In addition, a 132kV overhead power line (namely the associated grid connection infrastructure) is also being proposed to feed the electricity generated by the proposed Oya Energy Facility into the national grid. The associated grid connection infrastructure will however require a separate Environmental Authorisation (EA) and was subject to a separate Basic Assessment (BA) process (**DEFF Ref No.: 14/12/16/3/3/1/2265**)⁴. The on-site 33/132kV substation (more specifically the 33kV yard³) however forms part of the proposed EIA application for the Oya Energy Facility. ***This EMPr forms part of the 33kV yard of the substation which will be owned and operated by the Applicant.***

² An additional 40MW of electricity (generated from either the PV or FBGF in the case of this application, but the BESS may be charged by other developments co-located and thus may be charged by wind) which is not directly evacuated to the on-site substation will be stored in the BESS and dispatched as and when required. The facility can thus generate and evacuate up to a maximum of 301MW of electricity at any given time (should it be required to).

³ On-site substation will consist of 33kV yard which will be owned and operated by Applicant as well as 132kV yard which will be owned and operated by Eskom. 132kV has been included in application with DEFF Ref No.: 14/12/16/3/3/1/2265, which was submitted to the DEFF for decision making on 15 January 2021.

⁴ Final Basic Assessment Report (FBAR) submitted to DEFF for decision-making on 15 January 2021. Applicant awaiting decision from DEFF.

Various feasible location alternatives for the Substation locations were identified and assessed as part of the EIA process. Two (2) Operation & Maintenance (O&M) building and substation area alternatives were considered by the EAP and specialists as follows⁵:

- **O&M and Substation Alternative 3:** Alternative 3 is located to the west of the public road on RE/155 Baakens Rivier; and
- **O&M and Substation Alternative 4:** Alternative 4 is located to the west of the public road on RE/155 Baakens Rivier, south of alternative 3.

It should be noted that **O&M and Substation Alternative 3** was found to be the most preferred alternative from an environmental perspective and is being proposed for authorisation.

7.1.5 Project location:

The proposed substation development will affect the following properties⁶:

NO	FARM NAME (if applicable)	FARM NUMBER (if applicable)	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE
1	Farm Baakens Rivier	155	Remainder	N/A	S32° 54' 24.448"	E20° 12' 28.565"

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.zg/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.

⁵ O&M and Substation Alternatives 1 & 2 were eliminated as they fall outside of the application area

⁶ O&M and Substation Alternative 3 was found to be the most preferred alternative from an environmental perspective and is being proposed for authorisation

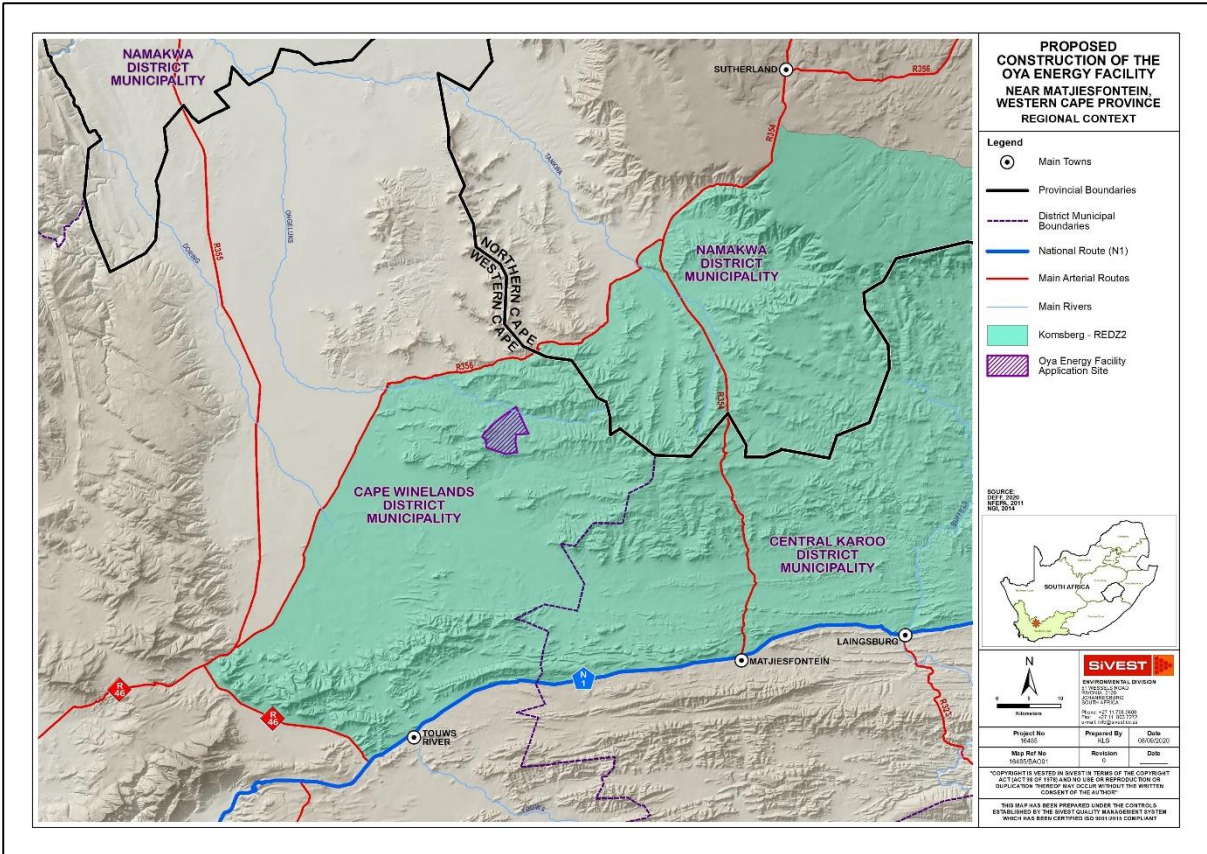


Figure 1: Regional Context of Oya Energy Facility (including on-site substation)

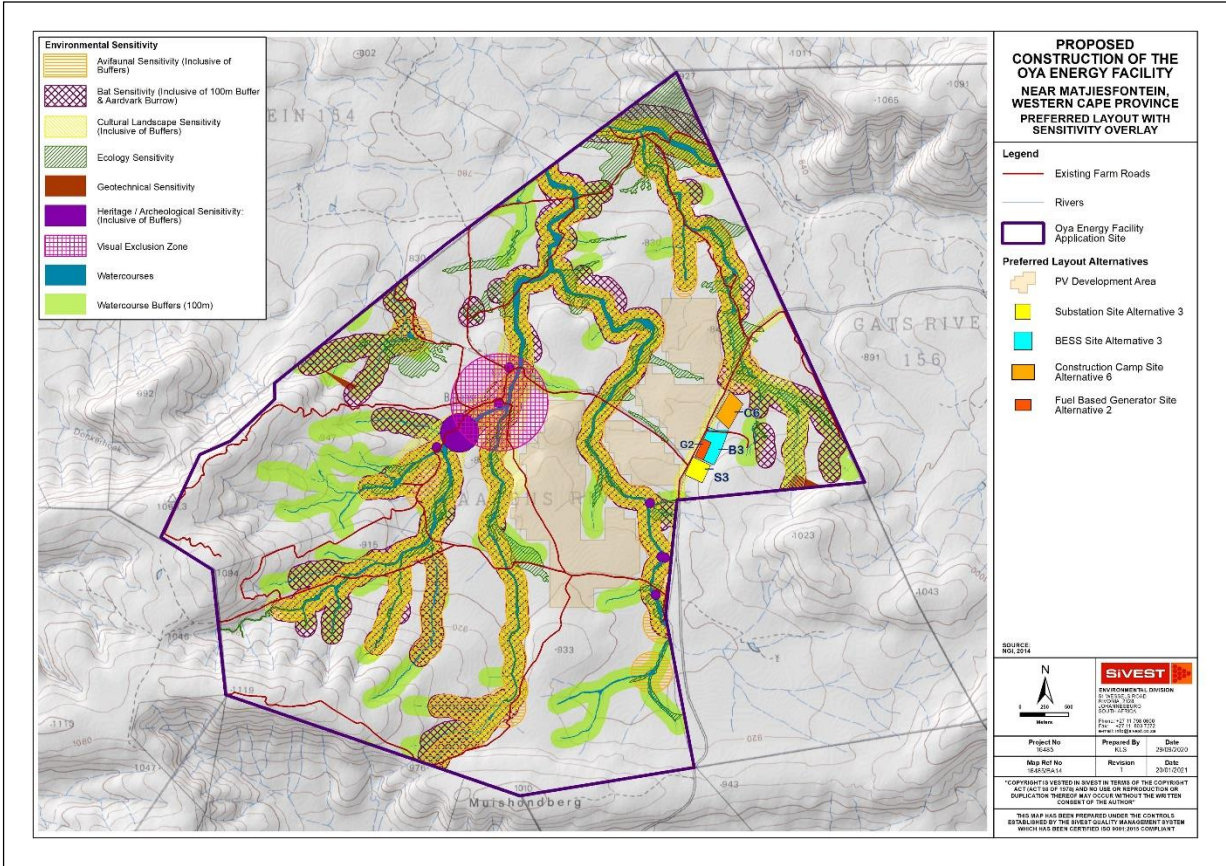


Figure 2: Sensitivity Overlay for Preferred Layout

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:

- Desktop Agricultural and Soils Impact Assessment and Addendum Letter;
- Surface Water Impact Assessment (including ground truthing walk-through);
- Avifauna Impact Assessment (including pre-construction monitoring and ground truthing walk-through);
- Bat Impact Assessment (including ground truthing walk-through);
- Heritage Impact Assessment [including Heritage Management Plan (HMP), inclusive of ground truthing walk-through]⁷;
 - Archaeological Impact Assessment and Addendum Letter;
 - Palaeontological Impact Assessment and Addendum Letter;
 - Cultural Landscape Impact Assessment and Addendum Letter;
- Socio-Economic Impact Assessment;
- Desktop Geotechnical Impact Assessment;
- Terrestrial Ecology Impact Assessment (including ground truthing walk-through);
- Transportation Impact Assessment;
- Glint and Glare Assessment and Addendum Letter;
- Visual Impact Assessment and Addendum Letter;
- Air Quality Impact Assessment; and
- Noise Impact Assessment.

⁷ The Heritage, Archaeological, Palaeontological and Cultural Landscape Impact Assessment were all undertaken as standalone assessments, however, the findings of the Archaeological, Palaeontological and Cultural Landscape Impact Assessments were used in order to inform the Heritage Impact Assessment. In addition, all above-mentioned specialist assessments have been undertaken in line with the requirements of Heritage Western Cape (HWC)

The following Risk Assessment was also undertaken:

- Major Hazardous Installations (MHI) Classification.

It should be noted that the following additional input was also obtained to inform the EIA process, as requested by the Department:

- Climate Change Statement.

The mitigation measures provided by the respective specialists as part of the Impact Assessment process are included below. Additional mitigation measures were also provided by various Departments / Organs of State (OoS) / authorities as part of the EIA process, and have been incorporated into this EMPr, where required (see below).

Agriculture:

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Planning and Design Phase			
Erosion	<ul style="list-style-type: none"> ▪ Design 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. 	Holder of the EA	<p>Compliance to all legislative requirements.</p> <p>Ensure that the storm water run-off control is included in the engineering design.</p> <p>Storm Water Management Plan implemented.</p> <p>Erosion Control Plan Implemented.</p> <p>All staff members are aware of the EMPr requirements relevant to them.</p>
Construction Phase			
Erosion	<ul style="list-style-type: none"> ▪ 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. 	Holder of the EA	<p>Key sensitive areas avoided</p> <p>Compliance to all legislative requirements.</p> <p>Confirm that disturbance and existence of hard surfaces causes no erosion on or downstream of the site.</p> <p>Confirm that vegetation clearing does not pose a high erosion risk.</p> <p>Confirm that no topsoil is lost.</p> <p>Storm Water Management Plan implemented.</p>
Erosion	<ul style="list-style-type: none"> ▪ Maintain where possible all vegetation cover and facilitate revegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion. 		
Topsoil Loss	<ul style="list-style-type: none"> ▪ 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. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
			<p>All staff members are aware of the EMPr requirements relevant to them.</p> <p>Vehicles repaired as per the approved Method Statement for vehicles management</p> <p>Ensure the EMPr is adhered to.</p> <p>Ensure the conditions of the EA are adhered to.</p> <p>Impacts avoided or managed as per specialist recommendations.</p> <p>Erosion plan implemented and hydrological measures in place.</p> <p>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.</p> <p>Corrective action must be implemented to the run-off control system in the event of any erosion occurring.</p> <p>Undertake a periodic site inspection to record the occurrence of and revegetation progress of all areas that require revegetation.</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
			Record GPS positions of all occurrences of below-surface soil disturbance (e.g. excavations). Record date of topsoil stripping and replacement. Check that topsoil covers entire disturbed area.
Operational Phase			
Erosion	<ul style="list-style-type: none"> ▪ Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring ▪ Facilitate revegetation of denuded areas throughout the site 	Holder of the EA	<p>Key sensitive areas avoided</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Storm Water Management Plan</p> <p>Ensure the EMPr is adhered to</p> <p>Erosion plan implemented and hydrological measures in place</p> <p>Confirm that existence of hard surfaces causes no erosion on or downstream of the site.</p> <p>Confirm that denuded areas are revegetated to stabilise soil against erosion.</p> <p>Undertake a periodic site inspection to record the progress of all areas that require revegetation.</p> <p>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</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
			<p>occurrence of any erosion on site or downstream.</p> <p>Corrective action must be implemented to the run-off control system in the event of any erosion occurring.</p>
Decommissioning Phase			
Erosion	<ul style="list-style-type: none"> ▪ 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. ▪ Maintain where possible all vegetation cover and facilitate revegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion. 	Holder of the EA	<p>Ensure the EMPr is adhered to</p> <p>Confirm that disturbance and existence of hard surfaces causes no erosion on or downstream of the site.</p> <p>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.</p> <p>Corrective action must be implemented to the run-off control system in the event of any erosion occurring.</p> <p>Confirm that vegetation clearing does not pose a high erosion risk.</p> <p>Undertake a periodic site inspection to record the occurrence of and revegetation progress of all areas that require revegetation.</p>
Topsoil Loss	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.		Confirm that no topsoil is lost.

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
	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 date of topsoil stripping and replacement. Check that topsoil covers entire disturbed area.

