

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



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

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

2. Purpose

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

3. Objective

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

4. Scope

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

5. Structure of this document

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

Part	Section	Heading	Content
A		Provides general guidance and information and is not legally binding	Definitions, acronyms, roles & responsibilities and documentation and reporting.
B	1	Pre-approved generic EMPr template	<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></p> <p>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></p> <p>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></p> <p>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;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<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.

Responsible Person(s)	Role and Responsibilities
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 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 must be included in the EMPr file and be submitted to the CA monthly or at intervals as indicated in the EA.

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

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

11.13 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

12. 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.

5.1 Environmental awareness training

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

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 EMP and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMP; – 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; b) Mitigation measures to be implemented when carrying out specific 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, training registers

c) Emergency preparedness and response procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. – A record of all environmental awareness training courses undertaken as part of the EMP must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand.						
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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	Method Statement compilation and communication of Method Statements to employees. Use of Specialist Studies to locate site camps	Prior to construction	ECO	Monthly	Signed Method Statements; signed proof of communication register; Liaison with ECO regarding site camp placement
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5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.

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"> – 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 Specialist Studies to locate sensitive areas and 'no-go' areas	Prior to construction in new area	ECO	Monthly	Contractor compliance with sensitive areas

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. 	Contractor	Implementation of mitigation measures	Ongoing	ECO	Monthly	Signed access agreements and maintenance of access roads

<ul style="list-style-type: none"> – 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. 						
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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; 	Contractor and Applicant	Implementation of the mitigation measures	Ongoing	ECO	Monthly	Site observation; public complaints register

<ul style="list-style-type: none"> – 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; – 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; 						
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<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and 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"> Minimising water use during cleaning of equipment; Undertaking regular audits of water systems; and Including a discussion on water usage and conservation during environmental awareness training. The use of grey water is encouraged. 	Contractor and Applicant	Application to DWS where applicable. Implementation of mitigation measures	Construction	ECO	Monthly	Proof of water source used; submission of above proof to DWS

5.7 Storm and waste water management

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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; Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 	Contractor	Employ methods to prevent water pollution	Construction	ECO	Weekly	Inspection of areas where construction takes place near watercourses

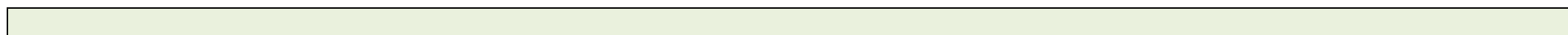
5.8 Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; – Hazardous waste must be disposed of at a registered waste disposal site; – Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 	Contractor	Following good waste management practices outlined in approved method statement	Construction	ECO	Weekly	Waste Safe disposal slips; service level agreements

5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.



Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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 – 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 lower 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 	Contractor	Method statements; Stormwater Management Plan	Construction	ECO	Weekly	Method Statement compliance

<p>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;</p> <p>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</p> <p>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.</p>						
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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; 	Contractor and Applicant	Specialist recommendations; Method statement; Search and Rescue Plan; Alien Vegetation	Pre-Construction and Construction and Operation	ECO	Pre-Construction and weekly during construction	Compliance to method statements and Search and Rescue Plan; Alien Vegetation

<ul style="list-style-type: none"> – 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; – 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. 		Removal Plan (approved plans and strategies used); site awareness				Removal Plan (approved plans and strategies used)
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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; – 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. 	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 method statements

5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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; Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences. 	Contractor	Method Statement; Heritage Management Plan	Pre-construction and construction	ECO	Weekly and daily for zones highlighted by Heritage Specialist where potsherds were found	Monitoring of construction areas; adherence to management plan if chance finds found

5.13 Safety of the public

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

Impact Management Actions	Implementation	Monitoring
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	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; Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Contractor	Landowner agreements; Method Statement	Construction	ECO	Weekly	Site works barricaded; safe working site maintained; public complaints register

5.14 Sanitation

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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 	Contractor	Service level agreement with service provider; Method	Construction	ECO	Weekly	Service level agreement with service provider;

<p>purposes of ablutions must be permitted under any circumstances;</p> <ul style="list-style-type: none"> 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; 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. 		statement; site awareness				proof of safe disposal of waste
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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; 	Contractor	Method statement;	Construction	ECO	Monthly	Method statement;

<ul style="list-style-type: none"> – 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. 		awareness training				proof of awareness training
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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; 	Contractor	Environmental Emergency Response Action Plan	Construction	ECO	Monthly	Adherence/ compliance to ERAP

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

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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); 	Contractor	Method statement; OHS requirements; adequate and responsible use and storage of hazardous substances; hazardous substance storage register	Construction	ECO	Weekly	Hazardous substance storage register; MSDS; method statement

<ul style="list-style-type: none"> – 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 bowzers; – The tanks/ bowzers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall); – The floor of the bund must be sloped, draining to an oil separator; – Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; – All empty externally dirty drums must be stored on a drip tray or within a bunded area; – No unauthorised access into the hazardous substances storage areas must be permitted; – No smoking must be allowed within the vicinity of the hazardous storage areas; – Adequate fire-fighting equipment must be made available at all hazardous storage areas; 						
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<ul style="list-style-type: none"> – Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; – An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; – The responsible operator must have the required training to make use of the spill kit in emergency situations; – An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; – In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 						
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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. 	Contractor	Method statement; OHS requirements; hazardous substances	Construction	ECO	Weekly	Method statement; hazardous substances storage

<p>The relevant local authority must be made aware of a fire as soon as it starts;</p> <ul style="list-style-type: none"> – 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. 		storage register; vehicle daily checklist; vehicle service register				register; vehicle daily checklist; vehicle service register
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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; 	Contractor	Method statement	Construction	ECO	Weekly	Compliance to mitigation and method statement

<ul style="list-style-type: none"> – A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; – Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; – Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; – Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) – Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; – Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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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; 	Contractor	Method statement; vehicle speed limit; dust suppression	Construction	ECO	Monthly	Site observation; dust suppression register

<ul style="list-style-type: none"> – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; – Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; – Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; – Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; – Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; – For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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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 	Contractor	Restriction of site hours to working hours	Construction	ECO	Monthly	Public Complaints Register

<p>applicable, provide transport to and from the site on a daily basis for construction workers;</p> <ul style="list-style-type: none"> – 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. 						
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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; 	Contractor	Emergency Response Action Plan; Method Statement	Construction	ECO	Monthly	Public complaints register; compliance to ERAP

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

5.25 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; – Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and – Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. 	Contractor	Method Statement and Engineering Drawings	Construction	ECO	Weekly	Adherence to method statements

5.26 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
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	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 and Engineering Drawings	Construction	ECO	Weekly	Adherence to method statements

5.27 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 and Engineering Drawings	Construction	ECO	Weekly	Adherence to method statements

5.28 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 and Engineering Drawings	Construction	ECO	Weekly	Adherence to method statements

5.29 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; 	Contractor	Method Statement; adherence to exclusion zones	Construction	ECO	Weekly	Site observations

<ul style="list-style-type: none"> – 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. 						
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5.30 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

5.31 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; 	Contractor	Method Statement	Construction – when applicable	ECO	Monthly – when applicable	Method Statement

<ul style="list-style-type: none"> – Refuse bins must have been emptied and secured; – Drip trays must have been emptied and secured. 						
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5.32 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; 	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"> – Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; – Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); – Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; – Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; – Subsoil must be ripped before topsoil is placed; – The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; – Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; – Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; – Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. – Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <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; 						
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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: JUWI Renewable Energies (Pty) Ltd

Name of applicant: Justine Wyngaardt

Tel No: 082 938 3479

Fax No: 021 831 6199

Postal Address: 20th Floor, The Halyard, 4 Christiaan Barnard Street,
Foreshore, Cape Town, 8001

Physical Address: 20th Floor, The Halyard, 4 Christiaan Barnard Street,
Foreshore, Cape Town, 8001

7.1.2 Details and expertise of the EAP:

Name of applicant: SiVEST SA (Pty) Limited

Tel No: 011 798 0633

Fax No:

E-mail address: nataliep@sivest.com

Expertise of the EAP (Curriculum Vitae included): yes

7.1.3 Project name: Roos Solar Photovoltaic Energy Facility and Associated Infrastructure

7.1.4 Description of the project:

It is anticipated that the proposed Solar PV energy facility will include PV fields (arrays) comprising of multiple PV panels. In summary, the proposed SEF development will include the following components:

PV panels

- Mounting: Fixed-tilt PV, single-axis tracking PV or double-axis tracking PV
- Module type: mono- or bi-facial
- up to approx. 4.0m PV panels

Access roads

- Main site access: Up to 8m, during construction and operation
- Internal roads: Approx. 4 - 5m, during construction and operation
- Existing roads will be utilised as far as reasonably possible and upgraded where necessary. Upgraded width: Up to 8m

Onsite Substation

- Substation will generally be stepping up from 22kV or 33kV to 88kV or 132kV.
- Maximum height of on-site substations: up to 10 m
- The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.
- Onsite substation size: Up to 2ha (for on-site substation hub)

Grid Integration

- The substation will connect to the existing 132kV overhead powerline via a double circuit 132kV loop-in, loop-out (LLO) overhead powerline configuration
- The LLO is expected to be approximately 150m long within a corridor of approximately 100m
- Pylon structures may be either steel lattice, steel monopole or woodpole structures
- The powerline structure will be determined at final design stage after technical consultation with Eskom Engineers and after the geotechnical and topographical surveys have been conducted

Construction Camp

- No construction camps would be developed, and labour would be sourced from nearby areas, as per relevant procurement requirements.

Temporary Infrastructure

- Temporary Laydown Area: up to approximately 5.96 ha

O&M Buildings

- O&M building will be utilized for plant supervision and storing of spare parts.
- All auxiliary buildings to be developed include, but are not limited to: O&M building, site office, staff lockers, bathrooms, warehouses, etc (with septic tanks and all infrastructure) as follows:
 - Office (~250m²).
 - Storeroom (~200m²).
 - Staff lockers and changing room (~100m²).
 - Security control (~40m²).
 - Sanitation facilities with septic tank outside.
 - Conservancy Tank.
 - Borehole (if possible, somewhere on site).

On-site IPP Electrical Infrastructure

- The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.)
- Internal underground lines of up to 33 kV (22kV or 33kV)
- Substation will generally be stepping up from 22kV or 33kV to 88kV or 132kV.
- Depth (m): Up to 1.5 m
- Cables will be laid underground wherever technically feasible, with overhead 33kV lines grouping PV areas to crossing valleys and ridges to get to the on-site substation.

Fencing

- The entire perimeter of the proposed facility will be secured.
- Type: proposed palisade or mesh or fully electrified
- Length: TBC
- Height: Up to 3m

Boreholes and storage tanks

- If required, a 10,000l storage tank may be located on site for water storage.

A Battery Energy Storage System (BESS)

- Capacity in MWh: Up to 340MW/ 340MWh
- Size in hectare - A BESS would be developed within the substation/electrical infrastructure hub footprint, if required
- Height: Up to 8 m
- Technology type (i.e.: Li-Ion solid state/Redox flow)
- Electrochemical Batteries including:
 - Lead Acid and Advanced Lead Acid
 - Lithium ion, NiCd, NiMH-based Batteries
 - High Temperature (NaS, Na-NiCl₂, Mg/PB-Sb)
 - Flow Batteries (VRFB, Zn-Fe, Zn-Br)
- The BESS would therefore comprise the selected batteries together with chargers, inverters and related equipment.

A summary of the project technical details is provided in the table below.

Table 2: Technical Detail Summary

TECHNICAL DETAILS	
PV panels	<ul style="list-style-type: none">▪ Mounting: Fixed-tilt PV, single-axis tracking PV or double-axis tracking PV.▪ Module type: mono- or bi-facial▪ up to approx. 3.5m PV panels
Access roads	<ul style="list-style-type: none">▪ Main site access: Up to 8m, during construction and operation▪ Internal roads: Approx. 4 - 5m, during construction and operation▪ Existing roads will be utilised as far as reasonably possible and upgraded where necessary. Upgraded width: Up to 8m.
On-site Substation	<ul style="list-style-type: none">▪ Substation will generally be stepping up from 22kV or 33kV to 88kV or 132kV.▪ Maximum height of on-site substations: up to 10 m▪ The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.).▪ Onsite substation size: Up to 4ha (for on-site substation hub)▪ The onsite substation will include an Eskom portion (switching station) and an Independent Power Producer (IPP) portion (facility substation)
Grid Integration	<ul style="list-style-type: none">▪ The substation will connect to the existing 132kV overhead powerline via a double circuit 132kV loop-in, loop-out (LILO) overhead powerline configuration.

TECHNICAL DETAILS	
	<ul style="list-style-type: none"> ▪ The LILO is expected to be approximately 150m long within a corridor of approximately 100m ▪ The powerline structure will be determined at final design stage after technical consultation with Eskom Engineers and after the geotechnical and topographical surveys have been conducted. ▪ Pylon structures may be either steel lattice, steel monopole or woodpole structures.
Construction camp	<ul style="list-style-type: none"> ▪ No construction camps would be developed, and labour would be sourced from nearby areas, as per relevant procurement requirements.
Temporary construction laydown / staging area	<ul style="list-style-type: none"> ▪ Temporary Laydown Area: up to approximately 7 ha.
Operation and Maintenance (O&M) buildings	<ul style="list-style-type: none"> ▪ All Auxiliary buildings to be developed include, but are not limited to: O&M building, site office, staff lockers, bathrooms, warehouses, etc. ▪ Footprint up to 0.5 ha (i.e., 5000 m²) ▪ Height (m): Up to 10 m
On-site IPP Electrical infrastructure	<ul style="list-style-type: none"> ▪ <i>"Cables will be laid underground wherever technically feasible, with overhead 33kV lines grouping PV areas to crossing valleys and ridges to get to the on-site substation."</i> ▪ The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.). ▪ Internal underground lines of up to 33 kV (22kV or 33kV). ▪ Substation will generally be stepping up from 22kV or 33kV to 88kV or 132kV. ▪ Depth (m): Up to 1.5 m
Fencing	<ul style="list-style-type: none"> ▪ Height: Up to 3m ▪ The entire perimeter of the proposed facility will be secured. ▪ Length: TBC ▪ Type: Could be Palisade or mesh or fully electrified.
Boreholes and storage tanks (if applicable)	<ul style="list-style-type: none"> ▪ If required, a 10,000l storage tank may be located on site for water storage.
Battery Energy Storage Systems	<ul style="list-style-type: none"> ▪ Capacity in MWh: Up to 340MW/ 340MWh ▪ Size in hectare - A BESS would be developed within the substation/electrical infrastructure hub footprint, if required. ▪ Height: Up to 8 m

TECHNICAL DETAILS	
	<ul style="list-style-type: none"> Technology type (i.e.: Li-Ion solid state/Redox flow) Electrochemical Batteries including: <ol style="list-style-type: none"> Lead Acid and Advanced Lead Acid Lithium ion, NiCd, NiMH-based Batteries High Temperature (NaS, Na-NiCl₂, Mg/PB-Sb) Flow Batteries (VRFB, Zn-Fe, Zn-Br) The BESS would therefore comprise the selected batteries together with chargers, inverters and related equipment.
Estimated number of employment opportunities generated by each PV project	<ul style="list-style-type: none"> Construction phase: 100 (skills split would be in line with applicable procurement requirements but would be roughly 60% low-skilled, 25% semi-skilled and 15% skilled) Operational phase: 10 (skills split would be in line with applicable procurement requirements but would be roughly 70% low skilled, 25% semi-skilled and 5% skilled) Decommissioning phase: unknown
Construction: Methodology	<ul style="list-style-type: none"> The facility would be constructed in the following sequence: <ol style="list-style-type: none"> Final design and micro-siting of the infrastructure based on topographical conditions and environmental sensitivities, and following obtaining required environmental permits. Vegetation clearance and construction of access roads (where required) Construction of foundations Assembly and erection of infrastructure on site Stringing of inverters Rehabilitation of disturbed areas Continued maintenance
Construction: Duration and start date	Up to 12-18 months, the start date is dependent upon award of a bid. Construction activities could take place concurrently.

7.1.5 Project location:

21 Digit Surveyor General Code	Description	Portion No.	Farm No.	Farm Name
TOJS00000000042300014	Portion 14 of Farm 423 Generaalsdraai	14	423	Generaalsdraai
TOJS00000000039000008	Portion 8 of the Farm 390 Wintershoek	8	390	Wintershoek

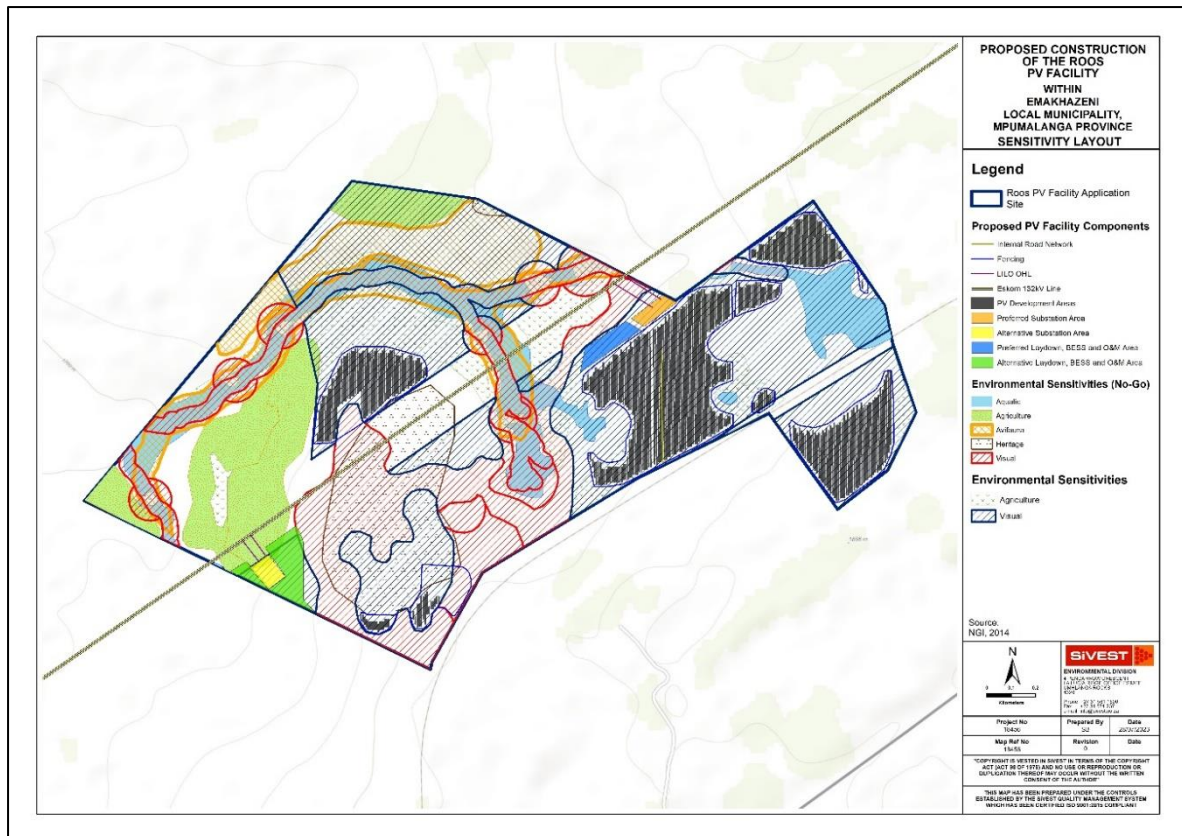


Figure 2: Environmental Sensitivity Overlay

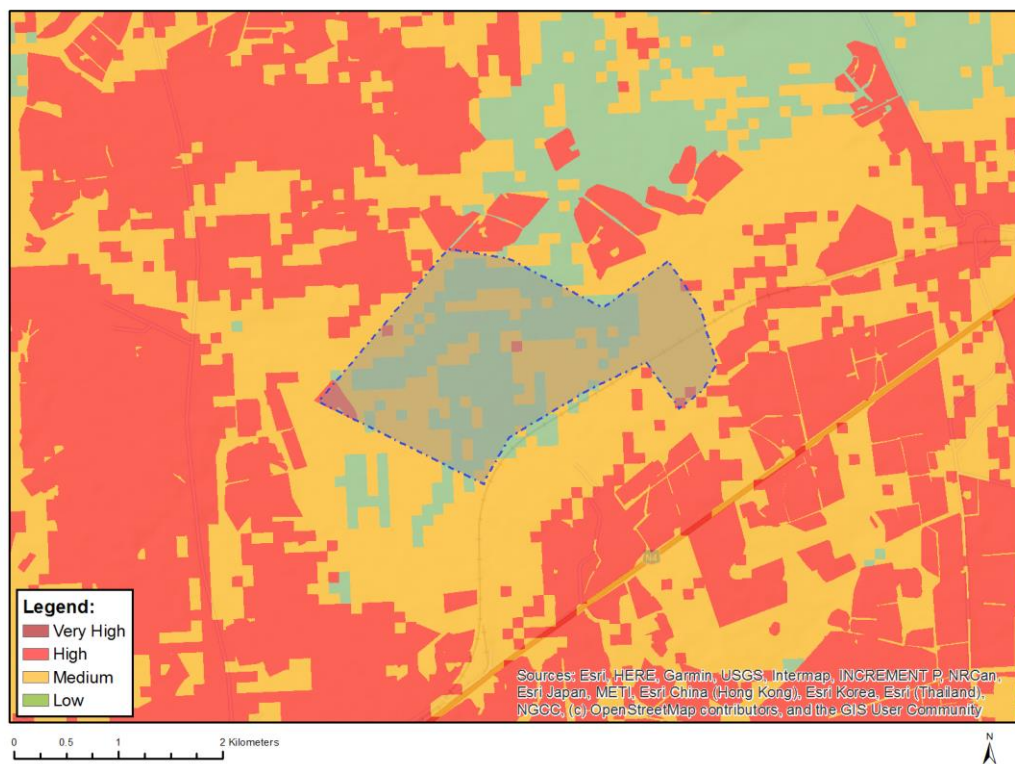


Figure 3: Map showing substation location in relation to the Agriculture Theme Sensitivity (DFFE Screening Tool)