Freshwater Ecology:

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<u>Construction Phase</u>			
<p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Construction of new internal roads which may traverse through watercourses; ▪ Installation (by means of trenching) of cables along new access roads. <p>These direct impacts may result in:</p>	<p><u>GENERAL MITIGATION MEASURES:</u></p> <ul style="list-style-type: none"> ▪ All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential; ▪ Retain as much indigenous freshwater vegetation as possible; ▪ All vegetation removed as part of the site clearing activities (specifically where large areas need to be cleared) must be stockpiled in designated areas (outside the 32m NEMA ZoR) or disposed of at a registered waste disposal facility; and ▪ During construction activities associated with surface infrastructure within close proximity to a watercourse (required at road crossings), regular spraying of non-potable water or the use of chemical dust suppressants must be implemented where possible to reduce dust and to ensure no smothering of vegetation within the watercourses occurs from excessive dust settling. It must be noted that specifics as to what type of dust suppressant (grey water vs. chemical dust suppressant) that will be utilised as part of the proposed development was not available at the time of assessment. Should this detail become available, it is recommended that the freshwater ecologist provide a statement on the suitability of the use of the proposed dust suppressant. 	Holder of the EA	<p>Key sensitive areas avoided</p> <p>Compliance to all legislative requirements.</p> <p>Storm Water Management Plan implemented.</p> <p>Water Management Plan Implemented</p> <p>Batching plant managed according to approved Method Statement</p> <p>All staff members are aware of the EMPr requirements relevant to them.</p> <p>All waste managed according to approved Method Statement</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ Trampling by construction personnel and equipment is likely to impact on the riparian and instream vegetation, leading to habitat degradation; ▪ Potential loss of habitat and ecological structure provided by the watercourses; and ▪ Potential changes to ecological and socio-cultural service provision. <p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Upgrading of roads in the study area which traverses several watercourses; ▪ Installation (by means of 	<p><u>MITIGATION MEASURES PERTAINING TO THE NEW ROAD AND CABLE CROSSINGS AND THE UPGRADING OF EXISTING ROADS:</u></p> <ul style="list-style-type: none"> ▪ Due to the nature of this proposed development, it is acknowledged that the road watercourse crossings cannot be avoided, thus a direct negative impact is expected to occur on the watercourses. Nevertheless, the following mitigation measures are applicable for the construction of new watercourse crossings and the upgrading of existing watercourse crossings: ▪ The design of the new road crossings should ensure that no erosion occurs, specifically along the embankments of the watercourse. As such, vegetation must be established in the construction footprint immediately after the construction of the road / installation of cables is complete; ▪ New road crossings must intersect the watercourse at a right angle (perpendicular) to minimise disturbance to the watercourse; ▪ During the construction of roads, upgrading of internal roads and associate cable installation that may potentially traverse watercourses, a buffer of no more than 5m on either side of the proposed road reserve through the watercourses may be impacted. This area must be cordoned off, and no vehicles or personnel are permitted outside of the authorised construction area; ▪ Soils excavated from the cable trench must be stockpiled immediately upstream of the trench. Once the cable is installed the trench must be infilled with the removed material and suitably compacted to avoid any erosion and preferential flow paths from forming; ▪ For trenching of the cables, the topsoil has to be stored separately and may not be contaminated. Furthermore, the soil layers should be replaced in the same order and the topsoil returned last; ▪ Any remaining soils following the completion of backfilling of the trenches are to be spread out thinly in an area within the watercourses to aid in the natural reclamation process. 		<p>Vehicles repaired as per the approved Method Statement for vehicles management</p> <p>Ensure the EMPr is adhered to.</p> <p>Ensure the conditions of the EA are adhered to.</p> <p>Implementation of Alien Invasive Species Management</p> <p>Impacts avoided or managed as per specialist recommendations.</p> <p>Erosion plan implemented and hydrological measures in place</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>trenching) of cables along existing access roads.</p> <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Trampling by construction personnel and equipment is likely to impact on the riparian and instream vegetation, leading to habitat degradation; ▪ Potential loss of habitat and ecological structure provided by the watercourses; and ▪ Potential changes to ecological and socio-cultural service provision. 			
<p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p>	<p>O&M and Substation alternative 4 (if identified as the preferred alternative) must be relocated outside the delineated extent of the watercourse and outside the 32m NEMA ZoR. This will significantly reduce all direct impacts to the geomorphology of the watercourse. Once this surface infrastructure component is located outside the watercourse, the following mitigation measures must be applied:</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ Site clearing and construction activities associated with O&M and substation alternative 4 directly traversing an episodic drainage line. <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Trampling by construction personnel and equipment is likely to impact on the riparian and instream vegetation, leading to habitat degradation; ▪ Potential loss of habitat and ecological structure provided by the watercourses; and ▪ Potential changes to ecological and socio-cultural service provision. 	<ul style="list-style-type: none"> ▪ Construction of the proposed surface infrastructure may result in disturbance to the natural buffer zone surrounding the watercourses, including the vegetation and soil components. This may impact on the habitat provisioning and biodiversity of the watercourses. As such, as far as feasible, existing roads should be utilised to gain access to the proposed construction areas. No indiscriminate crossing of the watercourses outside of the proposed crossing point may be permitted. This will prevent any direct impact to the vegetation associated with the watercourses and any terrestrial vegetation; ▪ During excavation activities, the topsoil and vegetation that is removed should be stockpiled separately from other material outside of the 32m NEMA ZoR; ▪ Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up. The mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later use as backfill material after construction has commenced; ▪ All exposed soils must be protected for the duration of the construction phase to prevent potential erosion, sedimentation and smothering of the vegetation (through dust and potential run-off) in the surrounding area; and ▪ After construction of the surface infrastructure, the area surrounding the surface infrastructure must be revegetated with suitable indigenous vegetation (terrestrial vegetation) to prevent the establishment of alien vegetation species and their potential spread into the watercourses. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Potential indirect impacts caused by the proposed infrastructure components not directly traversing watercourses include:</p> <ul style="list-style-type: none"> ▪ Construction of all proposed surface infrastructure components outside the 32m NEMA ZoR <p>These indirect impacts may result in:</p> <ul style="list-style-type: none"> ▪ Disturbance to the buffer zone surrounding the watercourse, making the watercourses vulnerable to the invasion of alien and invasive vegetation species; and ▪ Reduction in the surface roughness surrounding the watercourses. 	<ul style="list-style-type: none"> ▪ It should be feasible to utilise existing roads to gain access to the proposed construction area. Use must be made of existing and newly authorised watercourse crossings and no indiscriminate crossing of the watercourses outside of the existing crossing points or driving in unmarked areas through the buffer zones of the watercourses may be permitted. This will avoid any disturbance to the terrestrial vegetation; ▪ No other terrestrial vegetation areas may be disturbed by the proposed construction activities for the surface infrastructure, other than the approved proposed footprint areas; ▪ During excavation activities, the topsoil and vegetation that is removed should be stockpiled separately from other material outside of the 32m NEMA ZoR; ▪ Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, so as to not impact on any vegetation (watercourse or terrestrial). The mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later use as backfill material after construction has commenced; ▪ All exposed soils must be protected for the duration of the construction phase to prevent potential erosion, sedimentation and smothering (through dust and potential run-off) of the vegetation in the surrounding area; and ▪ After construction of the surface infrastructure, the area surrounding the surface infrastructure must be revegetated with suitable indigenous vegetation (terrestrial vegetation) to prevent the establishment of alien vegetation species and their potential spread into the watercourses. 		
<p>Potential direct impacts caused by proposed infrastructure components directly</p>	<p><u>GENERAL MITIGATION MEASURES:</u></p> <ul style="list-style-type: none"> ▪ It is imperative that all construction works for the watercourse road crossings be undertaken during the dry period when no surface water is present in the watercourses, and no diversion of flow would 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Construction of new internal roads which may traverse through watercourses; ▪ Installation (by means of trenching) of cables along new access roads. <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Excavation and trenching leading to stockpiling of soil within close proximity to the active channel of the watercourses; ▪ Movement of construction equipment and personnel within the watercourse leading to increased turbidity; ▪ Disturbances of soils leading to potential impacts to the watercourse vegetation, 	<p>be necessary – this is imperative to maintain a low impact significance;</p> <ul style="list-style-type: none"> ▪ The duration of impacts within the watercourse (specifically associated with the construction of new road crossings and upgrading of existing crossings) should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised. Therefore, the construction period should be kept as short as possible; and ▪ Construction activities in the watercourses will potentially result in bank destabilisation, and cause bank incision and sedimentation of the watercourse, therefore, sediment control devices should be installed downgradient of the construction site in the watercourse and all excess sediment is to be removed once construction activities have been completed. <p><u>MITIGATION MEASURES PERTAINING TO THE NEW ROAD AND CABLE CROSSINGS AND THE UPGRADING OF EXISTING ROADS:</u></p> <ul style="list-style-type: none"> ▪ The design of the road crossings should ensure that no erosion occurs, specifically along the embankments of the watercourse. As such, immediately after the construction of the road / installation of cables is complete, the construction footprint area within the watercourse must be ripped and suitably vegetated to prevent any erosion from occurring; ▪ During the upgrading of internal roads and associate cable installation that may potentially traverse watercourses, a buffer of no more than 5m on either side of the proposed road crossing through the watercourses may be impacted. This area must be cordoned off, and no vehicles or personnel are permitted outside of the authorised construction area; ▪ Soils excavated from the cable trench must be stockpiled immediately upstream of the trench. Once the cable is installed the trench must be infilled with the removed material and suitably 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>increased alien vegetation proliferation in the footprint areas, and in turn to altered watercourse habitat; and</p> <ul style="list-style-type: none"> ▪ Altered runoff patterns, leading to increased erosion and sedimentation of the watercourses. <p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Upgrading of roads in the study area which traverses several watercourses; ▪ Installation (by means of trenching) of cables along existing access roads. 	<p>compacted to avoid any erosion and preferential flow paths from forming;</p> <ul style="list-style-type: none"> ▪ For trenching of the cables, the topsoil has to be stored separately and may not be contaminated. Furthermore, the soil layers should be replaced in the same order and the topsoil returned last; and ▪ Any remaining soils following the completion of backfilling of the trenches are to be spread out thinly in an area within the watercourses to aid in the natural reclamation process. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Excavation and trenching leading to stockpiling of soil within close proximity to the active channel of the watercourses; ▪ Movement of construction equipment and personnel within the watercourse leading to increased turbidity; ▪ Disturbances of soils leading to potential impacts to the watercourse vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered watercourse habitat; and ▪ Altered runoff patterns, leading to increased erosion and sedimentation 			

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>of the watercourses.</p> <p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Site clearing and construction activities associated with O&M and substation alternative 4 directly traversing an episodic drainage line. <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Excavation activities leading to stockpiling of soil within close proximity to the active channel of the watercourses; ▪ Movement of construction equipment and personnel within the watercourse 	<p>O&M and substation alternative 4 (if identified as the preferred alternative) must be relocated outside the delineated extent of the watercourse and outside the 32m NEMA ZoR. This will significantly reduce all direct impacts to the geomorphology of the watercourses. Once this surface infrastructure component is located outside the watercourses, the following mitigation measures must be applied:</p> <ul style="list-style-type: none"> ▪ Construction of the proposed surface infrastructure may result in disturbance to the natural buffer zone surrounding the watercourses which may result in the reduction of surface roughness. This can be mitigated by ensuring that no concentrated runoff from the surface infrastructure construction area enters the watercourses. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>leading to increased turbidity;</p> <ul style="list-style-type: none"> ▪ Disturbances of soils leading to potential impacts to the watercourse vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered watercourse habitat; and ▪ Altered runoff patterns, leading to increased erosion and sedimentation of the watercourses. 			
<p>Potential indirect impacts caused by the proposed infrastructure components not directly traversing watercourses:</p> <ul style="list-style-type: none"> ▪ Construction of all other proposed surface infrastructure components outside the 32m NEMA ZoR 	<ul style="list-style-type: none"> ▪ It should be feasible to utilise existing roads to gain access to the proposed construction area. Use must be made of existing and newly authorised watercourse crossings and no indiscriminate crossing of the watercourses outside of the existing crossing points or driving in unmarked areas through the buffer zones of the watercourses may be permitted. This will avoid any disturbance to the terrestrial vegetation. This will avoid any disturbance to the soils surrounding the watercourses and any sediment laden runoff; and ▪ Concentrated flow from the construction footprint areas can be mitigated by ensuring that no concentrated runoff from the surface infrastructure construction area enters the watercourses. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>These indirect impacts may result in:</p> <ul style="list-style-type: none"> ▪ Reduction in the surface roughness surrounding the watercourses leading to concentrated surface runoff entering the watercourses and resulting in alterations to the flow patterns. 			
<p>Potential direct impacts caused by the proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Construction of new internal roads which may traverse through watercourses; ▪ Installation (by means of trenching) of cables along new access roads. <p>These direct impacts may result in:</p>	<ul style="list-style-type: none"> ▪ It is considered imperative that all works be undertaken during the dry period to limit surface water contamination and the need for any surface water diversion during the construction works (diverting the flow of water through a pipe or an excavated channel was not included as part of this risk assessment). In so doing, the severity of impact to the hydrological functioning will be significantly reduced as would the frequency of an impact; ▪ The design of the road and cable crossings should ensure adequate flow connectivity between the upstream and downstream portions of the watercourses. Thus, the gravel road and cable trenches must be level with the watercourse bed to allow water to flow over the road surface (avoid constriction of flow and alteration of flow pattern) and no drop may form downgradient of the road crossing which may result in concentrated flow and subsequent erosion; ▪ Road crossings must be broad enough to allow for surface water (when present) connectivity over the entire width of the active channel of the watercourse. This can be achieved by ensuring that 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ Construction in the watercourses may result in potential changes to the pattern, flow and timing of water entering the downstream portion of the watercourse when surface water is present (during rainfall season); ▪ Potential alterations to the runoff patterns, leading to increased erosion and sedimentation of the watercourse; and ▪ Constriction of flow leading to turbulent erosive flow of increased velocity or possible loss of recharge to downstream areas, impacting on downstream biota. <p>Potential direct impacts caused by the proposed infrastructure</p>	<p>the embankments of the watercourse are adequately sloped (3:1 ratio recommended) to allow free flowing of surface water; and</p> <ul style="list-style-type: none"> ▪ All excavated trenches must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion / incision; and ▪ For trenching of the cables, the topsoil has to be stored separately and may not be contaminated. Furthermore, the soil layers should be replaced in the same order and the topsoil returned last. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Upgrading of roads in the study area which traverses several watercourses; ▪ Installation (by means of trenching) of cables along existing access roads. <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Construction in the watercourses may result in potential changes to the pattern, flow and timing of water entering the downstream portion of the watercourse when surface water is present (during rainfall season); ▪ Potential alterations to the runoff patterns, leading to 			