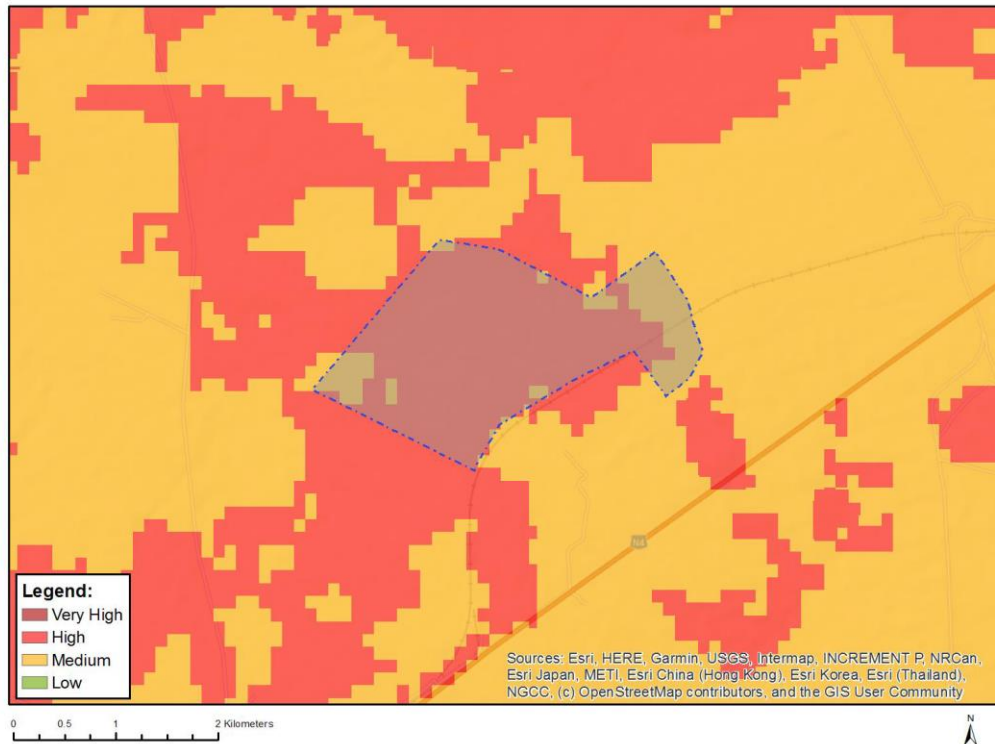


Figure 4: Map showing substation location in relation to the Animal Species Theme Sensitivity (DFFE Screening Tool)

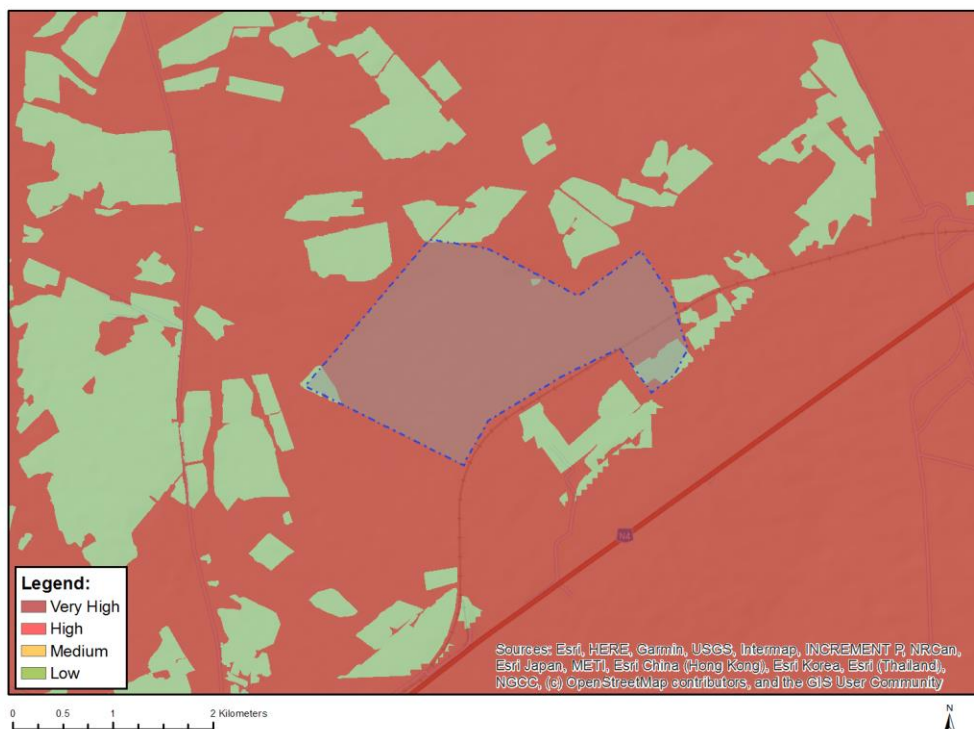


Figure 5: Map showing substation location in relation to the Aquatic Biodiversity Theme Sensitivity (DFFE Screening Tool)



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



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



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

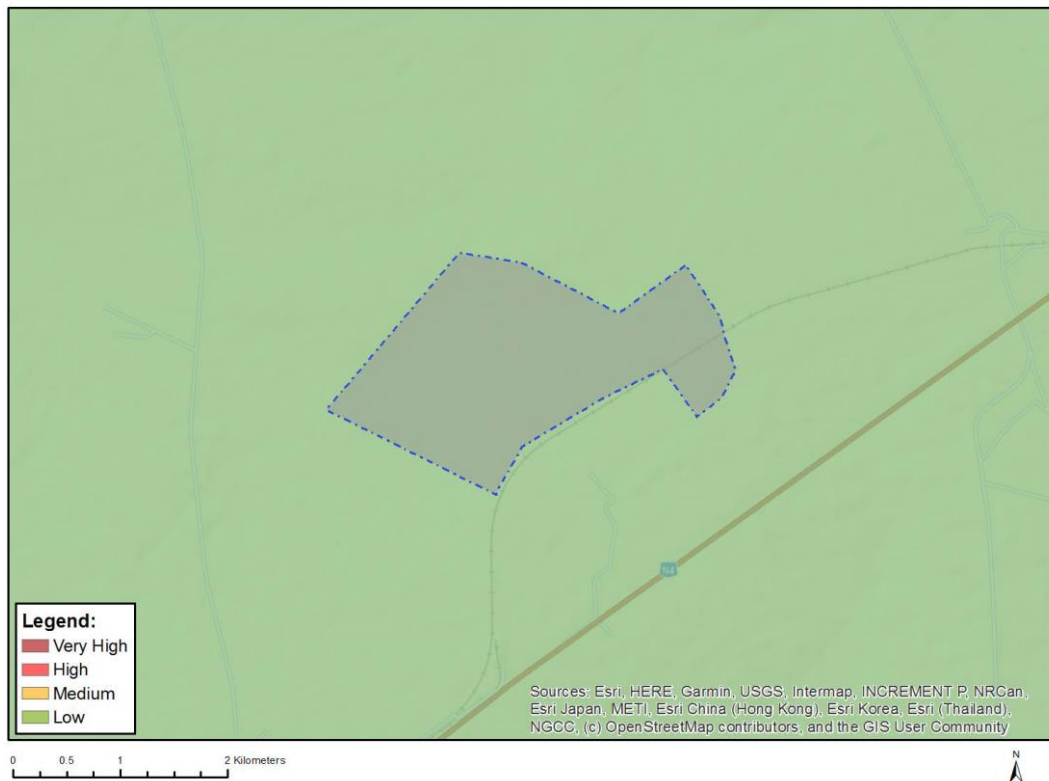


Figure 9: Map showing substation location in relation to the Defence Theme Sensitivity (DFFE Screening Tool)

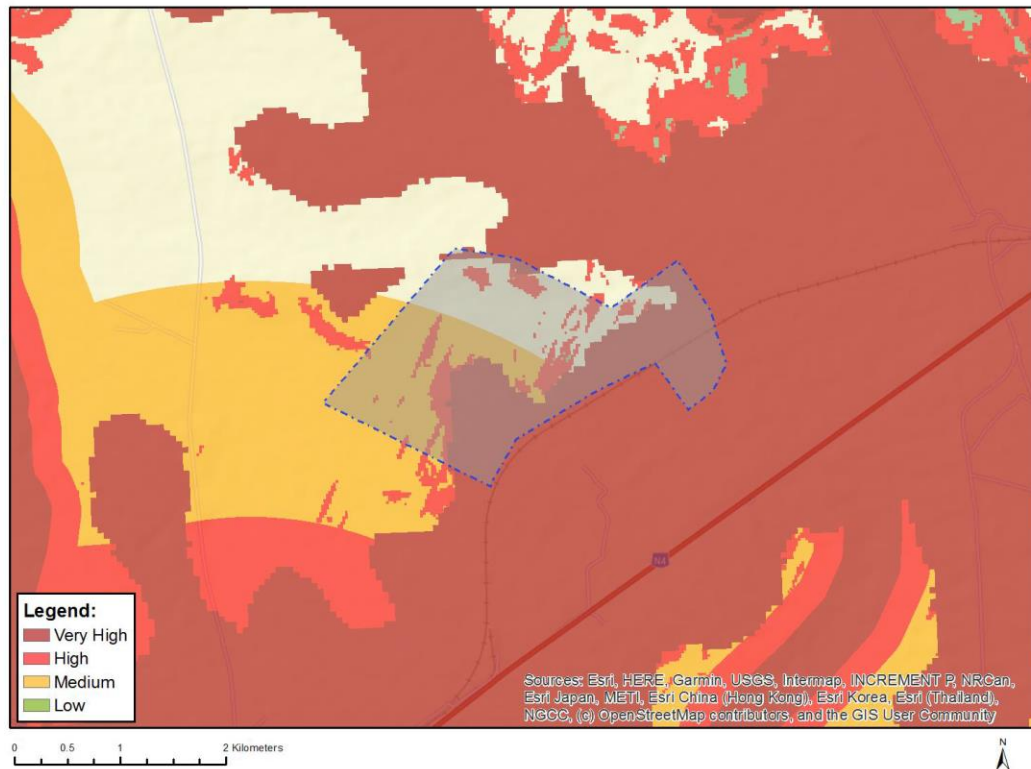


Figure 10: Map Showing relative Landscape (Solar) theme sensitivity.

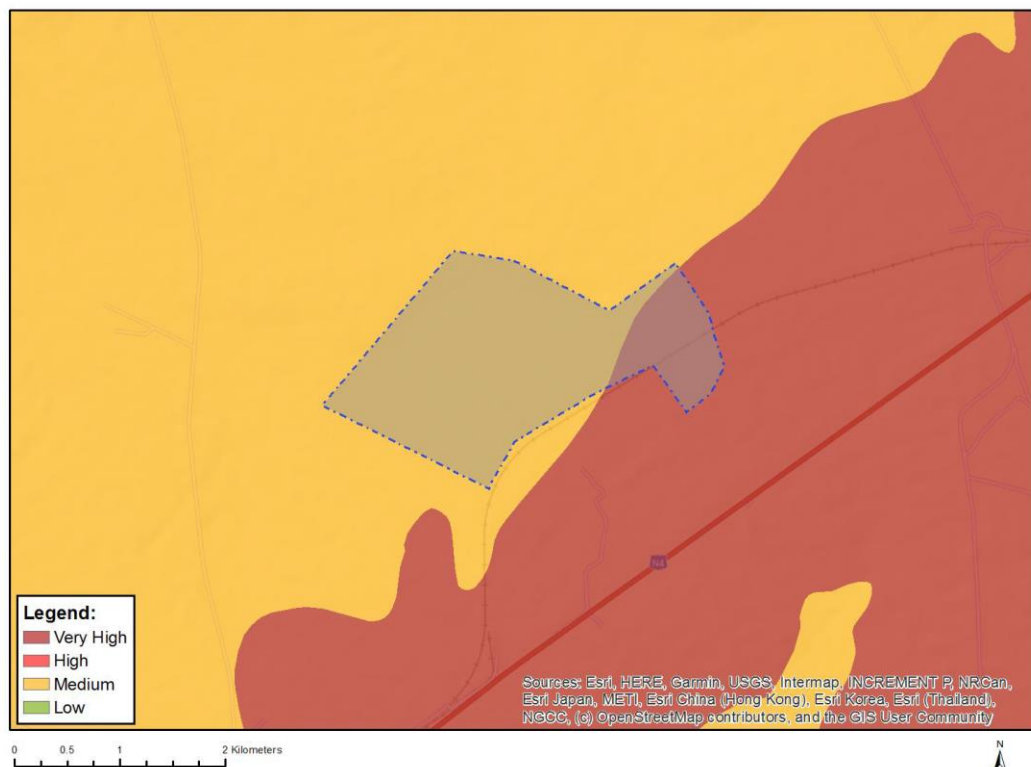


Figure 11: Map showing substation location in relation to the Palaeontology Theme Sensitivity (DFFE Screening Tool)

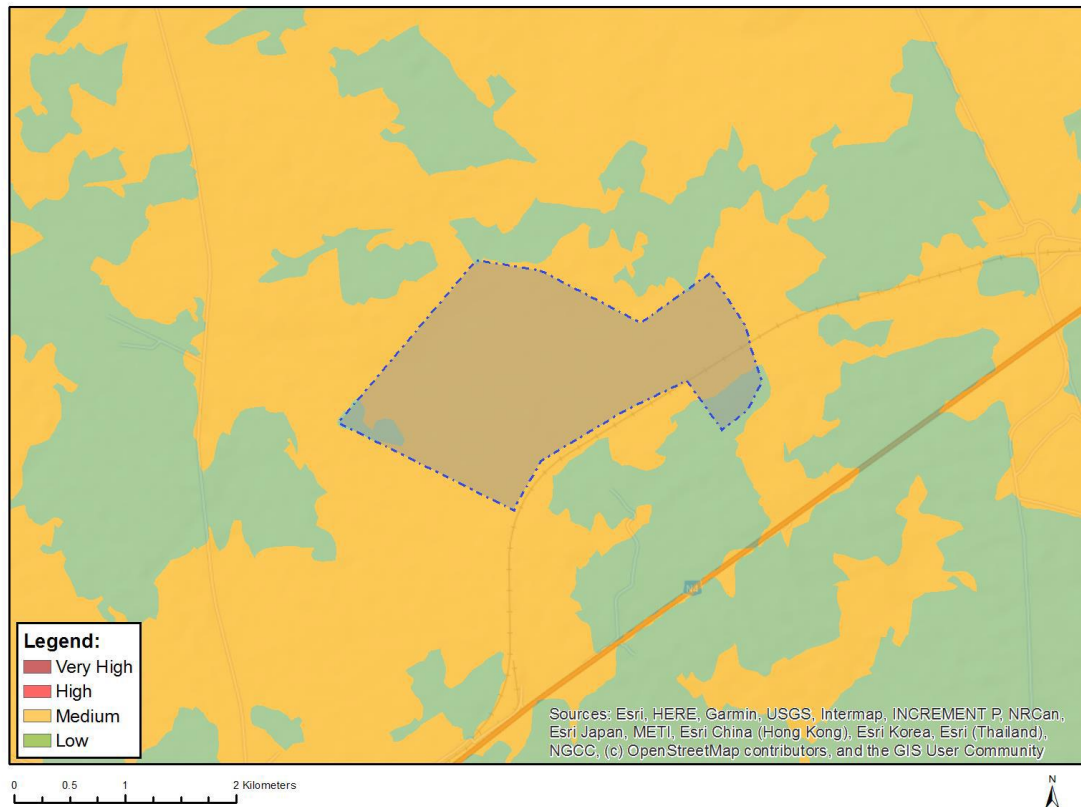


Figure 12: Map showing substation location in relation to the Plant Species Theme Sensitivity (DFFE Screening Tool)

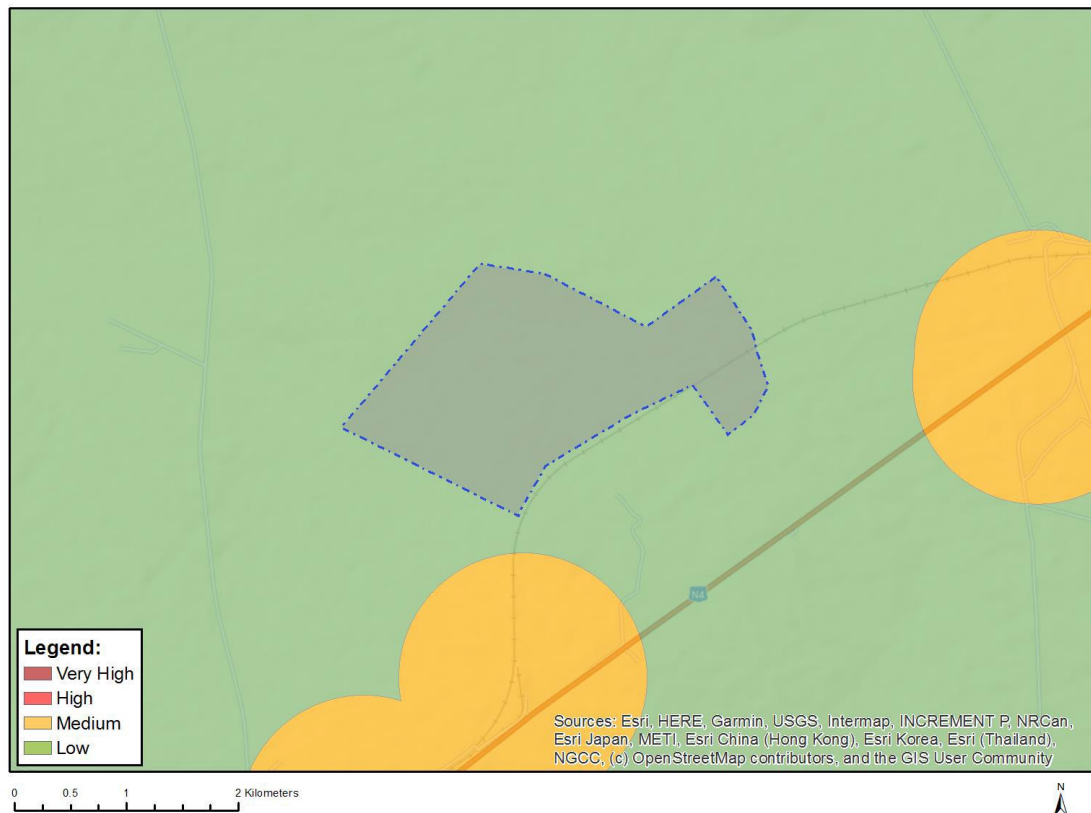


Figure 13: Map showing substation location in relation to the RFI Theme Sensitivity (DFFE Screening Tool)

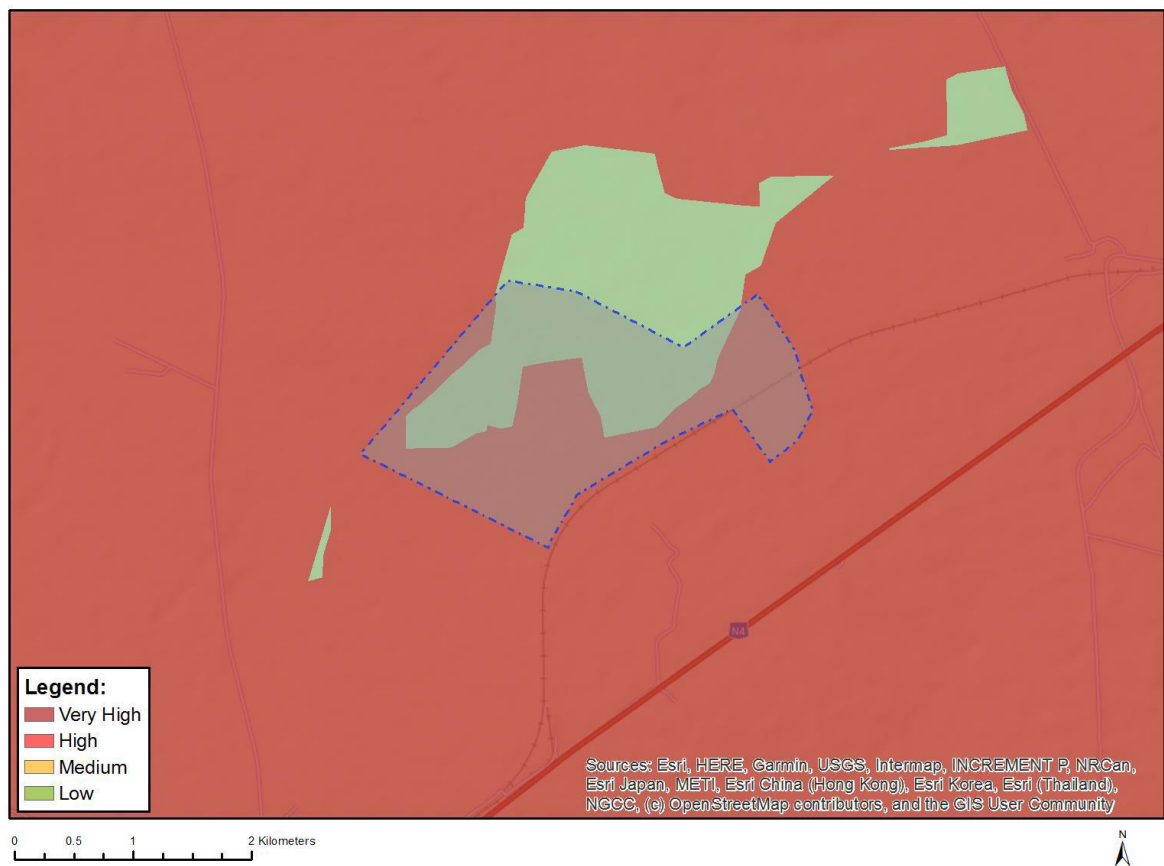


Figure 14: Map showing substation location in relation to the Terrestrial Biodiversity Theme Sensitivity (DFFE Screening Tool)