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>increased erosion and sedimentation of the watercourse; and</p> <ul style="list-style-type: none"> ▪ Constriction of flow leading to turbulent erosive flow of increased velocity or possible loss of recharge to downstream areas, impacting on downstream biota. 			
<p>Potential direct impacts caused by proposed infrastructure components directly traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Site clearing and construction activities associated with O&M and substation alternative 4 directly traversing an episodic drainage line. <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Construction in the watercourses may 	<p>O&M and substation alternative 4 (if identified as the preferred alternative) must be relocated outside the delineated extent of the watercourse and outside the 32m NEMA ZoR. This will significantly reduce all direct impacts to the hydrological regime and surface water quality of the watercourse. Once this surface infrastructure component is located outside the watercourses, the following mitigation measures must be applied:</p> <ul style="list-style-type: none"> ▪ Construction of the proposed surface infrastructure may result in disturbance to the natural buffer zone surrounding the watercourses which may result in the reduction of surface roughness and cause concentrated surface runoff into the watercourses. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>result in potential changes to the pattern, flow and timing of water entering the downstream portion of the watercourse when surface water is present (during rainfall season);</p> <ul style="list-style-type: none"> ▪ Potential alterations to the runoff patterns, leading to increased erosion and sedimentation of the watercourse; and ▪ Constriction of flow leading to turbulent erosive flow of increased velocity or possible loss of recharge to downstream areas, impacting on downstream biota. 			
<p>Potential indirect impacts caused by the proposed infrastructure components not directly traversing watercourses:</p>	<ul style="list-style-type: none"> ▪ It should be feasible to utilise existing roads to gain access to the proposed construction area. Use must be made of existing and newly authorised watercourse crossings and no indiscriminate crossing of the watercourses outside of the existing crossing points or driving in unmarked areas through the buffer zones of the watercourses may be permitted. This will avoid any disturbance to 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ Construction of all other proposed surface infrastructure components outside the 32m NEMA ZoR; <p>These indirect impacts may result in:</p> <ul style="list-style-type: none"> ▪ Potential alteration to the surface water flow patterns leading to concentrated surface flow into the watercourses; ▪ Higher flood peaks into the watercourses due to reduced surface roughness of the areas surrounding the infrastructure. 	<p>the terrestrial vegetation. This will avoid any disturbance to the hydrological regime of the watercourses as disturbances has already occurred and the existing road crossings are considered to promote hydrological connectivity and avoid any concentrated flow in the watercourses;</p> <ul style="list-style-type: none"> ▪ High flood peaks from the construction footprint areas can be mitigated by ensuring that no concentrated runoff from the surface infrastructure construction area enters the watercourses. The velocity of surface water flow from these areas must be reduced by ensuring that the vegetation in the buffer area surrounding the watercourses are intact or by the strategic placement of silt traps consisting of haybales as a means to obstruct flow but still allow flow to percolate at a reduced velocity and encourages a diffuse flow pattern. ▪ Concrete may be utilised as part of the surface infrastructure activities. The following mitigation measures are applicable to prevent any impacts to the hydrological functioning of the watercourses: <ul style="list-style-type: none"> ▪ No mixed concrete may be deposited outside of the designated construction footprint; ▪ As far as possible, concrete mixing should be restricted to the contractor laydown area. Additionally, batter / dagga board mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited while it awaits placing; and ▪ Concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. 		
Operational Phase			
<p>Potential direct impacts caused by the proposed infrastructure components directly</p>	<ul style="list-style-type: none"> ▪ No indiscriminate driving through the watercourses may be permitted. Use must be made of the existing watercourse crossings only; ▪ Unnecessary disturbances surrounding the perimeter of the surface infrastructure must be avoided; 	<p>Holder of the EA</p>	<p>Key sensitive areas avoided</p> <p>Impacts avoided or managed as per specialist recommendations</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>traversing watercourses such as:</p> <ul style="list-style-type: none"> ▪ Road crossings through the watercourses (new and existing); and ▪ O&M and substation alternative 4 directly within a watercourse (However it is assumed that this surface infrastructure component will be located outside the watercourse and the 32m NEMA ZoR, which will then not pose any direct negative impacts to the watercourse – see indirect impacts assessment below). <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Continued use of roads may result in the disturbance of vegetation and 	<ul style="list-style-type: none"> ▪ Vehicles used in the development site must be regularly washed (within a non-permeable area or off-site) to avoid the dispersal of seeds on any alien or invasive species into the watercourses; ▪ Ensure that routine inspections and monitoring of any instream infrastructure are undertaken to manage the establishment of indigenous vegetation and reduce the presence of any alien or invasive plant species; and ▪ Monitoring for the establishment for alien and invasive vegetation species must be undertaken, specifically at the road crossings. Should alien and invasive plant species be identified, they must be removed and disposed of as per an alien and invasive species control plan and the area must be revegetated with suitable indigenous vegetation. 		<p>Storm Water Management Plan</p> <p>Ensure the EMPr is adhered to</p> <p>Erosion plan implemented and hydrological measures in place</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>biota of the watercourses; and</p> <ul style="list-style-type: none"> ▪ Proliferation of opportunistic alien and invasive species due to ongoing disturbances. 			
<p>Potential indirect impacts caused by the proposed infrastructure components not directly traversing watercourses:</p> <ul style="list-style-type: none"> ▪ The all other surface infrastructure components outside the 32m NEMA ZoR <p>These indirect impacts may result in:</p> <ul style="list-style-type: none"> ▪ Potential disturbances to the buffer zone surrounding the watercourse, making the watercourses vulnerable to the invasion of alien and invasive 	<ul style="list-style-type: none"> ▪ No indiscriminate movement of construction equipment in the buffer zones surrounding the watercourses may be permitted. Use must be made of the existing roads only; ▪ Vehicles used in the development site must be regularly washed (within a non-permeable area or off-site) to avoid the dispersal of seeds on any alien or invasive species into the surrounding terrestrial environment and the subsequent dispersal thereof into the watercourses; and ▪ Ensure that routine inspections and monitoring of surface infrastructure are undertaken to manage the establishment of indigenous vegetation and the presence of any alien or invasive plant species, so as to reduce the spread of such species into the watercourses. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
vegetation species; and <ul style="list-style-type: none"> ▪ Reduction in the surface roughness surrounding the watercourses. 			
Potential direct impacts caused by the proposed infrastructure components directly traversing watercourses such as: <ul style="list-style-type: none"> ▪ Road crossings through the watercourses (new and existing); and ▪ O&M and substation alternative 4 directly within a watercourse (However it is assumed that this surface infrastructure component will be located outside the watercourse and the 32m NEMA ZoR, which will then not pose any direct negative impacts to the watercourse – see indirect 	<ul style="list-style-type: none"> ▪ Routine maintenance of the roads must be undertaken to ensure that no concentration of flow and subsequent erosion occurs due to the road crossings. Such maintenance activities must specifically be undertaken after high rainfall events; ▪ Stormwater runoff from the road crossings should be monitored (by the Operation and Maintenance (O&M) Manager), to ensure that no erosion of the watercourses occurs. Stormwater should be allowed to diffusely spread across the landscape, by ensuring adequate surface roughness in the watercourse (through vegetation and rocky areas); ▪ Maintenance vehicles must make use of dedicated access roads and no indiscriminate movement in the watercourses may be permitted; ▪ During periodic maintenance activities of the roads, monitoring for erosion should be undertaken; and ▪ Should erosion be observed, caused by the road crossings, the area must be rehabilitated by infilling the erosion gully and revegetation thereof with suitable indigenous vegetation. Use can also be made of rocks collected from the surrounding area to infill any area prone to erosion, as a natural dispersal mechanism. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>impacts assessment below).</p> <p>These direct impacts may result in:</p> <ul style="list-style-type: none"> ▪ Concentrated runoff from the road/surface infrastructure leading to potential erosion and subsequent sedimentation of the watercourses (increase in the sediment load) and turbulent flows when surface water is present; and ▪ Higher flood peaks into the watercourses due to reduced surface roughness in the watercourses and immediate vicinity of the surface infrastructure. 			
<p>Potential indirect impacts caused by the proposed infrastructure components not</p>	<ul style="list-style-type: none"> ▪ No water used as part of the substation cleaning activities (if any) may enter the watercourses. It should be ensured that the water is collected in stormwater management systems within the 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>directly traversing watercourses:</p> <ul style="list-style-type: none"> ▪ All other surface infrastructure components outside the 32m NEMA ZoR <p>These indirect impacts may result in:</p> <ul style="list-style-type: none"> ▪ Concentrate surface water entering the watercourses leading to potential erosion and additional sediment loads within the watercourses; ▪ Potential for contaminated surface water (from cleaning activities) that may enter the watercourses. 	<p>development area. This must be included in the Stormwater Management Plan⁸ for the proposed development; and</p> <ul style="list-style-type: none"> ▪ No concentrated surface water flow from the surface infrastructure areas may enter the watercourses. Flow must be spread in a diffuse manner over the landscape to eventually enter the watercourses. This can be achieved by ensuring a high surface roughness of the buffer area surrounding the watercourses and by the strategic placement of either permanent or temporary energy dissipation structures. 		
Decommissioning Phase			
<p>Potential impacts that may result due to the</p>	<ul style="list-style-type: none"> ▪ No indiscriminate movement of construction equipment in the watercourses and buffer zones surrounding the watercourses may 	<p>Holder of the EA</p>	<p>All waste managed according to approved Method Statement</p>

⁸ Hydrological Assessment, Stormwater Management Plan (SWMP) and Erosion Control Plan has been compiled by suitably qualified specialist. Hydrological Assessment, SWMP and Erosion Control Plan forms part of FEIAR (**Appendix 6G**) and Final EMPr, which has been submitted to DEFF for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>decommissioning activities:</p> <ul style="list-style-type: none"> ▪ Clearing of habitat that has established in previous phases, resulting in a disturbed ecological structure; ▪ Compaction and disturbance of soils due to decommissioning activities, making the impacted areas unfavourable for the establishment of vegetation and may allow opportunistic alien and invasive species to establish in the nearby watercourses; and ▪ Movement of construction vehicles within the watercourses, disturbing 	<p>be permitted. Use must be made of the existing roads during the decommissioning phase;</p> <ul style="list-style-type: none"> ▪ All surface infrastructure must be decommissioned. All materials must be removed from the watercourses (where applicable) and may temporarily be stockpiled outside the 32m NEMA ZoR, where after is must be removed from site and disposed of at a registered disposal facility; ▪ Should road crossings be decommissioned, road footprint areas within the watercourse must be levelled to the same level and shape as that of the upstream and downstream reaches. This will ensure a continuous bed level and prevent any concentration of surface flow from occurring; ▪ Watercourse embankments must be suitably rehabilitated (shaped and revegetated) to prevent any erosion from occurring; ▪ All bare areas in the study area, specifically where vegetation was initially cleared for surface infrastructure components) must be ripped and be revegetated within suitable indigenous vegetation species; ▪ All areas revegetated must be monitored until suitable basal cover has been re-established. Follow up revegetation should take place in areas where initial revegetation is not successful; ▪ It is recommended that a Watercourse Rehabilitation and Management Plan be compiled and implemented once the layout plan has been finalised⁹. Implementation must be overseen by a suitably qualified Environmental Site Officer (ESO) and the ESO must sign off the rehabilitation before the relevant contractors leave site; and ▪ Post-closure monitoring of the watercourses (for a period of 3 years), with specific mention of the invasion of alien vegetation species) is recommended to be undertaken. 		<p>Ensure the EMPr is adhered to</p> <p>Alien Plant Management Plan Implemented</p> <p>Plant Rehabilitation Implemented</p> <p>Watercourse Rehabilitation and Management Plan implemented</p>

⁹ Watercourse Rehabilitation and Management Plan has been compiled by Freshwater Ecologist and forms part of EIA Report (**Appendix 6G**) and EMPr

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>established biota therein.</p>			
<ul style="list-style-type: none"> ▪ Site disturbance and trampling of vegetation resulting in increased runoff, which could lead to erosion and alteration of the geomorphology of the watercourses (direct and indirect); ▪ Disturbance to the erodible soils, that may potentially result in an increased risk of bank incision, sheet erosion and gully formation in the watercourses and their surrounding area; ▪ Increased movement of construction vehicles within the watercourses (utilising 	<ul style="list-style-type: none"> ▪ No indiscriminate movement of construction equipment through the watercourses outside of the existing crossing point or driving in unmarked areas through the buffer zones of the watercourses may be permitted. This will avoid any disturbance to the hydrological regime of the watercourses as disturbances has already occurred and the existing road crossings are considered to promote hydrological connectivity and avoid any concentrated flow in the watercourses; ▪ High flood peaks from the decommissioning footprint areas can be mitigated by ensuring that no concentrated runoff from the surface infrastructure area and subsequent cleared area enters the watercourses. The velocity of surface water flow from these areas must be reduced by ensuring that the vegetation in the buffer area surrounding the watercourses are intact or by the strategic placement of silt traps or haybales as a means to obstruct flow but still allow flow to percolate at a reduced velocity and encourages a diffuse flow pattern¹⁰; ▪ Areas where surface infrastructure have been decommissioned and removed must be suitably compacted and revegetated to ensure that no erosion occurs which may contribute to the sediment load of the watercourses; and ▪ Should erosion gullies be noted, these areas must be rehabilitated by infilling them with suitable soil and ensuring the area is vegetated. The increased surface roughness will discourage concentrated flow paths to develop and ensure diffuse flow patterns. 		

¹⁰ A Flood Assessment has been undertaken and will be implemented and strictly adhered to during operational phase. This assessment can be made available on request.