7.3 Sub-section 3: Declaration

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

Signature Proponent/applicant/ holder of EA

Date:

A handwritten signature in black ink, appearing to read 'B. J. J. J.', is written over a horizontal dashed line.

03.08.2023

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 Geotechnical Assessment
- Surface Water Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Agriculture and Soils Impact Assessment (desktop)
- Avifaunal Impact Assessment
- Social Impact Assessment (desktop)
- Heritage Impact Assessment
- Paleontological Impact Assessment
- Transportation Impact Assessment
- Visual Impact Assessment
- Glint and Glare Assessment

Only additional mitigation measures provided by the Specialists are included below.

Agriculture:

Agriculture - Management Plan for the Pre-Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Site clearance and topsoil removal prior to the commencement of physical construction activities. The construction of stockpiles	<ul style="list-style-type: none">• Ensure proper storm water management designs are in place;• If any erosion occurs, corrective actions (erosion berms) must be taken to minimize any further erosion from taking place;• If erosion has occurred, topsoil should be sourced and replaced and shaped to reduce the recurrence of erosion;• Only the designated access routes are to be used to reduce any unnecessary compaction;• Compacted areas are to be ripped to loosen the soil structure;• The topsoil should be stripped by means of an excavator bucket, and loaded onto dump trucks;• Topsoil stockpiles are to be kept to a maximum height of 4m;• Topsoil is to be stripped when the soil is dry, as to reduce compaction;• Bush clearing contractors will only clear bushes and trees larger than 1m the remaining vegetation will be stripped with the top 0.3 m of topsoil to conserve as much of the nutrient cycle, organic matter, and seed bank as possible (only	Applicant Contractor • ECO	As prescribed by the Mitigation measures.	Prevent soil erosion and the loss of soil as a valuable resource	Ongoing

	<p>after alien vegetation has been removed);</p> <ul style="list-style-type: none"> • The subsoil approximately 0.3 – 0.6 m thick will then be stripped and stockpiled separately; • The handling of the stripped topsoil will be minimized to ensure the soil's structure does not deteriorate significantly; • Compaction of the removed topsoil must be avoided by prohibiting traffic on stockpiles; • Topsoil stockpiles should only be used for the rehabilitation of the area; • The stockpiles will be vegetated in order to reduce the risk of erosion, prevent weed growth and to reinstitute the ecological processes within the soil. • Prevent any spills from occurring. Machines must be parked within hard park areas and must be checked daily for fluid leaks; • If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities; • All vehicles are to be serviced in a correctly bunded area or at an off-site location; • Leaking vehicles will have drip trays place under them where the leak is occurring; 				
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Agriculture - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
<p>Site clearance and topsoil removal prior to the commencement of physical construction activities.</p> <p>The construction of stockpiles</p>	<ul style="list-style-type: none"> • Ensure proper storm water management designs are in place; • If any erosion occurs, corrective actions (erosion berms) must be taken to minimize any further erosion from taking place; • If erosion has occurred, topsoil should be sourced and replaced and shaped to reduce the recurrence of erosion; • Only the designated access routes are to be used to reduce any unnecessary compaction; • Compacted areas are to be ripped to loosen the soil structure; • The topsoil should be stripped by means of an excavator bucket, and loaded onto dump trucks; • Topsoil stockpiles are to be kept to a maximum height of 4m; • Topsoil is to be stripped when the soil is dry, as to reduce compaction; • Bush clearing contractors will only clear bushes and trees larger than 1m the remaining vegetation will be stripped with the top 0.3 m of topsoil to conserve as much of the nutrient cycle, organic matter, and seed bank as possible (only after alien vegetation has been removed); 	<p>Applicant</p> <p>Contractor ECO</p>	<p>As prescribed by the Mitigation measures.</p>	<p>Prevent soil erosion and the loss of soil as a valuable resource</p>	<p>Construction/ Ongoing</p>

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> • The subsoil approximately 0.3 – 0.6 m thick will then be stripped and stockpiled separately; • The handling of the stripped topsoil will be minimized to ensure the soil's structure does not deteriorate significantly; • Compaction of the removed topsoil must be avoided by prohibiting traffic on stockpiles; • Topsoil stockpiles should only be used for the rehabilitation of the area; • The stockpiles will be vegetated in order to reduce the risk of erosion, prevent weed growth and to reinstitute the ecological processes within the soil. • Prevent any spills from occurring. Machines must be parked within hard park areas and must be checked daily for fluid leaks; • If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities; • All vehicles are to be serviced in a correctly bunded area or at an off-site location; • Leaking vehicles will have drip trays place under them where the leak is occurring; 				

Agriculture - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
<p>Operation and maintenance of the topsoil stockpiles.</p> <p>Rehabilitation of the Project area will be undertaken, which includes the ripping of the compacted soil surfaces, spreading of topsoil and establishment of vegetation.</p>	<ul style="list-style-type: none"> • Ensure proper storm water management designs are in place; • If erosion occurs, corrective actions (erosion berms) must be taken to minimize any further erosion from taking place; • If erosion has occurred, topsoil should be sourced and replaced and shaped to reduce the recurrence of erosion; • Only the designated access routes are to be used to reduce any unnecessary compaction; • Compacted areas are to be ripped to loosen the soil structure and vegetation cover re-instated; • Implement land rehabilitation measures; <ul style="list-style-type: none"> • Follow rehabilitation guidelines; • The topsoil should be moved by means of an excavator bucket, and loaded onto dump trucks; • Topsoil is to be moved when the soil is dry, as to reduce compaction; • Topsoil to be replaced for rehabilitation purposes; • The handling of the stripped topsoil will be minimized to ensure the soil's structure does not deteriorate; and • Topsoil stockpiles should only be used for the rehabilitation of the area; 	<p>Applicant Contractor ECO</p>	<ul style="list-style-type: none"> • As prescribed by the Mitigation measures. 	<p>Prevent soil erosion and the loss of soil as a valuable resource</p>	<p>Ongoing</p>

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> • Prevent any spills from occurring. Machines must be parked within hard park areas and must be checked daily for fluid leaks; • If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities; • All vehicles are to be serviced in a correctly bunded area or at an off-site location; • Leaking vehicles will have drip trays place under them where the leak is occurring; 				

Management Plan for the Decommissioning Phase

N/A

Heritage:

Management Plan for the Pre-Construction Phase

N/A

Heritage - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Impact to significant archaeology	<ul style="list-style-type: none"> If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way forward. 	ECO	N/A	Conservation of significant resources	Daily

Management Plan for the Operation Phase

N/A

Management Plan for the Decommissioning Phase

N/A

Palaeontology:

Management Plan for the Pre-Construction Phase

N/A

Palaeontology - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Impact to significant palaeontology	If Palaeontological Heritage is uncovered during surface clearing and excavations ECO should be informed immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) so that Mitigation (recording and collection) can be carried out.	ECO	N/A	Conservation of significant resources	Daily

Management Plan for the Operation Phase

N/A

Management Plan for the Decommissioning Phase

N/A

Social:

Management Plan for the Pre-Construction Phase

N/A

Social - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Local employment opportunities during construction with accompanying skills development.	Implementation of a local employment policy and skills development programme.	The developer monitored by the Municipality.	Development and implementation of Standard Operating Procedures. Link into the Artisan Recognition of Prior Learning in the renewable energy storage value chain.	Local employment of contractor personnel.	Before contractor appointment and staff recruitment.
Local business and supplier development	Implementation of the Socio-Economic Development (SED) / Enterprise Development (ED) programmes required in terms of the REIPPP Programme.	The developer monitored by the Municipality	Link into the Internship programmes/opportunities in the renewable energy and storage sector by participating in Yes4Youth.	Creation of local suppliers	Before appointment of suppliers.
Influx of job seekers	Formulation of operating practices for the recruitment of contract workers to avoid an influx of unwanted persons seeking employment.	The developer monitored by the Municipality	Community information and training concerning the project and recruitment requirements	Prevention of an influx of job seekers coming to the site.	Before recruitment of contract workers.
Temporary increase in safety, security, and fire concerns.	Integrate the site security systems in the regional and farmer security processes, systems and networks.	The developer.	Coordinate the project's security and fire prevention systems with local security networks and SAPS.	Lower security and fire hazard risks.	Before contractor appointment and staff recruitment.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Traffic and nuisance impact for the temporary increase in traffic, noise and dust.	Traffic management to the site and use of dust management practices during construction.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.	As per mitigation actions provided in the specialist report.