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>watercourse road crossings) resulting in soil compaction; and</p> <ul style="list-style-type: none"> ▪ Potential runoff from stockpiles, earthwork activities and disposal of hazardous materials contributing to the watercourse sediment load. 			
Cumulative			
<ul style="list-style-type: none"> ▪ Loss of watercourse vegetation and subsequent habitat, due to watercourse road crossings and potential infrastructure located in the watercourses; and ▪ Changes to the pattern, flow and timing of surface water in the drainage systems due to land use changes in the 	<ul style="list-style-type: none"> ▪ The mitigation measures pertaining to the construction of new road infrastructure must be adhered to, specifically to avoid erosion and only allow new road crossings where authorised; ▪ Continuous and more frequent use of the roads and movement within the watercourses and surrounding buffer areas during the life of the proposed development may compromise the integrity of the watercourses. As such it is highly recommended that a Watercourse Maintenance and Management Plan (WMMP) be implemented, to avoid any unnecessary impacts and to ensure adequate mitigation of activities that may directly impact on the watercourses, in order to avoid extensive cumulative impacts from occurring. This WMMP must detail¹¹: <ul style="list-style-type: none"> ○ Alien and invasive plant species control; ○ Sediment and erosion control; and ○ Hydrological connectivity. 	Holder of the EA	<p>Key sensitive areas avoided</p> <p>Watercourse Maintenance and Management Plan (WMMP) implemented</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Storm Water Management Plan implemented</p> <p>Ensure the EMPr is adhered to</p> <p>Erosion plan implemented and hydrological measures in place</p>

¹¹ Watercourse Maintenance and Management Plan (WMMP) has been compiled by Freshwater Ecologist (**Appendix 6G**) and forms part of the EIA Report and EMPr which has been submitted for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
catchment, potentially resulting in changes to the hydrological regime of the larger downstream watercourses.			Alien Plant Management Plan Implemented

Terrestrial Ecology:

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Clearing of vegetation for construction of infrastructure will lead to direct loss and/or fragmentation of indigenous natural vegetation.	<ul style="list-style-type: none"> ▪ Keep footprint as small as possible by selecting options that affect a smaller overall area of habitat. ▪ As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores, taking the ecological sensitivity map into account. ▪ Wherever technically possible, avoid sensitive features and habitats when locating infrastructure. ▪ Cross streams and other linear features at right angles, where possible, and also near their end-points or where there are natural breaks in the feature of concern. ▪ Apply mitigation measures according to assessment by Surface Water Specialist. ▪ Where possible, access roads should be located along existing farm, access and district roads, even if these require upgrading. ▪ Restrict impact to development footprint only and limit disturbance spreading into surrounding areas. ▪ Footprints of laydown areas, construction sites, roads and substation sites should be clearly demarcated. ▪ Ensure all possible steps are taken to limit erosion of surfaces, including proper management of storm-water runoff. 	Holder of the EA	

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
	<ul style="list-style-type: none"> ▪ Compile a Rehabilitation Plan prior to the commencement of construction. ▪ No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities, unless for maintenance purposes, in which case all reasonable steps should be taken to limit damage to natural areas. ▪ No driving of vehicles off-road outside of construction areas. 		<p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p>
<p>Direct loss of individuals of protected and/or listed plant species, as well as loss of habitat for these species.</p>	<ul style="list-style-type: none"> ▪ It is a legal requirement to obtain permits for specimens that will be lost. ▪ A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads (final infrastructure layout). The best season is late Winter to early Spring. ▪ It is possible that some plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas, but the description and appropriateness of such measures must be included in a Plant Rescue Plan. Any such measures will reduce the irreplaceable loss of resources as well as the cumulative effect. Note that Search and Rescue is only appropriate for some species and that a high mortality rate can be expected from individuals of species that are not appropriate to transplant. ▪ A Plant Rescue Plan must be compiled to be approved by the appropriate authorities. ▪ For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken for a period of three years after translocation and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites to evaluate mortality relative to wild populations. 		<p>Ensure the EMP is adhered to</p> <p>All staff members are aware of the EMP requirements relevant to them</p> <p>Plant Rehabilitation Implemented</p> <p>Plant Rescue Plan Implemented</p> <p>Ecological Management Plan</p> <p>Alien Plant Management Plan Implemented</p> <p>Dust monitoring undertaken as per best practice guidelines</p> <p>Rehabilitation monitored</p>
<p>Direct loss of habitat favourable for various faunal species,</p>	<ul style="list-style-type: none"> ▪ Restrict impact to development footprint only and limit disturbance spreading into surrounding areas. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
including sites where mobile fauna would obtain refuge and sedentary fauna would have permanent homes	<ul style="list-style-type: none"> ▪ Limit clearing of natural habitat designated as sensitive, especially rocky outcrops, cliffs and riparian habitats, where possible. This has already been applied during the Design phase of the project where attempts have been made to avoid sensitive habitats. ▪ All mitigation measures that apply to “Loss and/or fragmentation of indigenous natural vegetation” also apply here. 		
Direct mortality due to machinery, construction and/or increased traffic.	<ul style="list-style-type: none"> ▪ Access to sensitive areas outside of development footprint should not be permitted during construction. ▪ Speed limits should be set for all roads on site, as well as access roads to the site. Strict enforcement of speed limits should occur – install speed control measures, such as speed humps, if necessary. ▪ Night driving should be strictly limited and, where absolutely required, lower speed limits should apply for night driving. ▪ Pre-construction walk-through in front of construction must be undertaken to move any individual animals, such as tortoises, prior to construction. ▪ No dogs or other pets should be allowed on site, except those confined to landowners' dwellings. ▪ Personnel on site should undergo environmental induction training, including the need to abide by speed limits, the increased risk of collisions with wild animals on roads in rural areas. ▪ Proper waste management must be implemented, ensuring no toxic or dangerous substances are accessible to wildlife. This should also apply to stockpiles of new and used materials to ensure that they do not become a hazard. 		
Displacement of mobile fauna as a result of habitat loss, noise, dust, and general activity.	<ul style="list-style-type: none"> ▪ Restrict impact to development footprint only and limit disturbance spreading into surrounding areas. ▪ Access to sensitive areas outside of development footprint should not be permitted during construction. ▪ Adhere to speed limits – install speed control measures, such as speed humps, if necessary ▪ No hunting of protected species. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
	<ul style="list-style-type: none"> ▪ Personnel to be undergo induction and be educated about protection status of species, including distinguishing features to be able to identify protected species. ▪ Report any mortality of protected species to conservation authorities 		
Increased poaching and/or illegal collecting due to improved access to previously remote areas.	<ul style="list-style-type: none"> ▪ Personnel to be educated about protection status of species, including distinguishing features, to be able to identify protected species. ▪ Implement strict access control for the site. ▪ No hunting / collecting of protected species. ▪ Report any illegal collection to conservation authorities. 		
Negative effects on physiological functioning of vegetation due to dust deposition	No speeding on access roads – install speed control measures, such as speed humps, if necessary, and penalties for non-compliance. Excessive dust can be controlled by using appropriate dust-control measures.		
Loss of integrity of CBAs due to direct loss of habitat and/or fragmentation of core areas and linkages.	All mitigation measures suggested for Impact 1 (Loss and/or fragmentation of indigenous natural vegetation) apply to this potential impact.		
Establishment and spread of declared weeds and alien invader plants due to the clearing and disturbance of indigenous vegetation	<ul style="list-style-type: none"> ▪ Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. ▪ Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan¹². ▪ Implement control measures, as per the Alien Management Plan. 		
Changes to behavioural patterns of animals, including possible migration away or	<ul style="list-style-type: none"> ▪ Access to sensitive areas outside of development footprint should not be permitted during construction. ▪ Personnel to be educated about environmental sensitivities and issues on site. 		

¹² Ecologist has compiled this plan. Has formed part of FEIAr (**Appendix 6H**) and Final EMPr which has been submitted to the DEFF for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
towards the project area	<ul style="list-style-type: none"> ▪ Appropriate lighting should be installed to minimize impacts on nocturnal animals, as per visual specialist assessment. ▪ Construction activities should not be undertaken at night. 		
Increased runoff and erosion due to clearing of vegetation, construction of hard surfaces and compaction of surfaces, leading to changes in downslope areas.	<ul style="list-style-type: none"> ▪ Maintain adequate buffer zones around hydrological features so that these do not become degraded from runoff and erosion. ▪ Compile and implement a Stormwater Management Plan¹³, which highlights control priorities and areas and provides a programme for long-term control. ▪ Undertake regular monitoring to detect erosion features early so that they can be controlled. ▪ Implement control measures. ▪ Construct proper culverts, bridges and/or crossings at drainage-line crossings, and other attenuation devices to limit overland flow. 		
Operational Phase			
Continued disturbance of indigenous natural vegetation	<ul style="list-style-type: none"> ▪ No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities, unless for maintenance purposes, in which case all reasonable steps should be taken to limit damage to natural areas. ▪ No driving of vehicles off-road. ▪ Implement Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas¹². ▪ Access to sensitive areas outside of development footprint should not be permitted during operation. ▪ Surface runoff and erosion must be properly controlled, and any issues addressed as quickly as possible. ▪ Continued implementation and monitoring of Rehabilitation Plan. 	Holder of the EA	
Direct mortality due to increased traffic, illegal collecting, poaching	<ul style="list-style-type: none"> ▪ Personnel and vehicles should be restricted to access; internal roads and no off-road driving should occur. ▪ No speeding on access roads – install speed control measures, such as speed humps, if necessary 		

¹³ Plan has been compiled by suitably qualified specialist and has formed part of FEIAR (**Appendix 6G**) and Final EMPr which has been submitted to the DEFF for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
and/or entanglement with infrastructure.	<ul style="list-style-type: none"> ▪ No illegal collecting of any individuals, particularly the Armadillo Girdled Lizard. ▪ No hunting of protected species or hunting of any other species without a valid permit. ▪ Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species. ▪ Prevent unauthorised access to the site – project roads provide access to remote areas that were not previously easily accessible for illegal collecting or hunting. 		<p>Ensure the EMPr is adhered to</p> <p>Ensure the conditions of the EA are adhered to</p> <p>All staff members are aware of the EMPr requirements relevant to them</p> <p>Plant Rescue Plan Implemented</p> <p>Ecological Management Plan</p>
Establishment and spread of declared weeds and alien invader plants due to presence of disturbed habitats, migration corridors and disturbance vectors.	<ul style="list-style-type: none"> ▪ Compile and implement an Alien Management Plan⁸⁶, which highlights control priorities and areas and provides a programme for long-term control. ▪ Undertake regular monitoring to detect alien invasions early so that they can be controlled. This should include formal monitoring on an annual basis by a qualified botanist for up to five years ▪ Implement control measures on an ongoing basis, according to the Alien Management Plan¹². ▪ Do NOT use any alien plants during rehabilitation. 		<p>Impacts avoided or managed as per specialist recommendations</p> <p>Alien Plant Management Plan Implemented</p> <p>Plant Rehabilitation Implemented</p>
Continued runoff and erosion due to presence of hard surfaces that change the infiltration and runoff properties of the landscape.	<ul style="list-style-type: none"> ▪ Maintain adequate buffer zones around hydrological features so that these do not become degraded from runoff and erosion. ▪ Compile and implement a Stormwater Management Plan¹³, which highlights control priorities and areas and provides a programme for long-term control. ▪ Undertake regular monitoring to detect erosion features early so that they can be controlled. ▪ Implement control measures. ▪ Construct proper culverts, bridges and/or crossings at drainage-line crossings, and other attenuation devices to limit overland flow. 		<p>Erosion plan implemented and hydrological measures in place</p> <p>Storm Water Management Plan implemented</p> <p>Ecological Management Plan Implemented</p>
Changes to behavioural patterns of animals, including possible migration away or	<ul style="list-style-type: none"> ▪ Personnel to be educated about environmental sensitivities and issues on site. ▪ Appropriate lighting should be installed to minimize impacts on nocturnal animals, as per assessment by visual specialist. ▪ Routine maintenance activities should not be undertaken at night. 		<p>All waste managed according to approved Method Statement</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
towards the project area.	<ul style="list-style-type: none"> ▪ Noise and light pollution should be managed according to guidelines from the noise specialist study and visual specialist assessment respectively. 		
Decommissioning Phase			
Additional disturbance of indigenous natural vegetation.	<ul style="list-style-type: none"> ▪ No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities, unless for maintenance purposes, in which case all reasonable steps should be taken to limit damage to natural areas. ▪ No driving of vehicles off-road. ▪ Implement Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas¹². ▪ Access to sensitive areas outside of development footprint should not be permitted during operation. ▪ Surface runoff and erosion must be properly controlled, and any issues addressed as quickly as possible. ▪ Continued implementation and monitoring of Rehabilitation Plan¹⁴. 	Holder of the EA	<p>All waste managed according to approved Method Statement</p> <p>Traffic management Strategy Implemented</p> <p>Ensure the EMPr is adhered to</p> <p>Monitoring to detect alien invasions undertaken</p> <p>Monitoring of decommissioning phase rehabilitation undertaken</p>
Direct mortality due to machinery, decommissioning and/or increased traffic.	<ul style="list-style-type: none"> ▪ Personnel and vehicles to avoid sensitive habitats. ▪ No speeding on access roads – install speed control measures, such as speed humps, if necessary ▪ No illegal collecting of any individuals, particularly the Armadillo Girdled Lizard. ▪ No hunting of protected species or hunting of any other species without a valid permit. ▪ Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species. ▪ Report any sighting's to conservation authorities. ▪ Prevent unauthorised access to the site – project roads provide access to remote areas that were not previously easily accessible for illegal collecting or hunting. 		

¹⁴ Ecologist has compiled this plan. Has formed part of FEIAR (**Appendix 6H**) and Final EMPr which has been submitted to the DEFF for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Displacement of mobile fauna as a result of noise, dust, and general activity.	<ul style="list-style-type: none"> ▪ Restrict impact to development footprint only and limit disturbance spreading into surrounding areas. ▪ No speeding on access roads – install speed control measures, such as speed humps, if necessary ▪ No hunting of protected species ▪ Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species. ▪ Report any siting's to conservation authorities. 		
Negative effects on physiological functioning of vegetation due to dust deposition.	<ul style="list-style-type: none"> ▪ No speeding on access roads – install speed control measures, such as speed humps, if necessary, and penalties for non-compliance. ▪ Excessive dust can be controlled by using appropriate dust-control measures. 		
Continued establishment and spread of declared weeds and alien invader plants due to presence of disturbed habitats, migration corridors and disturbance vectors.	<ul style="list-style-type: none"> ▪ Implement an alien management plan¹⁴, which highlights control priorities and areas and provides a programme for long-term control. ▪ Undertake regular monitoring to detect alien invasions early so that they can be controlled. Post-decommissioning monitoring should continue for an appropriate length of time to ensure that future problems are avoided. The required time-period should be indicated in the Alien Invasive Management Plan. ▪ Do NOT use any alien plants during any rehabilitation that may be required. 		
Changes to behavioural patterns of animals, including possible migration away or towards the project area.	<ul style="list-style-type: none"> ▪ Access to sensitive areas outside of infrastructure footprint should not be permitted during decommissioning. ▪ Personnel to be educated about environmental sensitivities and issues on site ▪ Appropriate lighting should be installed to minimize impacts on nocturnal animals. ▪ Project decommissioning activities should not be undertaken at night. ▪ Noise and light pollution should be managed according to guidelines from the noise specialist study and visual specialist 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
	respectively. No dangerous pits, trenches, etc. should remain on site after rehabilitation.		
Cumulative Impacts			
Clearing of vegetation on site will lead to regional loss, degradation and/or fragmentation of indigenous natural vegetation.	All projects should adhere to the site-specific recommendations of the ecologists to ensure that all facilities mitigate impacts where possible.	Holder of the EA	<p>Site-specific recommendations of ecologist adhered to</p> <p>Buffer zones around hydrological features applied and follow legal requirements and/or recommendations of hydrological specialist</p> <p>Min. buffer zones of 20m around identified sensitive features adhered to</p>
Direct loss of individuals of protected and/or listed plant species, as well as loss of habitat for these species.			
Disruption, disturbance, and alteration of landscape ecological processes due to loss of habitat across a number of projects.			
Landscape level impacts on populations of fauna as a result of loss of multiple habitats, changes in behaviour, reduction in range, and migration.			
Degradation of habitat as a result of landscape level increase in the spread of declared weeds and alien invader plants.			

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Loss of individuals and populations due to secondary impacts, such as hunting, road kill and illegal collecting.			
Loss, degradation or fragmentation of areas of habitat categorised as CBAs thus leading to reduced effectiveness of Provincial conservation planning.			

The following mitigation measure to increase the permeability of proposed fences to medium-to-small wildlife and wildlife-friendly designs must also be adhered to (where possible):

- Increase permeability of the fences to medium-to-small wildlife and wildlife-friendly designs. This will allow for wildlife to either jump over or crawl under the fence without causing harm to the animal. Smooth wire, instead of barbed wire should be used to avoid damage to the animal. Dimensions should allow for small to medium sized mammals and reptiles to pass underneath without causing harm.
- If parts of the facility are to be fenced, no electrified strands must be placed within 30cm of the ground as some species such as tortoises are susceptible to electrocution as they do not move

Avifauna

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Displacement of priority species due to disturbance (noise and movement) associated with the construction of the associated infrastructure.	<ul style="list-style-type: none"> ▪ Construction activity should be restricted to the immediate footprint of the infrastructure. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical. ▪ The recommendations of the ecological specialist studies must be strictly implemented, especially as far as limitation of the construction footprint and rehabilitation of disturbed areas is concerned. 	Holder of the EA	<p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements and best practice guidelines</p> <p>Adherence to the EMPr</p> <p>Noise and lighting managed according to approved Method Statement</p>
Operation Phase			
Displacement of priority avifauna due to habitat transformation associated with the associated infrastructure	<ul style="list-style-type: none"> ▪ No modules to be constructed in the recommended module-free zones. ▪ The recommendations of the ecological studies must be strictly implemented, especially as far as limitation of the construction footprint and rehabilitation of transformed areas is concerned. 	Holder of the EA	<p>Impacts avoided or managed as per specialist recommendations.</p> <p>Ensure the conditions of the EA are adhered to.</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p> <p>Noise and lighting managed according to approved Method Statement</p>
Entrapment in perimeter fences resulting in the mortality of priority species.	A single perimeter fence should be used.		
Collisions of priority avifauna with the solar panels resulting in the mortality of priority species.	No mitigation is required due to the very low expected magnitude		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Electrocutions on the proposed 33kV overhead line.	<ul style="list-style-type: none"> ▪ The final pole design must be signed off by the bird specialist to ensure that a bird-friendly design is used¹⁵. ▪ With regards to the infrastructure within the substation yard, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively. 		
Decommissioning Phase			
The de-commissioning of the associated infrastructure will result in a significant amount of movement and noise, which will lead to displacement of priority avifauna from the site due to disturbance. It is highly likely that most priority species will temporarily vacate the site footprint.	<ul style="list-style-type: none"> ▪ Activity should be restricted to the immediate footprint of the infrastructure. ▪ Measures to control noise and dust should be applied according to current best practice in the industry. ▪ Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical. ▪ The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the footprint and rehabilitation of disturbed areas is concerned. 	Holder of the EA	<p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Noise and lighting managed according to approved Method Statement</p> <p>Adherence to the EMPr</p>
Cumulative impacts			
Displacement due to disturbance and habitat transformation associated with the construction of the substation.	Implement all the mitigation measures as detailed in the relevant bird impact assessment reports.	Holder of the EA	Impacts avoided or managed as per specialist recommendations
Entrapment in perimeter fences.			Ensure the conditions of the EA are adhered to
Compliance to all legislative requirements			

¹⁵ Final pole design will be confirmed during detailed design stage (prior to construction commencing and will be signed off by the bird specialist)

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Electrocutions on the 33kV OHL and in the substations.			Adherence to the EMPr Operational monitoring programme implemented

Bats

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
During construction, bat roosts can be destroyed during earth levelling processes that involves levelling of clumps of trees. Bat mortalities can occur during roost destruction.	Adhere to the bat sensitivity map, avoid areas of high bat sensitivity and their buffers, this will include roosting habitat that may potentially offer micro roosts.	Holder of the EA	Impacts avoided or managed as per specialist recommendations Ensure the conditions of the EA are adhered to Compliance to all legislative requirements and best practice guidelines Adherence to the EMPr Avoidance of areas of high bat sensitivity and their buffers

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>During construction, bat roosts can be destroyed during earth levelling processes that involves levelling of rocky outcrops (small and large) or steep exposed surface rock (small cliffs). Bat mortalities can occur during roost destruction.</p>	<p>Adhere to the bat sensitivity map, avoid areas of high bat sensitivity and their buffers, this will include roosting habitat that may potentially offer micro roosts.</p>	<p>Holder of the EA</p>	<p>Areas of high bat sensitivity and their buffers avoided</p> <p>Vegetation rehabilitation plan implemented and adhered to</p> <p>Impacts avoided or managed as per specialist recommendations.</p> <p>Ensure the conditions of the EA are adhered to.</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p>
<p>During construction prime bat foraging habitat may be destroyed due to vegetation clearing and earth levelling processes.</p>	<p>Adhere to the bat sensitivity map, avoid areas of high bat sensitivity and their buffers, this will include prime bat foraging habitats. Vegetation should be allowed to recover where it was cleared after the decommissioning of the facility, and where significant topsoil was removed a vegetation rehabilitation specialist must be consulted.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Operation Phase			
<p>The presence of security lights on and around substations can create significant light pollution that will impact bat feeding habits and species compositions negatively, by discouraging photophobic (light averse) species and encouraging species that readily forage around lights attracting insects. This can cause local displacement of photophobic bat species.</p>	<p>Only use outside security lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools. Ensure all lights are down hooded, and where possible and practical utilise lights with colour temperatures that attracts less insects.</p>	<p>Holder of the EA</p>	<p>Impacts avoided or managed as per specialist recommendations.</p> <p>Ensure the conditions of the EA are adhered to.</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p> <p>Noise and lighting managed according to approved Method Statement</p>
Decommissioning Phase			
<p>Foraging habitat destruction due to temporary stockpiles, storage facilities and construction camps.</p>	<p>Adhere to the bat sensitivity map, avoid areas of high bat sensitivity and their buffers. Vegetation should be allowed to recover where it was cleared.</p>	<p>Holder of the EA</p>	<p>Areas of high bat sensitivity and their buffers avoided</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
			<p>Compliance to all legislative requirements</p> <p>Noise and lighting managed according to approved Method Statement</p> <p>Adherence to the EMPr</p> <p>Vegetation rehabilitation plan implemented and adhered to</p>
Cumulative impacts			
<p>The presence of security lights on and around the substation, as well as other renewable energy facilities in the area, can create significant light pollution that will impact bat feeding habits and species compositions negatively on a larger geographical scale. Photophobic (light averse) species will be discouraged and species that readily forage for</p>	<p>Only use outside security lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools. Ensure all lights are down hooded, and where possible and practical utilise lights with colour temperatures that attracts less insects. To minimise cumulative impacts, it's critical for all renewable energy facilities to take responsibility for their own required mitigation measures.</p>	<p>Holder of the EA</p>	<p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p> <p>Noise and lighting managed according to approved Method Statement</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>insects around lights will be encouraged. This can cause regional displacement of photophobic bat species.</p>			
<p>During construction prime bat foraging habitat may be destroyed due to vegetation clearing and earth levelling processes. Cumulatively the lost foraging habitat can be significant for all facilities in the area, however due to all facilities within a 35km radius being wind energy, the foraging habitat lost is not prime foraging habitat and generally in widely dispersed pockets.</p>	<p>Adhere to the bat sensitivity map, avoid areas of high bat sensitivity and their buffers, this will include prime bat foraging habitats. Vegetation should be allowed to recover where it was cleared after the decommissioning of the facility, and where significant topsoil was removed a vegetation rehabilitation specialist must be consulted. To minimise cumulative impacts, it's critical for all renewable energy facilities to take responsibility for their own required mitigation measures.</p>		
<p>During construction, bat</p>			

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>roosts can be destroyed during earth levelling processes that involves levelling of rocky outcrops (small and large) or steep exposed surface rock (small cliffs). Bat mortalities can occur during roost destruction. If other facilities in the area destroy bat roosts during construction, the cumulative effect on regional populations can be significant. However, all facilities within a 35km radius are wind energy facilities, with smaller more dispersed pockets of habitat destruction.</p>			

<p>During construction, bat roosts can be destroyed during earth levelling processes that involves levelling of single trees or clumps of trees, or demolishing of buildings. Bat mortalities can occur during roost destruction. If other facilities in the area destroy bat roosts during construction, the cumulative effect on regional populations can be significant. However, all facilities within a 35km radius are wind energy facilities, with smaller more dispersed pockets of habitat destruction.</p>			
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Heritage and Archaeology

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
<p>Construction activities close to the following identified structures can damage and cause irreparable damage or destroy the resource.</p> <ul style="list-style-type: none"> ▪ OYPV-03 ▪ OYPV-04 ▪ OYPV-08 ▪ OYPV-09 ▪ OYPV-10 ▪ OYPV-22 ▪ OYPV-23 	<ul style="list-style-type: none"> ▪ Apply a 50m buffer to these sites. ▪ Demarcate as 'no-go' areas ▪ A slight alteration to the project layout should be made. The proposed connecting road and watercourse crossing located near sites OYPV-22 and OYPV-23 should be moved 50m away from these sites, to allow for the 50m buffer. ▪ If development occurs within 50m, the middens need to be satisfactorily studied and recorded before impact occurs. ▪ The applicable HWC Heritage destruction permits will need to be applied for through an approved work program. 	Holder of the EA	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Heritage Management Plan Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>
<p>Construction activities close to the following resources (Stone Age and Rock Art sites) can damage and cause irreparable damage or destroy the resource:</p> <ul style="list-style-type: none"> ▪ OYPV-11 	<ul style="list-style-type: none"> ▪ An archaeological walk down of the final approved layout will be required before construction commences¹⁶; ▪ Any heritage features of significance identified during this walk down will require formal mitigation or where possible a slight change in design could accommodate such resources¹⁶. ▪ Implement a 50-meter buffer around all structures with a rating of IIIc and higher ▪ Implement a 200-meter buffer around the rock art site at (OYPV-11) 		

¹⁶ A heritage walk-through of the site was undertaken by a qualified specialist based on the recommendation as well as for the final proposed layout and EMP to obtain approval. The results of the walk-through are presented in the Heritage Management Plan (HMP) which is included in **Appendix 6E** of the FEIAR.

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ OYPV-13 <p>Rock art sites are extremely sensitive to human actions and are easily damaged.</p>	<ul style="list-style-type: none"> ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations¹⁷. ▪ Chance finds protocol must be developed that includes the process of work stoppage in immediate vicinity of find, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. ▪ Demarcate as 'no-go' areas 		
<p>Destruction or damage to previously unidentified archaeological or historical resources</p>	<p>A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations¹⁷.</p>		

¹⁷ Management plan for heritage resources has been compiled by qualified specialist, and includes the results of the specialist walk-through. HMP has been provided in **Appendix 6E** of the FEIAR and has also been submitted to the DEFF with Final EIA Report for approval

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Disturbance, damage or destruction of scientifically important, legally-protected fossils preserved at or below the ground due to surface clearance, excavations into bedrock and superficial sediments</p>	<ul style="list-style-type: none"> ▪ Monitoring of all major surface clearance and deeper (>1m) excavations for fossil material (bones, teeth, petrified wood, plant-rich beds etc.). ▪ Significant fossil finds to be safeguarded and reported to Heritage Western Cape. Recording and sampling of important new fossil finds and relevant geological data by specialist palaeontologist. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Operational Phase			
<p>Uncontrolled access to the following Homesteads, structures (kraals and buildings), and burial grounds could result in damage that cannot be reversed:</p> <ul style="list-style-type: none"> ▪ OYPV-03 ▪ OYPV-04 ▪ OYPV-08 ▪ OYPV-09 ▪ OYPV-10 	<ul style="list-style-type: none"> ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during operations¹⁷. ▪ Identify as 'no-go' areas 	Holder of the EA	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Heritage Management Plan Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>
<p>Construction activities close to the following identified structures (Historical middens) can damage and cause irreparable damage or destroy the resource:</p> <ul style="list-style-type: none"> ▪ OYPV-22 ▪ OYPV-23 	<ul style="list-style-type: none"> ▪ Apply a 50m buffer to these sites. ▪ A slight alteration to the project layout should be made. The proposed connecting road and watercourse crossing located near sites OYPV-22 and OYPV-23 should be moved 50m away from these sites, to allow for the 50m buffer. ▪ If development occurs within 50m, the middens need to be satisfactorily studied and recorded before impact occurs. ▪ The applicable HWC Heritage destruction permits will need to be applied for through an approved work program. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Uncontrolled access to the following Stone Age and Rock Art sites could result in damage that cannot be reversed. Rock Art sites are significantly more susceptible for damage:</p> <ul style="list-style-type: none"> ▪ OYPV-11 ▪ OYPV-13 	<ul style="list-style-type: none"> ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during operations¹⁷. ▪ Identify as 'no-go' areas. 		
<p>Due to the size of the area assessed, and the design process requiring surveying before identification of the layout, the possibility of encountering heritage features in non-surveyed areas does exist.</p>	<p>The nature of heritage resources are such that they are non-renewable. The proper mitigation and documentation of these resources can however preserve the data for research.</p> <ul style="list-style-type: none"> ▪ Any heritage features of significance identified during the operational phase will require formal mitigation or where possible accommodate such resources. ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations¹⁷. ▪ A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing Heritage Western Cape (HWC) of such finds and a final process of mitigation implementation. 		
Decommissioning Phase			
<p>A reduction in the population density after decommissioning, can reduce the possibility of human impact on the</p>	<ul style="list-style-type: none"> ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during operations¹⁷. ▪ Identify as no-go areas 	Holder of the EA	

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>following Homesteads, structures (kraals and buildings), and burial grounds:</p> <ul style="list-style-type: none"> ▪ OYPV-03 ▪ OYPV-04 ▪ OYPV-08 ▪ OYPV-09 ▪ OYPV-10 			<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Heritage Management Plan Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p>
<p>Construction activities close to the following identified structures (Historical middens) can damage and cause irreparable damage or destroy the resource:</p> <ul style="list-style-type: none"> ▪ OYPV-22 ▪ OYPV-23 	<ul style="list-style-type: none"> ▪ Apply a 50m buffer to these sites. ▪ A slight alteration to the project layout should be made. The proposed connecting road and watercourse crossing located near sites OYPV-22 and OYPV-23 should be moved 50m away from these sites, to allow for the 50m buffer. ▪ If development occurs within 50m, the middens need to be satisfactorily studied and recorded before impact occurs. ▪ The applicable HWC Heritage destruction permits will need to be applied for through an approved work program. 		<p>Cultural landscape sensitivity guidelines adopted</p>
<p>A reduction in the population density after decommissioning, can reduce the possibility of human impact on the following Stone Age and Rock Art sites:</p> <ul style="list-style-type: none"> ▪ OYPV-11 ▪ OYPV-13 	<ul style="list-style-type: none"> ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during operations¹⁷. ▪ Identify as no-go areas 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Cumulative Impacts			
Homesteads, structures (kraals and buildings), and burial grounds	<ul style="list-style-type: none"> A management plan for the heritage resources¹⁷ needs then to be compiled and approved for implementation during construction and operations. Identify as 'no-go' areas 	Holder of the EA	Impacts to heritage resources managed and avoided as far as possible Chance Find Procedure Implemented
Stone Age and Rock Art sites	<ul style="list-style-type: none"> A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. Identify as 'no-go' areas 		Heritage Management Plan Implemented Cultural Management Plan implemented
Palaeontological heritage - Disturbance, damage or destruction of scientifically important, legally-protected fossils preserved at or below the ground due to surface clearance, excavations into bedrock and superficial sediments.	<ul style="list-style-type: none"> Monitoring of all major surface clearance and deeper (>1m) excavations for fossil material (bones, teeth, petrified wood, plant-rich beds etc.). Significant fossil finds to be safeguarded and reported to Heritage Western Cape. Recording and sampling of important new fossil finds and relevant geological data by specialist palaeontologist. 		Buffer areas being maintained / adhered to Cultural landscape sensitivity guidelines adopted