Social - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Creation of direct employment coupled with skills development.	<ul style="list-style-type: none"> Implementation of a local employment policy and skills development programme. 	The developer monitored by the Municipality.	Development and implementation of Standard Operating Procedures. Link into the Artisan Recognition of Prior Learning in the renewable energy storage value chain.	Local employment of contractor personnel. Before contractor	Before contractor appointment and staff recruitment.
Visual and sense of place impacts and related impacts on tourism.	<ul style="list-style-type: none"> As specified in the Landscaping to visually screen the project 	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project	As specified in the Landscaping to visually screen the project
Removal of productive agricultural land.	<ul style="list-style-type: none"> As specified in the specialist report 	As specified in the specialist report	As specified in the specialist report	As specified in the specialist report	As specified in the specialist report

Management Plan for the Decommissioning Phase

N/A

Transport:

Transport - Management Plan for the Pre-Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Increase in road traffic	<ul style="list-style-type: none"> Identify type and condition of affected roads 	Developer	Transportation study	Establish baseline	Once-off
	<ul style="list-style-type: none"> Deduce current traffic 	Developer	Transportation study	Establish baseline conditions	Once-off
	<ul style="list-style-type: none"> Deduce expected additional traffic 	Developer	Transportation study	Understand extent of impact	Once-off
	<ul style="list-style-type: none"> Confirm ability of existing road network to absorb additional traffic 	Developer	Transportation study	Ensure containment of impact	Once-off
Increase in traffic incidents with pedestrians and livestock	<ul style="list-style-type: none"> Assess current pedestrian conditions 	Developer	Transportation study	Establish baseline	Once-off
	<ul style="list-style-type: none"> Confirm ability of existing road network to safely accommodate pedestrians 	Developer	Transportation study	Ensure containment of impact	Once-off
Traffic disruptions and road damage due to abnormal loads	<ul style="list-style-type: none"> Identify required abnormal loads 	Developer	Transportation study; Abnormal Load Study	Understand extent of impact	Monthly
	<ul style="list-style-type: none"> Identify suitable routes 	Developer	Transportation study;	Ensure containment of impact	Once-off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
	<ul style="list-style-type: none"> Apply for abnormal load permits with the relevant authorities 	Developer	Application	Ensure containment of impact	Once-off
Access and internal roads	<ul style="list-style-type: none"> Assess suitability of existing accesses and internal roads 	Developer	Transportation study	Establish baseline	Once-off
	<ul style="list-style-type: none"> Design accesses and internal roads as per applicable criteria and standards 	Developer	Civil engineering design	Ensure containment of impact	Once-off
	<ul style="list-style-type: none"> Design access and internal roads to minimise earthworks 	Developer	Civil engineering design	Reduction of environmental disturbance	Once-off
	<ul style="list-style-type: none"> Design access and internal roads to minimise stormwater damage 	Developer	Civil engineering design	Reduction of environmental disturbance	Once-off
	<ul style="list-style-type: none"> Submit access and road designs for approval with relevant authorities prior to construction 	Developer	Application	Ensure compliance	Once-off

Transport - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Increase in road traffic	<ul style="list-style-type: none"> Group transportation of staff 	Contractor	Planning	Reduce the magnitude of additional road traffic	Daily
	<ul style="list-style-type: none"> Stagger material, plant and equipment deliveries 	Contractor	Programming of works	Reduce the magnitude of	Weekly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
				additional road traffic	
	<ul style="list-style-type: none"> Schedule deliveries for off-peak times 	Contractor	Programming of works	Reduce the magnitude of additional road traffic	Weekly
	<ul style="list-style-type: none"> Adequate traffic law enforcement 	Contractor	Traffic management plan	Safely manage additional road traffic	Daily
Increase in traffic incidents with pedestrians and livestock	<ul style="list-style-type: none"> Reduce and control speed of vehicles 	Contractor	Traffic management plan	Avoid incidents with pedestrians and livestock	Daily
	<ul style="list-style-type: none"> Safe accommodation of pedestrians 	Contractor	Traffic management plan	Avoid incidents with pedestrians	Daily
	<ul style="list-style-type: none"> Implement pedestrian safety initiatives 	Contractor	Social facilitation	Avoid incidents with pedestrians	Monthly
	<ul style="list-style-type: none"> Regularly maintain farm fences & access cattle grids 	Contractor	Inspections and communications	Avoid incidents with livestock	Monthly
Increase in road degeneration	<ul style="list-style-type: none"> Regularly conduct conditional assessments on gravel roads 	Contractor	Visual inspections	Identify deterioration of local roads timeously	Monthly
	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department 	Contractor, Local authority	Road maintenance	Reduce/address deterioration of local roads	Bi-annually
Addition of Abnormal Loads	<ul style="list-style-type: none"> Stagger abnormal load deliveries 	Contractor	Programming of works	Reduce the disturbance of road users associated with the transporting	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
				of abnormal loads	
	<ul style="list-style-type: none"> Schedule abnormal load deliveries for off-peak time 	Contractor	Programming of works	Reduce the disturbance of road users associated with the transporting of abnormal loads	Construction
	<ul style="list-style-type: none"> Ensure compliance with permits 	Contractor	Inspections	Safely manage abnormal loads	Construction
	<ul style="list-style-type: none"> Adequate traffic law enforcement 	Contractor	Traffic management plan	Safely manage abnormal loads	Construction

Transport - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Increase in road traffic	<ul style="list-style-type: none"> Group transportation of staff 	Operator	Planning	Reduce the magnitude of additional road traffic	When required
Increase in traffic incidents with pedestrians and livestock	<ul style="list-style-type: none"> Safe accommodation of pedestrians 	Operator	Monitoring	Avoid incidents with pedestrians	Weekly
	<ul style="list-style-type: none"> Reduce vehicle speed 	Operator	Monitoring	Avoid incidents with pedestrians and livestock	Daily

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
	<ul style="list-style-type: none"> Regularly maintain farm fences & access cattle grids 	Operator	Inspections and Reporting	Avoid incidents with livestock	Monthly
Addition of Abnormal Loads	<ul style="list-style-type: none"> Schedule abnormal load deliveries for off-peak time 	Operator	Programming of maintenance	Reduce the disturbance of road users associated with the transporting of abnormal loads	When required
	<ul style="list-style-type: none"> Ensure compliance with permits 	Contractor	Inspections	Safely manage abnormal loads	When required
	<ul style="list-style-type: none"> Adequate traffic law enforcement 	Contractor	Traffic management plan	Safely manage abnormal loads	When required

Management Plan for the Decommissioning Phase

N/A

Aquatic:

Aquatic - Management Plan for the Pre-Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Impacts to hydrological	<ul style="list-style-type: none"> During the detailed design phase, the footprint and design of structures (Including Pylons and Solar Structures) 	Environmental Control Officer	Construction Monitoring and	Best practice, limiting harm as per National	Pre- Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
function at a landscape level	<p>should aim to have the least impact on habitat quality and hydrology of the watercourse.</p> <ul style="list-style-type: none"> • Design should take into account soil properties, slopes and runoff energy. • Where possible Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas • Project engineers should compile a method statement, outlining the construction methodologies. The required mitigation measures to limit the impacts on the watercourse and associated buffers should be contained within the method statement. The method statement must be approved by the ECO and be available on site for reference purposes 		Preventative Measures	Environmental Management Act No. 107 of 1998	
Sedimentation	<ul style="list-style-type: none"> • Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. 	Developer and Contractor	Preventative	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Pre- Construction
Introduction and spread of alien vegetation.	<ul style="list-style-type: none"> • Undertake an Alien Plant Control Plan which specifies actions and measurable targets 	Developer and Contractor	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental	Pre- Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
				Management Act No. 107 of 1998	
Loss and disturbance of watercourse habitat and fringe vegetation.	<ul style="list-style-type: none"> The development footprint should remain outside the delineated watercourses areas and buffer zones. Where this is unavoidable a Watercourse offset plan and/or a Water use licence should be developed and authorised. This should be discussed with the relevant authorities, and if deemed necessary an offset plan should be developed and approved. Where possible Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas Implement an Alien Plant Control Plan Conduct thorough vegetation surveys and assessments before construction to identify sensitive habitats, watercourses, and fringe vegetation. Use this information to inform design decisions and avoid or minimise impacts to these areas. Carefully plan the solar plant layout to avoid or minimize the disturbance of watercourses and sensitive fringe vegetation. 	Developer and Contractor	Preventative	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Pre-Construction
Changes in water quality	<ul style="list-style-type: none"> Where possible Locate the infrastructure outside the calculated 	Developer and Contractor	Preventative	Best practice, limiting harm as per	Pre- Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>buffer zone. Where designs do not allow for changes a watercourse offset plan and/or a Water use licence should be developed and authorised. This should be discussed with the relevant authorities, and if deemed necessary an offset plan should be developed and approved.</p> <ul style="list-style-type: none"> • Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone • The development footprint must be fenced off from the watercourses and where possible for the non-perennial watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. 			National Environmental Management Act No. 107 of 1998	
Loss of aquatic biota	<ul style="list-style-type: none"> • Avoid unnecessary aquatic ecosystem crossing - limit work within the stream, river or wetland. The use of single access points for crossings. • The Structure currently located either within a wetland or within the buffer of a wetland should be moved. • Other than approved and authorised structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or its associated buffer zones. 	Developer and Contractor	Preventative	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Pre- Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Mark all areas which don't form part of the proposed development within the watercourse as no-go areas. Incorporation of phytoremediation into the storm water attenuation systems to facilitate nutrient reduction, sediment regime control and manage toxicants releases. 				

Aquatic - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Impacts to hydrological function at a landscape level	<ul style="list-style-type: none"> During the construction phase, best practice mitigation measures should be implemented. Excavated materials should not be contaminated and it should be ensured that the minimum surface area is taken up. Where possible Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998 Ensure EMPr is adhered to	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>This should be monitored as part of the EMP.</p> <ul style="list-style-type: none"> Do not permit vehicular or pedestrian access into natural areas or into seasonally wet areas during and immediately after rainy periods, until such a time that the soil has dried out. Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction. Effective control of stormwater from access roads should be undertaken. Effective culverts should be incorporated into the design of access roads. Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. 				
Sedimentation	<ul style="list-style-type: none"> Sediment traps should be installed. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the adjacent surface vegetation. Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a monthly basis to demonstrate compliance with upstream conditions. Any excavated soil/ should not be stored close to watercourses. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material. Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. Monitoring should be done to ensure that sediment pollution is timeously addressed 				
Introduction and spread of alien vegetation.	<ul style="list-style-type: none"> Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>establish, as specified in the Alien Vegetation Management Plan</p> <ul style="list-style-type: none"> Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards. 				
Loss and disturbance of watercourse habitat and fringe vegetation.	<ul style="list-style-type: none"> The development footprint should remain outside the delineated watercourses areas and buffer zones. Where this is unavoidable a Watercourse offset plan and/or a Water use license should be developed and authorised. This should be discussed with the relevant authorities, and if deemed necessary an offset plan should be developed and approved. Where possible Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. Implement an Alien Plant Control Plan Conduct thorough vegetation surveys and assessments before construction to identify sensitive habitats, watercourses, and fringe vegetation. Use this information to inform design decisions and avoid or minimise impacts to these areas. Carefully plan the solar plant layout to avoid or minimize the disturbance of 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Construction Monitoring and Preventative Measures	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>watercourses and sensitive fringe vegetation.</p> <ul style="list-style-type: none"> • Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish. • Develop a restoration and replanting plan to mitigate the loss of habitat and fringe vegetation. This may involve revegetation with native plant species, especially in areas where vegetation has been removed or disturbed during construction. 				
Changes in water quality	<ul style="list-style-type: none"> • Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. • Incorporation of phytoremediation into the storm water attenuation systems to facilitate nutrient reduction, sediment regime control and manage toxicants releases. • Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone • Implement stormwater management practices to control and treat runoff 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>from the solar plant site. This can involve the use of retention ponds, biofiltration systems, or constructed wetlands to capture and treat stormwater runoff before it enters water bodies.</p> <ul style="list-style-type: none"> Establish a robust water quality monitoring program to regularly assess the condition of water bodies near the solar plant. This includes monitoring key parameters such as pH, turbidity, dissolved oxygen, and levels of contaminants. Promptly report any deviations or exceedances from established water quality standards. Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. Develop norms and standards for the treatment of spills such as oil or hydraulic fluid. Ensure that the required equipment is available on hand to contain any spills. Appoint a reliable contractor for the removal of refuse during the construction phase. 				
Loss of aquatic biota	<ul style="list-style-type: none"> Ensure that no unnecessary vegetation is removed during the construction phase. Avoid unnecessary aquatic ecosystem crossing - limit work within the stream, river or wetland. The use of single access points for crossings. 	Construction Monitoring and Preventative Measures	Construction Monitoring and Preventative Measures	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Construction

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> • Implement weed control in aquatic ecosystem and buffer zones. • Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance of the proposed infrastructure and take immediate corrective action where invasive species are observed to establish. • Identify and protect important habitats for aquatic biota, such as wetlands, rivers, and streams, within and near the solar plant site. Implement habitat restoration projects to enhance and create suitable habitats for aquatic organisms. • Implement measures to maintain and improve water quality, such as implementing erosion control practices, managing stormwater runoff, and reducing the discharge of pollutants into water bodies. Regular monitoring of water quality parameters should be conducted to ensure compliance with standards and prompt identification of any issues 				

Aquatic - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Impacts to hydrological function at a landscape level	<ul style="list-style-type: none"> Do not permit vehicular or pedestrian access into natural areas or into seasonally wet areas during and immediately after rainy periods, until such a time that the soil has dried out. Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction. Effective control of stormwater from access roads should be undertaken. Effective culverts should be incorporated into the design of access roads. Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. 	Environmental Control Officer	Construction Monitoring and Preventative Measures	Ensure EMP is adhered to	Operation
Sedimentation	<ul style="list-style-type: none"> Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a monthly basis to demonstrate compliance with upstream conditions. 	Environmental Control Officer	Monitoring	Ensure EMP is adhered to	Operation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Monitoring should be done to ensure that sediment pollution is timeously addressed 				
Introduction and spread of alien vegetation.	<ul style="list-style-type: none"> Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan Undertake an Alien Plant Control Plan which specifies actions and measurable targets Rehabilitate or revegetate disturbed areas Acquire the necessary equipment for removal and control Planned sequence of areas to be cleared of invasive plants A register of the methods used, dates undertaken, as well as herbicides and dosage used must be kept and available on site. The register must also include incidents of poisoning or spillage □ Ensure that contractors can identify the relevant plants and are aware of the removal procedures Construction equipment must be cleaned prior to site access. This will prevent alien invasive seed from other sites to spread into disturbed soils 	Environmental Control Officer	Monitoring	Ensure EMPr is adhered to	Operation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Manual removal methods are preferred to chemical control Rehabilitate or revegetate disturbed areas. 				
Loss and disturbance of watercourse habitat and fringe vegetation.	<ul style="list-style-type: none"> Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. Implement sediment and erosion control measures to prevent sediment runoff from construction activities into watercourses. This can include sediment barriers, sediment ponds, and erosion control blankets to protect the water quality and vegetation along the watercourses Establish a monitoring program to assess the effectiveness of mitigation measures and monitor the condition of watercourses and fringe vegetation during and after construction 	Environmental Control Officer	Monitoring	Ensure EMPr is adhered to	Operation
Changes in water quality	<ul style="list-style-type: none"> Independent water quality analyses should be undertaken annually, or as specified by an aquatic specialist, to demonstrate and audit compliance of effective pollution control measures A detailed rehabilitation plan should be drawn up with the input from a water quality, soil contamination 	Environmental Control Officer	Monitoring	Ensure EMPr is adhered to	Operation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>assessment and ecologist should any spills occur.</p> <ul style="list-style-type: none"> • It should be ensured that regular maintenance takes place to prevent failure of any infrastructure associated with the proposed decommissioning • Incorporation of phytoremediation into the storm water attenuation systems to facilitate nutrient reduction, sediment regime control and manage toxicants releases. • Provide training to personnel involved in the solar plant's operation and maintenance on best practices for water quality protection. Promote awareness and understanding of the potential impacts of the solar plant on water quality and the importance of adhering to mitigation measures • Ensure that no decommissioning activities impact on the watercourse or buffer area. This includes edge effects. 				
Loss of aquatic biota	<ul style="list-style-type: none"> • Implement weed control in aquatic ecosystem and buffer zones. • Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance of the proposed infrastructure and take immediate corrective action where invasive species are observed to establish. 	Environmental Control Officer	Monitoring	Ensure EMPr is adhered to	Operation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Identify and protect important habitats for aquatic biota, such as wetlands, rivers, and streams, within and near the solar plant site. Implement habitat restoration projects to enhance and create suitable habitats for aquatic organisms. Implement measures to maintain and improve water quality, such as implementing erosion control practices, managing stormwater runoff, and reducing the discharge of pollutants into water bodies. Regular monitoring of water quality parameters should be conducted to ensure compliance with standards and prompt identification of any issues 				

Aquatic - Management Plan for the Decommissioning Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Impacts to hydrological function at a landscape level	<ul style="list-style-type: none"> Effective control of stormwater from access roads should be undertaken. Implement Best Practice with regards to concrete mixing on site and control of waste and pollution Where structures are removed from nearby watercourses care should be 	Developer and Contractor Environmental Control Officer	Monitoring	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Decommissioning

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>taken not to disturb a larger footprint than needed.</p> <ul style="list-style-type: none"> • Culverts must remain in place and must not be removed if the given road is not removed during the decommissioning phase. • Vehicle movement should be restricted to designated decommissioning areas to prevent the increase in hardened surfaces and subsequent increase in runoff. 				
Sedimentation	<ul style="list-style-type: none"> • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of earthworks in that area. • Sediment traps should be installed • Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a monthly basis to demonstrate compliance with upstream conditions. • Any excavated soil/ should not be stored close to watercourses. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material. • Monitoring should be done to ensure that sediment pollution is timeously addressed 	Environmental Control Officer	Monitoring and Preventative Measures and Rehabilitation	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998	Decommissioning

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Where structures are removed from nearby watercourses care should be taken not to disturb a larger footprint than needed. Vehicle movement should be restricted to the minimum that is required for decommissioning. Unnecessary movement of vehicles will increase the degradation of paths and dirt roads leading to increased erosion risk. Progressive rehabilitation must occur. Rehabilitation has to be take place as soon as decommissioning commences to prevent soil erosion. Monitoring should be done to ensure that sediment pollution is timeously dressed. 				
Introduction and spread of alien vegetation.	<ul style="list-style-type: none"> Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Pan Undertake an Alien Plant Control Plan which specifies actions and measurable targets Retain vegetation and soil in position for as long as possible, removing it immediately ahead of decommissioning /earthworks in that 	Environmental Control Officer	Monitoring and Preventative Measures and Rehabilitation	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998 Ensure EMPr is adhered to	Decommissioning

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<p>area and returning it where possible afterwards.</p> <ul style="list-style-type: none"> Rehabilitation must occur concurrently with decommissioning. The mixture of vegetation seed must be used during rehabilitation. The mix must include: Annual and perennial species, pioneer species, species which are indigenous to the area to ensure there is no ecological imbalance in the area. 				
Loss and disturbance of watercourse habitat and fringe vegetation.	<ul style="list-style-type: none"> Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. Rehabilitate any impacted areas Where structures are removed from nearby watercourses care should be taken not to disturb a larger footprint than needed. Vehicle movement should be restricted to the minimum that is required for decommissioning. Rehabilitation of decommissioned areas must commence concurrently with decommissioning. Monitor the establishment of alien invasive species within the areas affected by the decommissioning and take immediate corrective action where invasive species are observed to establish. 	Environmental Control Officer	Monitoring and Preventative Measures and Rehabilitation	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998 Ensure EMPr is adhered to	Decommissioning

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
	<ul style="list-style-type: none"> Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed 				
Changes in water quality	<ul style="list-style-type: none"> A detailed rehabilitation plan should be drawn up with the input from a water quality assessment 	Environmental Control Officer	Monitoring and Preventative Measures and Rehabilitation	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998 Ensure EMPr is adhered to	Decommissioning
Loss of aquatic biota	<ul style="list-style-type: none"> Monitor the establishment of alien invasive species within the areas affected during decommissioning 	Environmental Control Officer	Monitoring and Preventative Measures and Rehabilitation	Best practice, limiting harm as per National Environmental Management Act No. 107 of 1998 Ensure EMPr is adhered to	Decommissioning

Avifauna:

Management Plan for the Pre-Construction Phase

N/A

Avifauna - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Disturbance due to noise such as, machinery movements	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"

Avifauna - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
Bird mortalities	<ul style="list-style-type: none"> Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure as well as collisions of large bodied species with powerlines. Although the current overall bird activity qualifies the proposed solar development boundary as a high-density area, there are certain times of the year (and day) when it appears that large flocks of birds (such as cranes, 	Company Appointed ECO, trained by SACNASP registered Zoologist.	<ul style="list-style-type: none"> Location and species must be recorded (a georeferenced photograph as evidence is also required). Monthly reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on 	Collision frequency and intensity (# kills per species per unit time) will need to be assessed per species by a specialist. However, any non-specific collision concentrations (> 10 kills per month clustering in a stretch of powerline) must initiate investigation and corrective measures (including retrofitting of	Weekly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/FREQUENCY
	<p>bustards and large birds of prey) are far more prevalent.</p> <ul style="list-style-type: none"> • All powerline infrastructure must be fitted with approved bird diverters in order to provide visibility for large-bodied birds. In all areas where service road intersects with semi natural or natural habitat, all fences must be set back at least (strictly) 75 metres from the edge of every service road in order to allow for vulnerable species such as bustards, raptors and korhaans to obtain adequate height after being flushed by vehicle traffic. • An Alternative mitigation measure and where a 75-metre buffer is not possible, new fences must be set back no more than 5 metres (directly adjacent) from the edge of service roads. Through the essential elimination of habitat, this will limit any chance of vulnerable species foraging on verge side vegetation and causing subsequent fence collisions. 		<p>negative change detection not directly attributable to Project activities (Solar Facility Operation) and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.</p>	<p>mitigation measures).</p>	

Management Plan for the Decommissioning Phase

N/A

Terrestrial:

Terrestrial - Management Plan for the Pre-Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Vegetation Loss	<ul style="list-style-type: none">• Blanket clearing of vegetation must be limited to the site. No clearing outside of footprint to take place.• The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.• Topsoil must be striped and stockpiled separately during site preparation and replaced on completion where revegetation will take place.• Erosion prevention is key thus runoff must be controlled and managed by use of proper stormwater management measures.• Any site camps and laydown areas requiring clearing must be located within already disturbed areas away from sensitive areas.	Developer and Contractor	N/A	To minimise vegetation loss	Planning and Design phase prior to construction commencing

Terrestrial - Management Plan for the Construction Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Alien Invasive Species Invasion	<ul style="list-style-type: none"> Alien invasive species (AIS) and weeds must be removed from the site as per CARA/NEMBA requirements. A suitable AIS and weed management strategy to be implemented during construction and operation phases. After clearing and construction is completed, an appropriate cover may be required, should natural re-establishment of grasses not take place in a timely manner along road verges. This will also minimise dust. 	Authorisation Holder / Project Manager / ECO		To minimise regeneration of AIS and weeds	Quarterly during the construction phase. Annually during the operational phase. Once-off during the decommissioning phase.