Cultural Landscapes

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Construction and development close to Stone structures	<ul style="list-style-type: none"> Any construction or access roads must maintain a 100m buffer from identified heritage resources. 	Holder of the EA	

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>(kraals, homesteads, herders' huts, burials, and their associated modern structures) can damage them permanently causing loss of cultural landscape significance. Heritage resources are irreplaceable and damage to them is irreversible.</p>	<ul style="list-style-type: none"> ▪ Construction and site crew must be informed of the significance and vulnerability of the resources and maintain a distance at all times. ▪ ECO must manage the heritage resources and ensure compliance of buffers and distance. ▪ Vulnerable sites must be cordoned off as 'no-go' areas. ▪ If any subsurface construction needs to be done in the vicinity of the heritage resources, a suitably qualified archaeologist should be on site to monitor. ▪ Work plan for management of heritage resources and cultural landscape elements to be included in CMP¹⁸. 		<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>
<p>Construction and development close to Stone age sites and rock art can damage them permanently causing loss of cultural landscape significance. Heritage resources are irreplaceable and damage to them is irreversible. Damage to rock art</p>	<ul style="list-style-type: none"> ▪ Any construction or access roads must maintain a 100m buffer from identified heritage resources. ▪ Construction and site crew must be informed of the significance and vulnerability of the resources and maintain a distance at all times. ▪ ECO must manage the heritage resources and ensure compliance of buffers and distance. ▪ Vulnerable sites must be cordoned off as 'no-go' areas. ▪ If any subsurface construction needs to be done in the vicinity of the heritage resources, a suitably qualified archaeologist should be on site to monitor. ▪ Work plan for management of heritage resources and cultural landscape elements to be included in CMP¹⁸. 		

¹⁸ A HMP has been compiled (**Appendix 6E** of FEIAR) and will be adhered to. Based on feedback received from the heritage specialist in this regard, it was the specialist's opinion that the requirements from the CLA would only need to be implemented when the project is implemented (i.e. before construction commences), starting from the EMP implementation. For this reason, the requirements of the CLA have been included in the HMP for further implementation.

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
sites is common and irreversible.			
<p>Change in land use alters the patterns existing on the landscape including their associated material features.</p> <p>Construction and development close to the structures can damage them permanently causing loss of cultural landscape significance.</p> <p>Heritage resources are irreplaceable and damage to them is irreversible.</p>	<p>The patterns of current land use are to be left in place as far possible including current fence layouts and wind pumps should have a 50m buffer from any new development. Existing roads to be used as far possible without extreme widening and new farm tracks must be minimised. The impact on the land use patterns is neutral if done within the development threshold and will be read as a new, potentially positive, layer of land use.</p>		
<p>Construction and/or road widening can alter the experience of historic roads and in places where stone retaining walls are present, can damage them permanently. Large or heavy construction traffic can damage the</p>	<p>Existing historic roads must be maintained as close to current state as possible. Construction traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any stone retaining walls must be done without reducing the aesthetic and authenticity of the stone structure. Existing roads must be used as far possible and minimally altered.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
roads and associated material.			
The most densely clustered human occupation sites are found along the watercourses on site. Sites of land use and burials are located along watercourses. Development close to the watercourses and confluences has a high potential for negative impact on cultural landscape elements.	Watercourses and confluences must have a buffer of 100m for any development on either side. The development buffer along the watercourse adjacent to an identified 'no-go' area must be 200m.		
Points of intersection are significant as places that influence and determine patterns and processes of the cultural landscape. Inappropriate development at these points can damage the cultural landscape.	Existing watercourse and road intersections must be maintained as close to current state as possible. Existing patterns must be maintained and current points of crossing to be used for new development. Construction traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any crossings must be done without reducing the aesthetic and authenticity of the current site. Intersections of watercourses with main historic route must be maintained as is.		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Changes of land use caused by new development can significantly alter the patterns and characteristics of the cultural landscape and the way people interact with the landscape.</p> <p>Changes of geographical names or introduction of inappropriate names can remove the sense of place and identity.</p>	<p>New geographical names must be appropriate and reflect aspects of the landscape and the new layer of land use. With sensitive development that stays within the threshold and adheres to mitigation measures, the land use and living heritage of the landscape can be improved by introducing new interactions with people.</p>		
<p>Changes of land use, development and an influx of 'outsiders' could negatively impact on potential valuable IKS, language and lifeways of the local population. Loss of biodiversity due to development reduces potentially valuable IKS.</p>	<p>Impacts are to POTENTIAL IKS. Research on IKS in the area would mitigate this impact. There are no local communities currently living on the site so there is no direct impact. Research on IKS in the surrounding areas and local communities can be used to determine any significant resources on the site that may be related to IKS. Without further research, impact assessment on POTENTIAL IKS is not possible. Any known fauna or flora with IKS significance, for example medicinal plants, must be noted by the qualified botanical specialist and must be assessed for potential impacts by development.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Extensive development alters the experience and sense of place of the cultural landscape as a vast area with a thin scatter of human influence. Views onto and from the site will be heavily impacted upon by development.</p>	<p>Development of energy facilities must be located so that views onto them from the surrounding area, historic routes or the significant CLA's identified in the report are minimised. Development must be concentrated on lower valley areas away from ridge slopes and visual intrusion minimised by utilising slope angles, valley undulations and prevalent travel directions to hide development from viewpoints such as historic routes or historic farmstead that are still utilised, such as Baakens Rivier tourism accommodation.</p>		
Operational Phase			
<p>Heritage resources are irreplaceable and damage to them is irreversible. Operational crew and activity of the operational phase can damage Stone structures (kraals, homesteads, herders huts, burials, and their associated modern structures if not managed appropriately.</p>	<ul style="list-style-type: none"> ▪ Operational crew must be informed of the significance and vulnerability of the resources and maintain a 10m distance at all times. Staff manager (unsure of which person would be responsible here) must manage the heritage resources and ensure compliance of buffers and distance. ▪ Vulnerable sites must be cordoned off as 'no-go' areas. ▪ If any subsurface construction needs to be done in the vicinity of the heritage resources, a suitably qualified archaeologist should be on site to monitor. ▪ Work plan for management of heritage resources and cultural landscape elements to be included in CMP¹⁸. 	<p>Holder of the EA</p>	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Heritage resources are irreplaceable and damage to them is irreversible. Operational crew and activity of the operational phase can damage Stone age sites and rock art if not managed appropriately. Damage to rock art sites is common and irreversible.</p>			
<p>Change in land use alters the patterns existing on the landscape including their associated material features. Change of land use is unavoidable and not necessarily negative. Interference with the structures can damage them permanently causing loss of cultural landscape significance. Heritage resources are irreplaceable</p>	<p>Operational crew must be informed of the significance and vulnerability of the resources and maintain a 10m distance at all times. Staff manager (unsure of which person would be responsible here) must manage the heritage resources and ensure compliance of buffers and distance. The patterns of current land use are to be left in place as far possible including current fence layouts and wind pumps should have a 50m buffer from any new development. Existing roads to be used as far possible without extreme widening and new farm tracks must be minimised. The impact on the land use patterns is neutral if done within the development threshold and will be read as a new, potentially positive, layer of land use.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
and damage to them is irreversible.			
Road widening can alter the experience of historic roads and in places where stone retaining walls are present, can damage them permanently. Large or heavy operational traffic can damage the roads and associated material.	Existing historic roads must be maintained as close to current state as possible. Operational traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any stone retaining walls must be done without reducing the aesthetic and authenticity of the stone structure. Existing roads must be used as far possible and minimally altered. 50m buffer from the Historic Trunk Road for any new buildings (road widening and upgrade is acceptable).		
The most densely clustered human occupation sites are found along the watercourses on site. Sites of land use and burials are located along watercourses. Development or activity close to the watercourses and confluences has a high potential for negative impact on cultural landscape elements.	Watercourses and confluences must have a buffer of 100m for any development or activity on either side. The development buffer along the watercourse adjacent to an identified 'no-go' area must be 200m.		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Points of intersection are significant as places that influence and determine patterns and processes of the cultural landscape. Inappropriate development or activity at these points can damage the cultural landscape.</p>	<p>Existing watercourse and road intersections must be maintained as close to current state as possible. Existing patterns must be maintained and current points of crossing to be used for new development. Operational traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any crossings must be done without reducing the aesthetic and authenticity of the current site. Intersections of watercourses with main historic route must be maintained as is.</p>		
<p>Changes of land use caused by new development can significantly alter the patterns and characteristics of the cultural landscape and the way people interact with the landscape. Changes of geographical names or introduction of inappropriate names can remove the sense of place and identity.</p>	<p>New geographical names must be appropriate and reflect aspects of the landscape and the new layer of land use. With sensitive operational activity that stays within the threshold and adheres to mitigation measures, the land use and living heritage of the landscape can be improved by introducing new interactions with people.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>Changes of land use, development and an influx of 'outsiders' could negatively impact on potential valuable IKS, language and lifeways of the local population. Loss of biodiversity due to development reduces potentially valuable IKS.</p>	<p>Impacts are to POTENTIAL IKS. Research on IKS in the area would mitigate this impact. There are no local communities currently living on the site so there is no direct impact. Research on IKS in the surrounding areas and local communities can be used to determine any significant resources on the site that may be related to IKS. Without further research, impact assessment on POTENTIAL IKS is not possible. Any known fauna or flora with IKS significance, for example medicinal plants, must be noted by the qualified botanical specialist and must be assessed for potential impacts by development.</p>		
<p>Points of intersection are significant as places that influence and determine patterns and processes of the cultural landscape. Inappropriate development or activity at these points can damage the cultural landscape.</p>	<p>Existing watercourse and road intersections must be maintained as close to current state as possible. Existing patterns must be maintained and current points of crossing to be used for new development. Operational traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any crossings must be done without reducing the aesthetic and authenticity of the current site. Intersections of watercourses with main historic route must be maintained as is.</p>		
<p>Extensive development alters the experience and sense of place of the cultural landscape as a vast</p>	<p>Development of substations must be located so that views onto them from the surrounding area, historic routes or the significant CLA's identified in the report are minimised. Development must be concentrated on lower valley areas away from ridge slopes and visual intrusion minimised by utilising slope angles, valley undulations and prevalent travel directions to hide development from viewpoints such as</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
are with a thin scatter of human influence. Views onto and from the site will be heavily impacted upon by development.	historic routes or historic farmstead that are still utilised, such as Baakens Rivier tourism accommodation.		
Due to the size of the area assessed, and the design process requiring surveying before identification of the layout, the possibility of encountering heritage features in non-surveyed areas does exist.	<p>The nature of heritage resources are such that they are non-renewable. The proper mitigation and documentation of these resources can however preserve the data for research.</p> <ul style="list-style-type: none"> ▪ Any heritage features of significance identified during the operational phase will require formal mitigation or where possible accommodate such resources. ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations¹⁷. ▪ A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing Heritage Western Cape (HWC) of such finds and a final process of mitigation implementation. 		
Decommissioning Phase			
Construction and development close to Stone structures (kraals, homesteads, herders' huts, burials, and their associated modern structures can damage them permanently causing loss of cultural landscape	<ul style="list-style-type: none"> ▪ Any construction or access roads must maintain a 100m buffer from identified heritage resources. ▪ Construction and site crew must be informed of the significance and vulnerability of the resources and maintain a distance at all times. ▪ ECO must manage the heritage resources and ensure compliance of buffers and distance. ▪ Vulnerable sites must be cordoned off as 'no-go' areas. ▪ If any subsurface construction needs to be done in the vicinity of the heritage resources, a suitably qualified archaeologist should be on site to monitor. ▪ Work plan for management of heritage resources and cultural landscape elements to be included in CMP¹⁸. 	Holder of the EA	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>significance. Heritage resources are irreplaceable and damage to them is irreversible.</p>			
<p>Construction and development close to Stone age sites and rock art can damage them permanently causing loss of cultural landscape significance. Heritage resources are irreplaceable and damage to them is irreversible. Damage to rock art sites is common and irreversible.</p>			
<p>Change in land use alters the patterns existing on the landscape including their associated material features. Construction and development close to the structures can damage them permanently causing loss of</p>	<p>The patterns of current land use are to be left in place as far possible including current fence layouts and wind pumps should have a 50m buffer from any new development. Existing roads to be used as far possible without extreme widening and new farm tracks must be minimised. The impact on the land use patterns is neutral if done within the development threshold and will be read as a new, potentially positive, layer of land use.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>cultural landscape significance. Heritage resources are irreplaceable and damage to them is irreversible.</p>			
<p>Construction and/or road widening can alter the experience of historic roads and in places where stone retaining walls are present, can damage them permanently. Large or heavy construction traffic can damage the roads and associated material.</p>	<p>Existing historic roads must be maintained as close to current state as possible. Construction traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any stone retaining walls must be done without reducing the aesthetic and authenticity of the stone structure. Existing roads must be used as far possible and minimally altered. 50m buffer from the Historic Trunk Road for any new buildings (road widening and upgrade is acceptable).</p>		
<p>The most densely clustered human occupation sites are found along the watercourses on site. Sites of land use and burials are located along watercourses. Development close to the watercourses and confluences</p>	<p>Watercourses and confluences must have a buffer of 100m for any development on either side. The development buffer along the watercourse adjacent to an identified 'no-go' area must be 200m.</p>		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
has a high potential for negative impact on cultural landscape elements.			
Points of intersection are significant as places that influence and determine patterns and processes of the cultural landscape. Inappropriate development at these points can damage the cultural landscape.	Existing watercourse and road intersections must be maintained as close to current state as possible. Existing patterns must be maintained and current points of crossing to be used for new development. Construction traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist. Strengthening of any crossings must be done without reducing the aesthetic and authenticity of the current site. Intersections of watercourses with main historic route must be maintained as is.		
Changes of land use caused by new development can significantly alter the patterns and characteristics of the cultural landscape and the way people interact with the landscape. Changes of geographical names or introduction of inappropriate	New geographical names must be appropriate and reflect aspects of the landscape and the new layer of land use. With sensitive development that stays within the threshold and adheres to mitigation measures, the land use and living heritage of the landscape can be improved by introducing new interactions with people.		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
names can remove the sense of place and identity.			
Changes of land use, development and an influx of 'outsiders' could negatively impact on potential valuable IKS, language and lifeways of the local population. Loss of biodiversity due to development reduces potentially valuable IKS.	Impacts are to POTENTIAL IKS. Research on IKS in the area would mitigate this impact. There are no local communities currently living on the site so there is no direct impact. Research on IKS in the surrounding areas and local communities can be used to determine any significant resources on the site that may be related to IKS. Without further research, impact assessment on POTENTIAL IKS is not possible. Any known fauna or flora with IKS significance, for example medicinal plants, must be noted by the qualified botanical specialist and must be assessed for potential impacts by development.		
Extensive development alters the experience and sense of place of the cultural landscape as a vast area with a thin scatter of human influence. Views onto and from the site will be heavily impacted upon by development.	Development of substations must be located so that views onto them from the surrounding area, historic routes or the significant CLA's identified in the report are minimised. Development must be concentrated on lower valley areas away from ridge slopes and visual intrusion minimised by utilising slope angles, valley undulations and prevalent travel directions to hide development from viewpoints such as historic routes or historic farmstead that are still utilised, such as Baakens Rivier tourism accommodation.		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Cumulative Impacts			
Cultural Landscapes	Mitigation measures as proposed in the CLA for the proposed Oya Energy Facility development that reduce negative impacts to perceptual qualities, land use patterns and living heritage will reduce the impact of this facility on the overall load. With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of CLAs in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts to cultural landscapes. Notwithstanding, any mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.	Holder of the EA	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Cultural Management Plan implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Cultural landscape sensitivity guidelines adopted</p>

Palaeontology

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<i>Construction Phase</i>			

<p>Disturbance, damage or destruction of scientifically important, legally-protected fossils preserved at or below the ground due to surface clearance, excavations into bedrock and superficial sediments.</p>	<ul style="list-style-type: none"> ▪ Monitoring of all major surface clearance and deeper (>1m) excavations for fossil material (bones, teeth, petrified wood, plant-rich beds etc.). ▪ Significant fossil finds to be safeguarded and reported to Heritage Western Cape. Recording and sampling of important new fossil finds and relevant geological data by specialist palaeontologist. 	<p>Holder of the EA</p>	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Heritage Management Plan Implemented</p> <p>Buffer areas being maintained / adhered to</p>
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Cumulative Impacts			
Disturbance, damage or destruction of scientifically important, legally-protected fossils preserved at or below the ground due to surface clearance, excavations into bedrock and superficial sediments.	<ul style="list-style-type: none"> ▪ Monitoring of all major surface clearance and deeper (>1m) excavations for fossil material (bones, teeth, petrified wood, plant-rich beds etc). ▪ Significant fossil finds to be safeguarded and reported to Heritage Western Cape. Recording and sampling of important new fossil finds and relevant geological data by specialist palaeontologist. 	Holder of the EA	<p>Impacts to heritage resources managed and avoided as far as possible</p> <p>Chance Find Procedure Implemented</p> <p>Heritage Management Plan Implemented</p> <p>Buffer areas being maintained / adhered to</p> <p>Monitoring of all major surface clearance and deeper (>1m) excavations undertaken</p>

Mitigation measures related to Archaeological, Palaeontological and Cultural Landscape heritage were also provided, based on comments received from Heritage Western Cape (HWC).

Archaeology

- An archaeological walk down of the final approved layout must take place before construction, and all identified heritage resources above Grade IIIC are to be avoided or mitigated.
- A 50m buffer around all structures with a grading of IIIC or higher to be implemented
- Heritage resources graded as IIIC-IIIA to be demarcated as no-go areas during construction
- A 200m buffer and no-go area around the rock art site (OYPV-11) to be implemented
- A management plan for heritage resources during and after construction to be submitted to HWC for approval.

Palaeontology

- No specialist palaeontological monitoring or mitigation is required, unless significant fossil material is uncovered during construction
- The ECO must be made aware of the possibility of fossil remains being encountered
- A letter from a palaeontologist is required confirming that the ECO has been trained in identifying fossil material. Monitoring for fossil material of all major surface clearance operations and any excavations deeper than 1m by the ECO
- Significant fossil finds must be safeguarded and reported to HWC by the ECO
- The Protocol for Chance Fossil Finds must be included in the Management Plan.

Land use patterns

- The patterns of current land use are to be left in place as far as possible including current fence layouts and wind pumps should have a 50m buffer from any new development.

Management measures

- Existing roads to be used as far as possible without extreme widening and new farm tracks must be minimised. The impact on the land use patterns is neutral if done within the development threshold and will be read as a new, potentially positive, layer of land use.
- Historic roads and farm tracks existing historic roads must be maintained as close to current state as possible. Widening, guttering, road verges, and hardening should be reduced as far as possible. The most significant historic roads, the Grand Trunk Road and the tracks leading to old farmsteads, such as the Baakens Rivier farmstead should be maintained as close to current state as possible.
- Construction traffic must be reduced in amount and weight as far as is possible to accommodate the width and strength of the roads as they currently exist.
- if any stone retaining walls must be done without reducing the aesthetic and authenticity of the stone structure.
- No specialist palaeontological monitoring or mitigation is required, unless significant fossil material is uncovered during construction
- The ECO must be made aware of the possibility of fossil remains being encountered
- A letter from a palaeontologist is required confirming that the ECO has been trained in identifying fossil material. Monitoring for fossil material of all major surface clearance operations and any excavations deeper than 1m by the ECO
- Significant fossil finds must be safeguarded and reported to HWC by the ECO
- The Protocol for Chance Fossil Finds must be included in the Management Plan.

Watercourses

- Watercourses and confluences must have a buffer of 100m for any development on either side. The development buffer along the watercourse adjacent to an identified no-go area must be 200m.

Watercourse and road intersections

- Existing watercourse and road intersections must be maintained as close to current state as possible.
- Existing patterns must be maintained and current points of crossing to be used for new development.
- Strengthening of any crossings must be done without reducing the aesthetic and authenticity of the current site.

Perceptual qualities during all phases

- Development must be located so that views onto it from the surrounding area, historic routes or the significant CLA's identified in the report are minimised.
- Development must be concentrated on lower valley areas away from ridge slopes and visual intrusion minimised by utilising slope angles, valley undulations and prevalent travel directions to hide development from viewpoints such as historic routes or historic farmstead that are still utilised, such as Baakens Riviers tourism accommodation. All guesthouses are buffered, and the ridgeline is excluded from the study area.

General for final design layout

- Review of the CLA once the access road layout has been completed and before construction.
- Foot survey of specific sites of panels, cabling and roads before construction on completion of final design layout.
- Work plan for management of heritage resources and cultural landscape elements during construction, operational and decommissioning phase to be included in the Conservation Management Plan.
- Work plan to be approved by HWC with comment from heritage practitioner and a cultural landscapes specialist (for CL elements).

Intangible Heritage

- New geographical names must be appropriate and reflect aspects of the landscape and the new layer of land use.
- With sensitive development that stays within the threshold and adheres to mitigation measures, the land use and living heritage of the landscape can be improved by introducing new interactions with people.
- Impacts are to POTENTIAL IKS. Research on IKS in the area would mitigate this impact. A social heritage or cultural landscapes specialist is required to be present for the PPP in order to identify and assess any IKS or living heritage concerns related to the study site and mitigations if required. PPP studies done for other reports would need to be assessed for living heritage indicators and, if necessary, questions about living heritage would need to be included as part of the PPP for public consideration. Further, Conservation Bodies registered with HWC need to be informed of the proposed development for their comment in terms of heritage resources.
- There are no local communities currently living on the site so there is no direct impact. Research on IKS in the surrounding areas and local communities can be used to determine any significant resources on the site that may be related to IKS. Without further research, an impact assessment on POTENTIAL IKS is not possible. Any known fauna or flora with IKS significance, for example medicinal plants, must be noted by the qualified botanical specialist and must be assessed for potential impacts by development. However, this is outside the scope of this BA process but must be followed up on in the PPP and included in the final heritage significance and impact statements in the final HIA/ EIA.

Socio-Economic:

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Health & social wellbeing – Air Quality	Refer to the mitigation measures suggested by the air quality specialist.	Holder of the EA	
Health & social wellbeing – Noise	Refer to the mitigation measures suggested by the noise specialist		
Health & social wellbeing – Increase in crime	<ul style="list-style-type: none"> ▪ Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing; ▪ Fence off construction site and control access to these sites; ▪ Appoint an independent security company to monitor the site; 		

	<ul style="list-style-type: none"> Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum; Prevent loitering within the vicinity of the construction camp as well as construction sites. 		<p>Construction workers identifiable (carrying identification cards and wearing identifiable clothing)</p> <p>Community Liaison Forum established and implemented</p>
Health & social wellbeing - Increased risk of HIV infections	<ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms; Expose workers to a health and HIV / AIDS awareness educational program; Extend the HIV / AIDS program into the community with specific focus on schools and youth clubs. 		<p>All staff members are aware of the EMPr requirements relevant to them</p> <p>Onsite HIV Infections Policy implemented</p>
Health & social wellbeing - Influx of construction workers	<ul style="list-style-type: none"> Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors; Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy. 		<p>Health and HIV/AIDS awareness educational program implemented</p> <p>Ensure effective communication with the community and Key Stakeholders</p>
Health & social wellbeing - Hazard exposure	<ul style="list-style-type: none"> Ensure all construction equipment and vehicles are properly maintained at all times; Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly; Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to; Make staff aware of the dangers of fire during regular tool box talks. 		<p>Thorough induction to site undertaken</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Recruitment policy drawn up in consultation with Community Leaders and Ward Councillors of area and implemented</p> <p>Appropriate safety precautions for fires etc. implemented</p>
Quality of the living environment - Disruption of daily living patterns	<ul style="list-style-type: none"> Ensure that, at all times, people have access to their properties as well as to social facilities. 		<p>All environmental incidents and community complaints are adequately dealt with</p>
Quality of the living environment - Disruptions to	<ul style="list-style-type: none"> Regularly monitor the effect that construction is having on infrastructure and immediately report any damage to infrastructure to the appropriate authority; 		<p>Procurement policy implemented</p>

social and community infrastructure	<ul style="list-style-type: none"> Ensure that where communities' access is obstructed that this access is restored to an acceptable state. 		Public grievance and incident register implemented and monitored
Economic - Job creation and skills development	<ul style="list-style-type: none"> Wherever feasible, local residents should be recruited to fill semi and unskilled jobs; Women should be given equal employment opportunities and encouraged to apply for positions; A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction. 		Fair employment practices in place
Economic - Positive economic impacts	A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.		Maintain a "locals first" recruitment policy as far as possible
Operation Phase			
Health & wellbeing - Air Quality	Refer to the mitigation measures suggested by the air quality specialist.	Holder of the EA	Transparent grievance mechanism implemented and monitored
Health & wellbeing - Noise	Refer to the mitigation measures suggested by the noise specialist.		Impacts avoided or managed as per specialist recommendations
Quality of the living environment - Transformation of the sense of place	<ul style="list-style-type: none"> Apply the mitigation measures suggested in the Visual Impact Assessment Report; Communicate the benefits associated with renewable energy to the broader community; Ensure that all affected land owners and tourist associations are regularly consulted; A Grievance Mechanism should be put in place and all grievances should be dealt with in a transparent manner; The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed. 		Community Liaison Forum established and implemented
Economic - Positive economic impacts	<ul style="list-style-type: none"> Implement a training and skills development programme for locals; Work closely with the appropriate municipal structures in regard to establishing a social responsibility programme. 		

Economic - Socio-economic stimulation	<ul style="list-style-type: none"> ▪ Ensure that the procurement policy supports local enterprises; ▪ Establish a social responsibility programme either in line with the REIPPP BID guidelines or equivalent; ▪ Work closely with the appropriate municipal structures in regard to establishing a social responsibility programme; ▪ Ensure that any trusts or funds are strictly managed in respect of outcomes and funds. 		
Cumulative impacts			
Health – Risk of HIV	<ul style="list-style-type: none"> ▪ Mitigation can only be implemented at a regional level and will need to be driven on a provincial and municipal basis. In this sense the following mitigation measures would need to be considered. ▪ Ensure that all companies coming into the area have, and are, implementing an effective HIV/AIDS policy; ▪ Introduce HIV/ADS awareness programs to schools and youth institutions; ▪ Carefully monitor and report on the HIV status of citizens in the region; ▪ Be proactive in dealing with any increase in the HIV prevalence rate in the area. 	Holder of the EA	
Quality of the living environment – Sense of place	<ul style="list-style-type: none"> ▪ Mitigation can only be implemented at a regional level and will need to be driven on a provincial and municipal basis. In this sense the following mitigation measures would need to be considered. ▪ Consider undertaking a cumulative impact assessment to evaluate the changes taking place across the area on a broader scale; ▪ Form a regional work group tasked with addressing the effect of changes to the sense of place of the region; ▪ Establish grievance mechanisms to deal with complaints associated with changes to the area; ▪ Enlighten the public about the need and benefits of renewable energy; ▪ Engage with the tourism businesses and authorities in the region to identify any areas of cooperation that could exist. 		
Quality of the living environment - Service supplies and infrastructure	<ul style="list-style-type: none"> ▪ Mitigation can only be implemented at a regional level and will need to be driven on a provincial and municipal basis. In this sense the following mitigation measures would need to be considered. 		