Terrestrial - Management Plan for the Operation Phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Alien Invasive Species Invasion	<ul style="list-style-type: none"> Alien invasive species (AIS) and weeds must be removed from the site as per CARA/NEMBA requirements. A suitable AIS and weed management strategy to be implemented during construction and operation phases. After clearing and construction is completed, an appropriate cover may be required, should natural re-establishment of grasses not take place 	Authorisation Holder / Project Manager / ECO	N/A	To minimise regeneration of AIS and weeds	Quarterly during the construction phase. Annually during the operational phase. Once-off during the decommissioning phase.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	in a timely manner along road verges. This will also minimise dust.				

Management Plan for the Decommissioning Phase

N/A

Visual:

Visual- Management Plan for the Pre-Construction Phase

N/A

Visual - Management Plan for the Construction Phase

IMPACT/ ASPECT	MITIGATION/MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Topsoil loss can reduce the viability of rehabilitation measures and needs to be carefully managed if available.	<ul style="list-style-type: none"> Topsoil excavated from the site should be stockpiled and utilised for rehabilitation of the site after construction. 	Project management and EPC	As defined by the rehabilitation specialist.	Topsoil is utilized and no sterilization of topsoil takes place.	As required.
Un-necessary roads have the potential to create a	<ul style="list-style-type: none"> Limit road access to an efficient minimum by coordinated planning between the project 	Project management and EPC	Temporary roads should be well marked and should only cross drainage lines on areas	The surrounding landscape remains rural and agricultural in	As required.

visual disturbance long after the usage as past.	management and the environmental control officer.		identified as permanent road features where erosion and soil loss management can be contained. Non-compliance with road signage and utilisation of no authorised roads should become a finable offence.	landscape and land use.	
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the site and along the access road.	<ul style="list-style-type: none"> Set up a clear management plan with clear accountability structures with set thresholds for triggering of mitigations. Set up a liaison committee to engage with local farmsteads located within 500m of an access road, with monthly communication with the farm owners on the effectiveness of the dust management procedures. 	Project management and EPC (as the issue arises).	Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the EPC.	Dust generated on site as well as on the access road to the site, is well managed and does not become a nuisance factor for the workers or the surrounding farmsteads.	On-going
Buildings painted bright colours can increase the visual presence of the structures in a rural landscape, creating higher levels of visual contrast and attracting the	<ul style="list-style-type: none"> The buildings should be painted a grey, brown colour (or other colour in keeping with the surrounding landscape) to assist in reducing colour contrast. 	Project management and EPC	At the commencement of construction, purchase order criteria for ordering paints and sheet metals need to be clearly defined.	Colour contrast generated from the buildings as seen from the roads is low and does not attract the attention of the casual observer.	Commencement of construction.

attention of the casual observer. (BESS excluded)	<ul style="list-style-type: none"> • Sheet metal structures should make use of mid-grey colour, and preferable have a rough texture material. • As BESS structure often require a white paint of containers to reduce heat risk to the batteries, the BESS is excluded from the colour mitigation. Risk to landscape is low due to limited visibility and low receptors exposure. 				
Light spillage from security lighting of structures can significantly increase the visual impact of a project in a rural landscape in a dark-sky context.	<ul style="list-style-type: none"> • Light spillage mitigation from security lighting should be implemented and monitored by the ECO during construction to ensure that light spillage does not create a glowing effect. • No overhead/ flood lighting of structures or areas. • No up lighting to be used. 	Project management and EPC	At the commencement of construction, purchase order criteria for ordering of security lighting need to be clearly defined.	Lights contrast generated from the buildings as seen from the roads is low and does not attract the attention of the casual observer.	Commencement of construction.
Litter has the potential to degrade landscape character and can be contained by fencing around the construction camp/ laydown.	<ul style="list-style-type: none"> • Littering should be a finable offence. • Fencing around the laydown should be diamond shaped to catch windblown litter. The fences should be routinely checked for the collection of litter caught on the fence. 	Project management and EPC	Littering rules need to be clearly defined and workers effectively informed of the consequences of littering.	Solid waste litter is effectively controlled and does not become a landscape degradation risk.	Checked bi-monthly

Soil erosion can result in visual scarring on prominent areas.	<ul style="list-style-type: none"> In areas where construction has taken place on steeper slopes, soil erosion measures need to be implemented. 	Project management and EPC (checked monthly)	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area at hand, rehabilitation processes need to commence.	Soil erosion is limited and effectively managed such that visual scarring does not take place.	Commencement of construction. On-going
Cut and Fill areas can generate visual scarring in the landscape beyond the locality.	<ul style="list-style-type: none"> Cut & Fill areas should be limited as much as possible, with specific detail placed on prevention of soil erosion. Slopes should not exceed 1 in 6m gradients and need to be rehabilitated to natural vegetation directly post construction. 	Project management and EPC with inputs from rehabilitation specialist.	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area at hand, rehabilitation processes need to commence.	Cut/ fill scarring is limited and effectively managed and does not dominate the attention of the casual observer.	Commencement of construction. On-going

Visual - Management Plan for the Operation Phase

IMPACT/ ASPECT	MITIGATION/MANAGEMENT ACTIONS	RESPONSIBILITY	METHODOLOGY	MITIGATION/MANAGEMENT OBJECTIVES AND OUTCOMES	FREQUENCY
Compaction of larger areas can result in soil sterilisation and	<ul style="list-style-type: none"> Post construction, the laydown areas and other construction areas no longer needed for operational management, should be 	Project management and EPC with inputs from	As defined by the rehabilitation specialist.	Soil sterilization does not take place and large degraded areas do not occur, with overall landscape integrity maintained.	On completion of construction phase. On-going

IMPACT/ ASPECT	MITIGATION/MANAGEMENT ACTIONS	RESPONSIBILITY	METHODOLOGY	MITIGATION/MANAGEMENT OBJECTIVES AND OUTCOMES	FREQUENCY
landscape degradation.	ripped (0.5m depth) to restore compacted topsoil, and then rehabilitated to natural vegetation under the supervision of the rehabilitation specialist.	rehabilitation specialist.			
Soil erosion can result in visual scarring on prominent areas.	<ul style="list-style-type: none"> In areas where construction has taken place on steeper slopes, soil erosion measures need to be implemented. 	Project management and EPC	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area at hand, rehabilitation processes need to commence.	Soil erosion is limited and effectively managed such that visual scarring does not take place.	Bi-annual
Light spillage from security lighting of structures can significantly increase the visual impact of a project in a rural landscape in	<ul style="list-style-type: none"> Light spillage measures designed during pre-construction phase should be implemented and monitored by the ECO during construction to ensure that light spillage does not create a glowing effect. 	Project management and EPC.	A review of the security lights at night is undertaken by the EPC to check that undue light spillage is not taking place without loss of security.	Lights contrast generated from the buildings as seen from the roads is low and does not attract the attention of the casual observer.	At commencement of Operation Phase.

IMPACT/ ASPECT	MITIGATION/MANAGEMENT ACTIONS	RESPONSIBILITY	METHODOLOGY	MITIGATION/MANAGEMENT OBJECTIVES AND OUTCOMES	FREQUENCY
a dark-sky context.					
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the site and along the access road.	<ul style="list-style-type: none"> Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorization of the ECO. 	Project management and EPC (as the need arises).	Set up a clear management plan with clear accountability structures with set thresholds for triggering of mitigations.	Dust generated on site as well as on the access road to the site, is well managed and does not become a nuisance factor for the workers or the surrounding farmsteads.	On-going.

Visual - Management Plan for the Decommissioning Phase

IMPACT/ ASPECT	MITIGATION/MANAGEMENT ACTIONS	RESPONSIBILITY	METHODOLOGY	MITIGATION/MANAGEMENT OBJECTIVES AND OUTCOMES	FREQUENCY
Compaction of larger areas can result in soil sterilisation and landscape degradation.	<ul style="list-style-type: none"> Post construction, the laydown areas and other construction areas no longer needed for operational management, should be ripped (0.5m depth) to restore compacted topsoil, and then rehabilitated to 	Project management and EPC with inputs from rehabilitation specialist.	As defined by the rehabilitation specialist.	Soil sterilization does not take place and large degraded areas do not occur, with overall landscape integrity maintained.	Within 1 year of closure.

	natural vegetation under the supervision of the rehabilitation specialist.				
Old, unused structures have the potential to significantly degrade the landscape character.	<ul style="list-style-type: none"> • All structures not required for agricultural purposes post-closure should be removed and where possible, recycled or reused. • Building structures should be broken down (including building foundations) • The rubble should be managed according to the National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA) and deposited at a registered landfill if it cannot be recycled or reused. 	Project management and EPC	As defined by the rehabilitation specialist.	The post operation landscape reverts to rural agricultural without landscape degradation created by un-used/ old structures.	Within 1 year of closure.
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the site and along the access road.	<ul style="list-style-type: none"> • Set up a clear management plan with clear accountability structures with set thresholds for triggering of mitigations. • Set up a liaison committee to engage with local farmsteads located within 500m of an access road, with monthly communication with the farm owners on the effectiveness of the dust management procedures. 	Project management and EPC (as the issue arises).	Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorization of the EPC.	Dust generated on site as well as on the access road to the site, is well managed and does not become a nuisance factor for the workers or the surrounding farmsteads.	On-going

CHANCE FOSSIL FINDS PROTOCOL

Monitoring Programme for Palaeontology – to commence once the excavations /drilling activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Figure 11). This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
8. If no fossils are found and the excavations and mining have finished, then no further monitoring is required.

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.