	<ul style="list-style-type: none">▪ Engage with the municipal authorities to ensure that they are aware of the expansion planned for the area and the possible consequences of this expansion;▪ Ensure that local labour is recruited in respect of these developments in the area.		
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<p>Economic - Positive economic impacts</p>	<ul style="list-style-type: none"> ▪ Mitigation can only be implemented at a regional level and will need to be driven on a provincial and municipal basis. In this sense the following mitigation measures would need to be considered. ▪ Implement a training and skills development programme amongst the local community; ▪ Ensure that the procurement policy supports local enterprises; ▪ Establish a social responsibility programme; ▪ Work closely with the appropriate municipal structures in regard to establishing a social responsibility programme; ▪ Ensure that any trusts or funds are strictly managed in respect of outcomes and funds allocated. 		<p>Community Liaison Forum established and implemented</p> <p>Onsite HIV Infections Policy implemented Health and HIV/AIDS awareness educational program implemented</p> <p>Ensure effective communication with the community and Key Stakeholders</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Procurement policy implemented</p> <p>Public grievance and incident register implemented and monitored</p> <p>Engagement with tourism businesses and authorities in the region</p> <p>Engagement with municipal authorities</p> <p>Fair employment practices in place</p> <p>Maintain a "locals first" recruitment policy as far as possible</p> <p>Implement training and skills development programme amongst local community and ensure this is adhered to</p> <p>Social responsibility programme implemented and being adhered to</p>
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			Appropriate management of trusts or funds
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Visual:

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
<ul style="list-style-type: none"> ▪ Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. ▪ Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from 	<ul style="list-style-type: none"> ▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Inform receptors of the construction programme and schedules. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Where possible, the operation and maintenance buildings and laydown areas should be consolidated to reduce visual clutter. ▪ Where possible, underground cabling should be utilised. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the construction site, where possible. ▪ Ensure that dust suppression techniques are implemented: <ul style="list-style-type: none"> ○ on all access roads; ○ in all areas where vegetation clearing has taken place; ○ on all soil stockpiles. 	Holder of the EA	<p>Clear communication channels for receptors established</p> <p>Noise and lighting managed according to approved Method Statement</p> <p>Ensure the EMPr is adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Implementation of Plant Rehabilitation Plan</p> <p>All waste managed according to approved Method Statement</p> <p>Dust management plan implemented</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>surrounding viewers.</p> <ul style="list-style-type: none"> ▪ Surface disturbance during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 			
Operation Phase			
<ul style="list-style-type: none"> ▪ The on-site infrastructure may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ The proposed energy facility will alter the visual 	<ul style="list-style-type: none"> ▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the facility. ▪ Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the site. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ As far as possible, limit the amount of security and operational lighting present on site. 	Holder of the EA	<p>Clear communication channels for receptors established</p> <p>Lighting managed according to approved Method Statement</p> <p>Ensure the EMPr is adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts.</p> <ul style="list-style-type: none"> ▪ Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. ▪ The night time visual environment will be altered as a result of operational and security lighting at the proposed energy facility. 	<ul style="list-style-type: none"> ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill. ▪ Lighting fixtures should make use of minimum lumen or wattage. ▪ Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used. ▪ If possible, make use of motion detectors on security lighting. ▪ The operations and maintenance (O&M) buildings should not be illuminated at night unless for security measures. ▪ The O&M buildings must be painted in natural tones that fit with the surrounding environment. ▪ Buildings and similar structures must be in keeping with relevant regional planning policy documents. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Decommissioning Phase			
<ul style="list-style-type: none"> ▪ Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. ▪ Decommissioning activities may be perceived as an unwelcome visual intrusion. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. 	<ul style="list-style-type: none"> ▪ All infrastructure that is not required for post-decommissioning use should be removed. ▪ Carefully plan to minimize the decommissioning period and avoid delays. ▪ Maintain a neat decommissioning site by removing rubble and waste materials regularly. ▪ Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. ▪ All cleared areas should be rehabilitated as soon as possible. ▪ Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required. ▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Inform receptors of the construction programme and schedules. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Where possible, the operation and maintenance buildings and laydown areas should be consolidated to reduce visual clutter. ▪ Where possible, underground cabling should be utilised. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the construction site, where possible. ▪ Ensure that dust suppression techniques are implemented: <ul style="list-style-type: none"> ○ on all access roads; ○ in all areas where vegetation clearing has taken place; ○ on all soil stockpiles. 	Holder of the EA	<p>Noise and lighting managed according to approved Method Statement</p> <p>A traffic management Strategy Implemented</p> <p>All staff members are aware of the EMP requirements relevant to them</p> <p>Plant Rehabilitation Implemented</p> <p>Dust management plan implemented</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<ul style="list-style-type: none"> ▪ Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 			
Cumulative impacts			
<ul style="list-style-type: none"> ▪ Additional renewable energy developments and their associated infrastructure in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. ▪ Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in 	<ul style="list-style-type: none"> ▪ Restrict vegetation clearance on development sites to that which is required for the correct operation of the facility. ▪ Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the facility. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ As far as possible, limit the amount of security and operational lighting present on site. ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill. ▪ Lighting fixtures should make use of minimum lumen or wattage. ▪ Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used. ▪ If possible, make use of motion detectors on security lighting. ▪ The operations and maintenance (O&M) buildings should not be illuminated at night, unless for safety purposes. ▪ The O&M buildings should be painted in natural tones that fit with the surrounding environment. 	Holder of the EA	<p>Noise and lighting managed according to approved Method Statement</p> <p>A traffic management Strategy Implemented</p> <p>All staff members are aware of the EMPR requirements relevant to them</p> <p>Plant Rehabilitation Implemented</p> <p>Dust management plan implemented</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
<p>more natural undisturbed settings.</p> <ul style="list-style-type: none"> ▪ Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. ▪ The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area. 			

Geotechnical

<i>Impact</i>	<i>Impact Management Actions</i>	<i>Responsibility</i>	<i>Impact Management Outcome</i>
<i>Construction Phase</i>			

<p>Displacement of natural earth material and overlying vegetation.</p> <ul style="list-style-type: none"> ▪ Increase in soil and wind erosion due to clearing of vegetation. ▪ Construction and earthmoving vehicles may displace soil during operations. ▪ Creation of drainage paths along access tracks. ▪ Potential oil spillages from heavy plant. ▪ Sedimentation of non-perennial features and excessive dust. 	<ul style="list-style-type: none"> ▪ Identify protected areas prior to construction. ▪ Construction of temporary berms and drainage channels to divert surface water. ▪ Minimize earthworks and fills. ▪ Use existing road network and access tracks. ▪ Rehabilitation of affected areas (such as regrassing, mechanical stabilization). ▪ Correct engineering design and construction of gravel roads and water crossings. ▪ Correct construction methods for foundation installations and cut to fill configurations. ▪ Vehicle repairs to be undertaken in designated areas. ▪ Control stormwater flow 	<p>Holder of the EA</p>	<p>Protected areas identified prior to construction</p> <p>Temporary berms and drainage channels to divert surface water constructed</p> <p>A traffic management Strategy Implemented</p> <p>Rehabilitation plan implemented and being adhered to</p> <p>Engineering design for gravel roads and water crossings approved</p> <p>Vehicle repair / maintenance plan implemented and being adhered to</p> <p>Stormwater management plan implemented and being adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p>
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Operation Phase			
<p>Displacement of natural earth material.</p> <ul style="list-style-type: none"> ▪ Potential oil spillages from maintenance vehicles. ▪ Sedimentation of non-perennial features caused by soil erosion. 	<ul style="list-style-type: none"> ▪ Use of existing roads and tracks where feasible. ▪ Rehabilitation of affected areas (such as erosion control mats). ▪ Correct engineering design and construction of roads and water crossings. ▪ Vehicle repairs to be undertaken in designated areas. ▪ Maintenance of stormwater system. 	<p>Holder of the EA</p>	<p>A traffic management Strategy Implemented</p> <p>Rehabilitation plan implemented and being adhered to</p> <p>Engineering design for gravel roads and water crossings approved</p> <p>Vehicle repair / maintenance plan implemented and being adhered to</p> <p>Stormwater management plan implemented and being adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p>

Decommissioning Phase			
<p>Decommissioning of the structure will disturb the geological environment.</p> <ul style="list-style-type: none"> ▪ Increase in soil and wind erosion due to clearance of structures. ▪ Construction and earthmoving vehicles will displace the soil. ▪ Creation of drainage paths. ▪ Potential oil spillages from vehicles. ▪ Excessive sediments in non-perennial features. 	<ul style="list-style-type: none"> ▪ Use of temporary berms and drainage channels to divert surface water where feasible. ▪ Minimize earthworks and demolish footprints. ▪ Use of existing roads and tracks were feasible. ▪ Rehabilitation of affected areas (such as regrassing). ▪ Develop a chemical spill response plan. ▪ Develop dust and demolition fly suppression plan. ▪ Vehicle repairs to be undertaken in designated areas. ▪ Reinstate channelized drainage features. 	<p>Holder of the EA</p>	<p>Protected areas identified prior to construction</p> <p>Temporary berms and drainage channels to divert surface water constructed</p> <p>A traffic management Strategy Implemented</p> <p>Rehabilitation plan implemented and being adhered to</p> <p>Engineering design for gravel roads and water crossings approved</p> <p>Vehicle repair / maintenance plan implemented and being adhered to</p> <p>Stormwater management plan implemented and being adhered to</p> <p>Chemical spill response plan implemented and being adhered to</p> <p>Dust and demolition fly suppression plan / strategy implemented and being adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p>

			Compliance to all legislative requirements Adherence to the EMPr Monitoring programme implemented
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Transport

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Traffic Congestion	<ul style="list-style-type: none"> ▪ Stagger component delivery to site ▪ Reduce the construction period ▪ The use of mobile batch plants and quarries in close proximity to the site ▪ Staff and general trips should occur outside of peak traffic periods. ▪ Regular maintenance of gravel roads by the Contractor during the construction phase and by Client / Facility Manager during operation phase. 	Holder of the EA	Traffic management Strategy Implemented Delivery schedule implemented and being adhered to Road maintenance / management plan implemented and being adhered to
Dust Pollution will affect air quality.	<ul style="list-style-type: none"> ▪ Dust Suppression of gravel roads during the construction phase, as required. Regular maintenance of gravel roads by the Contractor during the construction phase and by Client / Facility Manager during operation phase. Staff and general trips should occur outside of peak traffic periods. 		Impacts avoided or managed as per specialist recommendations Ensure the conditions of the EA are adhered to
Noise pollution due to increased traffic.	<ul style="list-style-type: none"> ▪ Stagger component delivery to site ▪ Reduce the construction period as far as possible ▪ The use of mobile batch plants and quarries in close proximity to the site ▪ Staff and general trips should occur outside of peak traffic period 		Compliance to all legislative requirements Adherence to the EMPr Monitoring programme implemented
Decommissioning Phase			
Traffic Congestion	<ul style="list-style-type: none"> ▪ Stagger component removal from site ▪ Reduce the decommissioning period 	Holder of the EA	
Dust Pollution will affect air quality.	<ul style="list-style-type: none"> ▪ Staff and general trips should occur outside of peak traffic periods. ▪ Regular maintenance of gravel roads. 		

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Noise pollution due to increased traffic.	<ul style="list-style-type: none"> ▪ Dust Suppression of gravel roads, as required. 		<p>A traffic management Strategy Implemented</p> <p>Dust management plan implemented and being adhered to</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p>
Cumulative impacts			
Traffic generated by the proposed development and the associated noise and dust pollution.	<ul style="list-style-type: none"> ▪ Stagger component delivery to site ▪ Dust suppression ▪ Reduce the construction period ▪ The use of mobile batch plants and quarries in close proximity to the site ▪ Staff and general trips should occur outside of peak traffic periods ▪ Even if all renewable energy projects within the area are constructed at the same time, the roads authority will consider all applications for abnormal loads and work with all project companies to ensure that loads on the public roads are staggered and staged to ensure that the impact will be acceptable. 	Holder of the EA	<p>A traffic management Strategy Implemented</p> <p>All staff members are aware of the EMPr requirements relevant to them</p> <p>Dust management plan implemented</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p>

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
			Adherence to the EMPr Monitoring programme implemented

Noise

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Construction Phase			
Noise emissions	Limit high noise activities (e.g. piling) to daytime operations when possible, noting that operational requirements might not allow this due to various factors e.g. Crane use optimization, weather conditions etc.	Holder of the EA	Noise managed according to approved Method Statement A noise management strategy Implemented All staff members are aware of the EMPr requirements relevant to them Impacts avoided or managed as per specialist recommendations Ensure the conditions of the EA are adhered to Compliance to all legislative requirements Adherence to the EMPr Monitoring programme implemented

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
Operation Phase			
Noise emissions	Ambient noise monitoring (once off) should be conducted at NSA 1 during the decommissioning phase of the generators to validate the noise modelling. Silencers should be fitted to the generator exhausts.	Holder of the EA	<p>Noise monitoring (once off) undertaken at NSA 1</p> <p>Noise managed according to approved Method Statement</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Operational monitoring programme implemented</p>
Decommissioning Phase			
Noise emissions	Limit high noise activities to daytime operations when possible.	Holder of the EA	<p>Noise managed according to approved Method Statement</p> <p>Impacts avoided or managed as per specialist recommendations</p> <p>Ensure the conditions of the EA are adhered to</p> <p>Compliance to all legislative requirements</p> <p>Adherence to the EMPr</p> <p>Monitoring programme implemented</p>

Pollution, Chemicals and Air Quality Management¹⁹:

Additional mitigation measures related to pollution and chemicals management as well as air quality management were also provided, based on comments received from the WC DEA&DP. Please see table below.

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
All phases			
Impact as a result of pollution and chemical spillage and/or leakage	<ul style="list-style-type: none"> ▪ Should more than 100m³ of general waste be stored at the proposed site for a period exceeding 90 days, the waste storage facility will be required to register and adhere to the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) National Norms and Standards for the Storage of Waste as contained in Government Notice No. 926 of 29 November 2013. ▪ Hazardous and non-hazardous waste must be stored separately. Should these waste streams be mixed, the entire portion of waste will be considered as hazardous waste. ▪ Proper storage facilities for the storage of oils, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume, and this must be sited away from drainage lines on a site with the approval of the ECO. The bund wall must also have an additional allocation for potential storm water events ▪ Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level. ▪ No surface, ground or storm water may be polluted as a result of any activities on the site. Please use silt retention traps and a Storm water master plan to prevent erosion and pollution. 	Holder of the EA	

¹⁹ Included based on request / recommendations from WC DEA&DP

Impact	Impact Management Actions	Responsibility	Impact Management Outcome
All phases			
	<ul style="list-style-type: none"> ▪ The rehabilitation of the site must ensure that the final conditions of the site is environmentally acceptable and that there will be no adverse long term effects on the surrounding environment especially the water resources ▪ Above-ground fuel storage tanks must be housed in an adequate bund capable of holding 110% of the total volume of the tanks combined (i.e. 1000m³) ▪ In the event of a significant spill or leak of hazardous substances (e.g. petrol and diesel), such incident(s) must be reported to all relevant authorities, including the Directorate: Pollution and Chemicals Management of the WC DEA&DP, in accordance with section 30(5) of the NEMA, 1998 pertaining to the control of incidents. 		

<p>Air Quality impacts</p>	<p>Dust created by the proposed development must comply with the National Dust Control Regulations (GN No. R. 827 of 1 November 2013), promulgated in terms of the NEM: AQA, 2004. These regulations prohibit a person from conducting any activity to give rise to dust in such quantities and concentrations that the dust, or dust fall, may have a detrimental impact on human health and the environment</p>		<p>All hazardous substances managed according to approved Method Statement.</p> <p>All waste managed according to approved Method Statement.</p> <p>Emergency plan(s) and Incident Report(s) for incidents in terms of section 30 (5) of the NEMA.</p> <p>All site personnel are familiar with the Emergency Plan(s) and Incident Report(s).</p> <p>Emergency plan(s) implemented and Incident Report(s) compiled and submitted (if required).</p> <p>Waste Management Plan Implemented.</p> <p>Dust management plan implemented.</p> <p>Stormwater management plan implemented and being adhered to.</p> <p>Rehabilitation plan implementd and being adhered to.</p> <p>All waste managed according to approved Method Statement / Waste Management Plan.</p> <p>All staff members are aware of the EMPr requirements relevant to them.</p>
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Impact	Impact Management Actions	Responsibility	Impact Management Outcome
All phases			
			<p>Ensure the EMPr is adhered to.</p> <p>Compliance with National Dust Control Regulations (GN No. R. 827 of 1 November 2013), promulgated in terms of the NEM: AQA, 2004.</p> <p>Compliance to all legislative requirements.</p> <p>Impacts avoided or managed as per recommendations from WC DEA&DP.</p>

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.